REVISION LOG

Version	Date	Section	Page	Revision
1.0	October 2017	All	All	Supporting Document for Type A Water Licence Application, submitted to Nunavut Water Board for review and approval
2.0	March 2023	All	All	Update to include Environmental Emergency Regulations requirements for Diesel and concordance table
3.0	July 2023	All	All	Update to reflect change of Project Ownership from Sabina Gold and Silver Corp. to B2Gold Corp.
4.0	February 2024	All	All	Update to B2G report style and additions related to Environmental Emergency Regulations.

Back River Project

Spill Contingency Plan

VERSION #4.0

Prepared by:
ENVIRONMENT
FEBRUARY 2024

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LIST OF ACRONYMNS

Abbreviation / Acronym	Definition
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
ERAP	Emergency Response Action Plan
ERC	Emergency Response Coordinator
ERT	Emergency Response Team
FEIS	Final Environmental Impact Statement
HMMP	Hazardous Materials Management Plan
INAC	Indigenous and Northern Affairs Canada
KIA	Kitikmeot Inuit Association
MAD	Main Application Document
MLA	Marine Laydown Area
NWB	Nunavut Water Board
NWT	Northwest Territories
OHF	Oil Handling Facility
OPEP	Oil Pollution Emergency Plan
PPE	Personal Protective Equipment
Project	Back River Project
RMERP	Risk management and Emergency Response Plan
B2Gold	B2Gold Corp.
SDS	Safety Data Sheet
SCP or Plan	Spill Contingency Plan
SPOEP	Shipboard Oil Pollution Emergency Plan
STP	Sewage Treatment Plant
TDGR	Transportation of Dangerous Goods Regulations
TSF	Tailings Storage Facility
WIR	Winter Ice Road

1.0 INTRODUCTION

This Spill Contingency Plan (SCP or Plan) outlines the spill prevention and response measures that B2Gold Corp. (B2Gold) will implement in responding to hydrocarbon or other contaminant spill incidents that may occur at the Back River Project (the Project). The Plan addresses land and freshwater based emergency response and spill scenarios at the Marine Laydown Area (MLA) in southern Bathurst Inlet, and at the Goose Property. Marine response related to bulk fuel offload is detailed in the Oil Pollution Prevention Plan & Oil Pollution Emergency Plan (OPEP). The SCP and other management plans are intended to support the Type A Water Licence Application for the Project.

Project activities, plans, and potential risks, including those related to spills, have been presented to communities and interested stakeholders by a combination of B2Gold, the Nunavut Impact Review Board (NIRB), and the Nunavut Water Board (NWB) leading up to, during, and after the environmental assessment and regulatory permitting phases. B2Gold has also developed and submitted extensive materials describing and evaluating all potential environmental impacts and risks associated with the Project, and the measures to be implemented to reduce these risks. All these materials, including previous versions of this Plan, have been subject to rigorous review by regulatory bodies, Indigenous organizations, and community members. In future, each update of this plan is submitted to the NWB and subject to further review by relevant parties prior to approval by the NWB. These materials are publicly available on the Nunavut Impact Review Board and the Nunavut Water Board public registries. B2Gold also maintains a record of ongoing and previous public consultations held by B2Gold and files an update on these discussions annually with the NIRB. B2Gold continues to conduct continuous and routine consultation, led by B2Gold's Director of Indigenous & Northern Affairs and Vice President, Environment.

This Plan was initially developed following the requirements of the Supplementary Information Guidelines for Mining and Milling MM3 and Water Works M1, issued by Nunavut Water Board (NWB 2010 a, b) and the Environmental Impact Statement Guidelines issued by the Nunavut Impact Review Board to B2Gold (NIRB 2013) and in accordance with best management practices and in conformance with current Federal and Territorial statutory requirements (see Applicable legislation and Guidelines Section 3). It has been subject to review by various regulatory agencies (including Environment and Climate Change Canada, Crown Indigenous Relations, and Northern Affairs Canada), the Kitikmeot Inuit Association and other stakeholders participating in the NIRB Project assessment process and the NWB water licencing process. This version has been updated to reflect stakeholder inputs, the current Project design, contact information, substances on site, and relevant requirements of the Environmental Emergency Regulations (2019).

This Plan is a living document to be updated upon changes in related regulatory requirements, management reviews, incident investigations, changes to facility operation or maintenance, and environmental monitoring results, best practice updates or other Project specific protocols once construction starts through to Project closure activities. Any updates will be filed with the Annual Report submitted under the Type A Water Licence.

The information presented herein is current as of February 2024.

A record will document all significant changes that have been incorporated in the Plan after the latest review.

1.1 FACILITY OVERVIEW

The Back River Project is a gold mining project owned by B2Gold within the West Kitikmeot region of southwestern Nunavut. It is situated approximately 400 kilometres (km) southwest of Cambridge Bay, 95 km southeast of the southern end of Bathurst Inlet (Kingaok), and 520 km northeast of Yellowknife, Northwest Territories. The Project is located predominantly within the Queen Maud Gulf Watershed (Nunavut Water Regulations, Schedule 4).

The Project is comprised of two main areas with interconnecting winter ice roads (WIR): Goose Property and the Marine Laydown Area (MLA), which is situated along the western shore of southern Bathurst Inlet. The majority of annual resupply is completed using the MLA and an approximately 160 km long WIR which seasonally connects these sites (Figure 1-1).

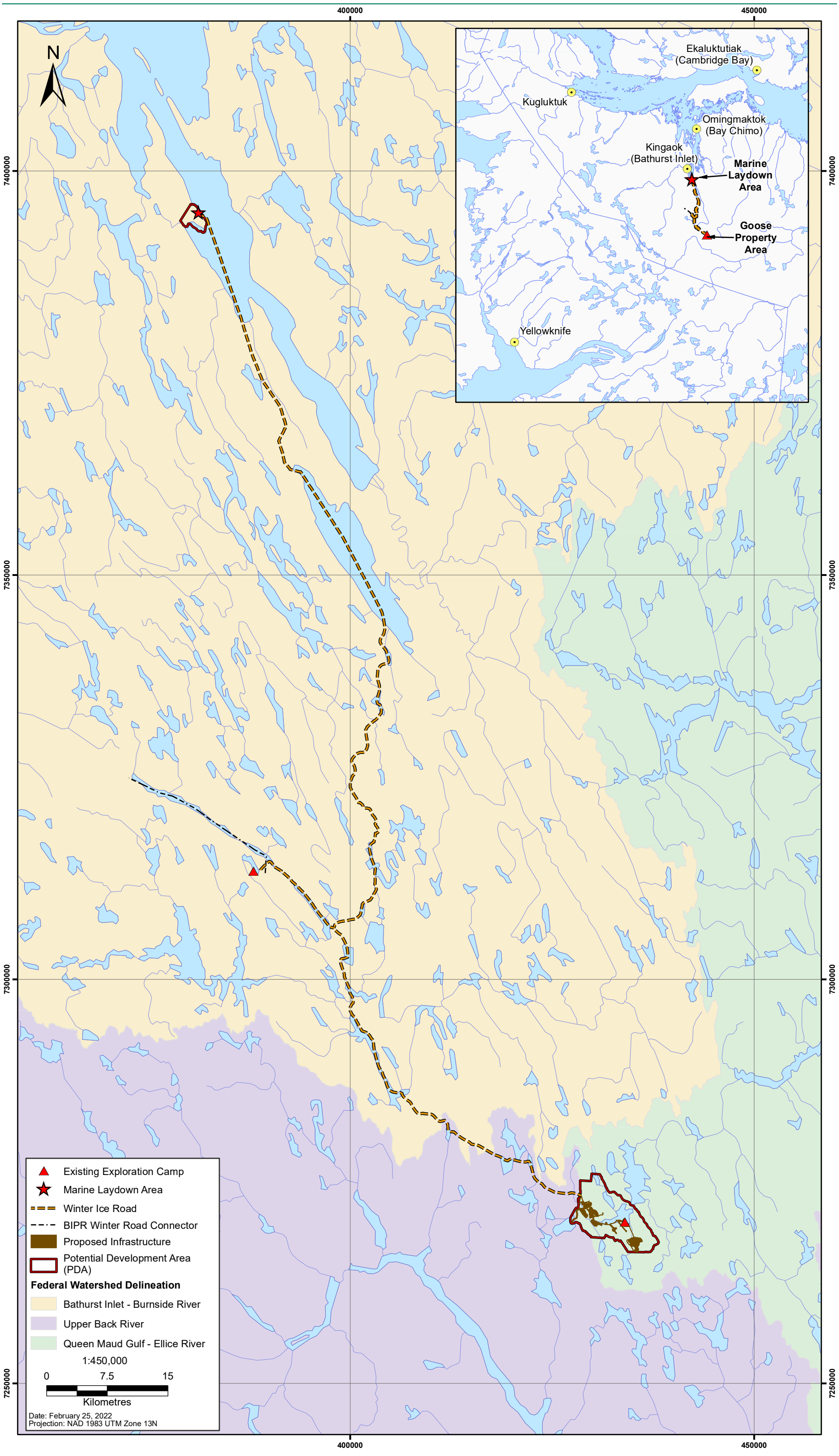

Figure 1-1: Back River Project Project Overview

2.0 SCOPE AND OBJECTIVES

This Spill Contingency Plan (SCP) is part of B2Gold's overall Emergency Response Program (ERP) for the Project. This Plan has been written to meet requirements of a Type A Water Licence and Canada's Environmental Emergency Regulations.

The scope of this Plan focuses on the spill response and environmental protection measures required in the event of a hydrocarbon or other contaminant spill at any of the Project properties and associated infrastructure, including winter ice and all-weather service roads and airstrips. This entails the implementation of response procedures for Project-related spills, releases, or discharges to land, water, ice, and snow of the following products:

- Hydrocarbon products including diesel fuel, gasoline, hydraulic oil,
- Soluble solids such as ammonium nitrate prill,
- Liquids such as glycols and paints,
- Tailings or reclaim water,
- Corrosive liquids including sulphuric acid and sodium cyanide,
- Compressed (inert and flammable) gas, and
- Other hazardous substances.

The SCP is designed to protect worker and public safety and minimize potential impacts to the environment in the event of a Project-related spill. This will be achieved through the application of best management practices implemented through predetermined lines of response and plans of action.

2.1 RELATED PLANS AND DOCUMENTS

Documents within the Application for the Type A Water Licence, which support this plan include:

- Risk Management and Emergency Response Plan (RMERP)
- Oil Pollution Prevention Plan & Oil Pollution Emergency Plan (OPEP)
- Fuel Management Plan (FMP)
- Landfarm Management Plan (LMP)
- Hazardous Materials Management Plan (HMMP)
- Water Management Plan (WMP)
- Explosives Management Plan (EMP)
- Occupational Health and Safety Plan (OHSP)
- Shipping Management Plan (SMP)
- Shipboard Oil Pollution Emergency Plan (provided by Shipping Company)

Additionally, Emergency Response Assistance Plans (ERAPs) will be required for the transportation of certain chemicals in accordance with Section 7 of the Transportation of Dangerous Goods Regulations (TDGR). This is discussed further in Sections 9.3.4 and 9.4.1

2.1.1 Linkage with B2Gold Oil Pollution Prevention Plan & Oil Pollution Emergency Plan

Based on the quantity of fuel to be transferred from ship to shore at the MLA, the MLA will be considered an Oil Handling Facility (OHF). The *Response Organizations and Oil Handling Facilities Regulations* under the *Canada Shipping Act* stipulates that operators of designated OHFs must have an on-site OPEP that has been approved by Transport Canada.

The OPEP prepared for the MLA-OHF applies to spills that may occur during ship-to-shore fuel transfers. Ship-specific Shipboard Oil Pollution Emergency Plans address marine spill incidents that may be associated with spills from shipping vessels while at sea. The OPEP prepared for the MLA has been designed to complement this plan.

B2Gold's Emergency Response Team (ERT) will be trained to adequately handle any emergencies that impact the ocean, land, and freshwater, including implementation of this SCP for land-based spills, and implementation of the OPEP for any spills that may occur during ship-to-shore fuel transfers.

3.0 APPLICABLE LEGISLATION

Specific legislation, regulations, and guidelines related to spill contingency planning and response in Canada, and specifically within Nunavut, are summarized in Table 3-1. Operational policies and procedures that fulfill conditions in applicable legislation will be further developed as the project proceeds.

B2Gold will also be bound by the terms and conditions of its land use permits to be issued by Crown-Indigenous and Northern Affairs Canada (CIRNAC) for Crown Lands and the Kitikmeot Inuit Association (KIA) for Inuit Owned Land, and its Type A Water Licence to be issued by the Nunavut Water Board.

Table 3-1 Legislation Applicable to Spill Contingency

Acts	Regulations	Guidelines
Federal		
Arctic Waters Pollution Prevention Act (R.S.C., 1985, c.A-12)	Arctic Shipping Pollution Prevention Regulations (C.R.C., c. 353)	
Canada Shipping Act (2001)	Environmental Response Regulations (SOR-2019-252) Vessel Pollution and Dangerous Chemical Regulations, (SOR 2012-69) Environmental Response Standards and Regulation	Environmental Response Standards (TP14909E)
Canadian Environmental Protection Act (R.S.C.1999 c.33)	Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (SOR/2008-197) Environmental Emergency Regulations, 2019: SOR/2019-51 Cross-border Movement of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2021-25)	Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products (Canadian Council of the Ministers of Environment (CCME) 2003) Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil (CCME 2008) Federal Contaminated Sites Action Plan (FCSAP) Supplemental Guidance on Implementation of Canada-Wide Standard for Petroleum Hydrocarbons in Soil at Federal Contaminated Sites (2022)
Fisheries Act (1985, c.F-14)	Metal and Diamond Mining Effluent Regulations (SOR/2002-2222)	
Explosives Act (1985, c.E-17)	Explosives Regulations, 2013 (SOR/2013-211)	Guidelines for Bulk Explosives Facilities – Minimum Requirements (NRCAN 2014)
National Fire Code of Canada (2020)		
Nunavut Waters and Nunavut Surface Rights Tribunal Act (2002)	Nunavut Waters Regulations (SOR/2013-69)	
Transportation of Dangerous Goods Act (1992, C.34)	Transportation of Dangerous Goods Regulations (SOR/2001-286)	2020 Emergency Response Guidebook (Transport Canada, the US Department of Transportation)
Territorial Lands Act (R. S. 1985, c.T-7)	Northwest Territories and Nunavut Mining Regulations (C.R.C., c.1516) Territorial Land Use Regulations (C.R.C., c.1524) Territorial Lands Regulations (C.R.C., c. 1525)	
Hazardous Products Act *Nunavut Act* (1993 c.28)	*Controlled Products Regulations*	*Workplace Hazardous Materials Information System (WHMIS)*
Territorial – Nunavut		

Environmental Protection Act	Spill Contingency Planning and Reporting Regulations (NWT Reg (Nu) 068-93) Used Oil and Waste Fuel Management Regulations (NWT Reg 064-2003) The removal of hazardous materials will require the registration with the Government of Nunavut, Department of Environment (DOE) as a waste generator as well as carrier (if applicable) prior to transport	Government of Nunavut (GN) Environmental Guidelines for the Management of: o General Management of Hazardous Waste in Nunavut (GN, 2010a) o Waste Paint (GN, 2010b) o Mercury-Containing Products and Waste Mercury (GN, 2010c) o Industrial Waste Discharges into Municipal Solid Waste and Sewage Disposal Facilities (GN, 2011a) o Waste Batteries (GN, 2011b) o Waste Solvent (GN, 2011c) o Waste Antifreeze (GN, 2011d) o Used Oil and Waste Fuel (GN, 2012) o Biomedical and Pharmaceutical Waste (GN, 2014) Canada-Wide Standards for Petroleum Hydrocarbons (PHC) In Soil (CCME 2008)
Mine Health and Safety Act (SNWT (Nu) 1994, c.25)	Mine Health and Safety Regulations (NWT Reg (Nu) 125-95)	
Workers' Compensation Act (RSNWT, 1998, c.W-6)	Workers' Compensation General Regulations (Nu Reg 017-2010)	
Explosives Use Act (RSNWT (Nu) 1988, c.E-10)	Explosives Regulations (RRNWT (Nu) 1990, c.E-27)	
Fire Prevention Act (RSNWT (Nu) 1988, c.F-6)	Fire Prevention Regulations (RRNWT (Nu) 1990, c.F-12)	
Motor Vehicles Act (RSNWT (Nu) 1988, c.M-16)	Consolidation of Large Vehicle Control Regulations (RRNWT (Nu) 1990, c.M-30)	
Public Health Act (RSNWT (Nu) 1988, c.P12)	Camp Sanitation Regulations (RRNWT (Nu) 1990, c.P-12)	
Safety Act (RSNWT 1988, c.S-1)	Occupational Health and Safety Regulations, Nu Reg 003-2016 Work Site Hazardous Materials Information System Regulations (RSNWT 1990, c.5-2)	
Transportation of Dangerous Goods Act (1990, RSNWT (Nu) 1988, c.81 (Supp))	Consolidation of Dangerous Goods Regulations (1991, R-095-91)	

4.0 INCIDENT MANAGEMENT SYSTEM

B2Gold has adopted the Incident Command System (ICS) and selected documents from that system's forms catalogue. The ICS is a standardized response coordination system designed to effectively employ manpower and other resources responding to an emergency event, and to coordinate with responding agencies. ICS is divided into 5 sections:

1. Command
2. Operations
3. Planning
4. Logistics
5. Finance/Administration

These five sections work together with defined duties and responsibilities to resolve the incident.

The full ICS system and its catalogue of forms has been adapted for use by B2Gold. This has been done without compromising the system as a whole; ICS is designed to be easily expanded and integrated with other responding organizations, as required.

During regular fuel transfer operations, B2G uses ICS Forms where possible to aid the switch to spill response operations and ICS.

Personnel trained on ICS can easily integrate into third-party response management systems as they use common job descriptions, common terminology, and standard ICS forms. ICS can also be expanded and contracted easily as resources arrive or are demobilized.

4.1 INCIDENT COMMAND POST

The On-site Command Team operates from an Incident Command Post (ICP). The ICP at the MLA and Goose properties are in the main administration building.

4.2 UNIFIED COMMAND

Unified Command is often misunderstood at a response to a marine source spill in Canada. This is a result of a difference in "who has final decision making authority", which is fundamentally different for Federal, Territorial, and Provincial jurisdictional response.

The structure and authority of the Unified Command is different in Canada than it is in the United States and other jurisdictions. Additionally, the structure and authorities under Federal regulations are significantly different than they are for Territorial, Provincial and Municipal response.

The concept of Unified Command simply means that all Federal, Territorial, Provincial agencies and industry who have a functional, jurisdictional, or legal responsibility at an incident, contribute to the process of determining overall response strategy and objectives. In other words: In a marine oil spill response if your organization is regulated by or has regulatory authority and is contributing to a response, you **MAY** be included in a Unified Command.

While it is desirable to form a limited Unified Command, it is always at the discretion of the MLA or Goose Incident Commander who has the final decision making authority. No individual or organization has the right to be on the Unified Command. In many cases, supporting agencies will have experience with firefighting and other types and jurisdictions of emergency response. They may demand a seat on the Unified Command as they would at a fire, flood, or other type of emergency response.

It is common in Canada at Marine and OHF spill incidents, that a Stakeholder's group is included in the Unified Command in an advisory capacity.

To respond effectively, it is critical to understand both the regulatory requirements and the advantages and disadvantages of a Unified Command.

4.2.1 Unified Command at Marine Source Spills

The MLA Incident Commander is the lead for the MLA Incident Command Team and has the final decision making authority for fuel spills that fall under the jurisdiction of this Plan. This includes spills to water and marine source spills that impact shorelines. The Delivery Vessel will also have an Incident Commander (typically the Captain) who has final decision making authority for marine spills that fall under their Ship-Source Oil Pollution Emergency Plan (SOPEP).

In the event of a marine spill to water (or potentially to water) during a fuel transfer, the B2G and Vessel Incident Commanders will work together to establish priorities and objectives, and to direct the response.

Acting together as a "Unified Command" the two ICs can (at their discretion) invite others to participate in their decision making process. For marine source spills, the Federal Lead Agency will the Canadian Coast Guard.

4.2.2 Unified Command for Land Source Spills

The Territorial Government Lead Agency Incident Commander is the lead regulator. Ultimately, they have the final decision making authority for land-source fuels pills that fall under their jurisdiction. This includes spills on land that migrate to water.

In the event of a land-side sourced fuel spill, the B2G Incident Commander will establish priorities and objectives and direct the response until a Territorial Government Representative arrives on-scene. At that point, it is desirable that the Territorial Government's Representative and B2G's Incident Commander form a Unified Command.

4.3 INCIDENT COMMAND STRUCTURE (INCIDENT COMMAND SYSTEM)

After the handoff from the initial operational response personnel, all spill procedures and response functions will be directed by the Incident Command Team located in the Incident Command Post.

Only those functions required under the circumstances of the event will be manned. Given the limited personnel on-site at the MLA, a reduced ICS organizational structure is described for the MLA OHF (below). However, for general reference and context (e.g., Goose Site), the complete ICS organizational structure is illustrated in Figure 4-1 below.

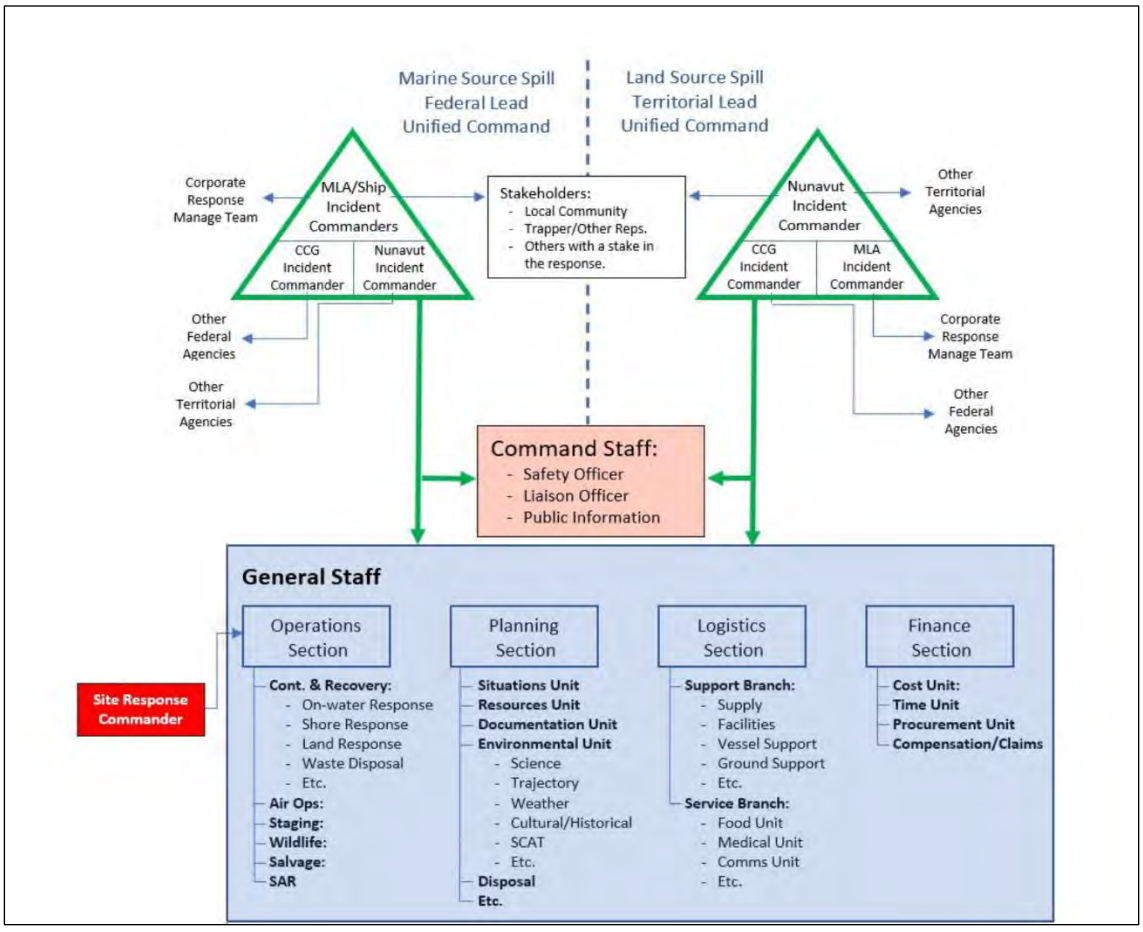

Figure 4-1 B2Gold Incident Command Structure Chart

5.0 ROLES AND RESPONSIBILITIES

The initial stage of any spill incident and resultant response is critical. An effective and timely initial response is essential to preventing a spill situation from escalating. Therefore, all relevant personnel must be fully aware of their individual duties and responsibilities as presented in this plan. It is the duty of any individual who encounters a spill to notify Incident Commander immediately upon encountering a spill.

Figure 4-1 (above) summarizes B2Gold's generalized emergency and spill response organization chart, which is also reflected in the Risk Management and Emergency Response Plan (RMERP), as well as the OPEP.

The specific responsibilities and duties of personnel involved in emergency and spill response are outlined in Sections 5.1 to 5.18. In the SCP, all spills are emergencies. The severity of the spill will determine the level of response and participation of the ERT members.

Contractors will be required under specific contractual clauses, to comply with B2Gold's approvals and environmental management plans, including this SCP. B2Gold staff will monitor contractor performance and adherence to legislation and commitments in the environmental management plans.

5.1 EMERGENCY RESPONSE COORDINATOR

The Emergency Response Coordinator (ERC) is the General Manager or his designate if absent. ERC duties during an emergency are detailed as follows:

- The ERC will ensure coordination of ERT support systems.
- Upon being notified of an emergency, the ERC will initiate response activities and assess the situation based on current information from the Incident Commander.
- Activate the emergency response process and escalate according to severity of incident.
- The ERC will coordinate all activities. In the event the ERC leaves his post, the ERC will designate an individual to coordinate in his absence.
- Ensure that the appropriate area manager/s has been notified.
- Provide internal notification as applicable based on the level of emergency.
- Provide instruction to ensure that appropriate external resources are notified.
- Receive information from the Incident Commander and ensure appropriate resources are made available.
- Provide support for the acquirement of additional supplies and resources as requested by the Incident Commander.
- Contact departmental resources via radio as required during the emergency response.
- Provide internal notification of the "all clear".
- Ensure the coordination and establishment of an emergency debriefing session.
- Review incident log and post response incident report.
- Post incident debrief with Incident Commander.
- Provide necessary information to Public Relations for a media statement release if required.
- Complete a report on the events surrounding the incident.
- Coordinate collection of all incident notes, reports, statements, and log of events.
- End the event in a project tracking system.
- Post incident: review the recommended measures to prevent a recurrence of the spill and implement the corrective actions.

5.2 INCIDENT COMMANDER

The Incident Commander is the site lead administrator for the ERT, responsible for ensuring the necessary emergency response equipment and adequate level of training for ERT members. The Incident Commander directs the ERT at the scene as ERT Leader. In the absence of the Incident Commander, a senior team member will be designated in his place.

The duties of the Incident Commander during an emergency are:

- Muster accordingly and brief team members.
- Report to the scene of the emergency.
- Take charge of the scene.
- Evaluate the details of the emergency as presented by those on scene.
- Assess the immediate situation, confirm the level of emergency, and notify the ERC.
- Maintain contact with the ERC and provide support in coordination of the response.
- Direct ERT members in their respective tasks as required.
- Contact departmental resources via radio as required during the emergency response.
- Request internal/external resources as required.
- Advise ERT on aspects of internal/external support as they are received.
- Develop a written log of events indicating instructions given, action taken, and outcomes achieved.
- Announce the 'all clear' to the ERC when the emergency has ended.
- Lead the post-emergency debriefing session.
- Ensure that all ERT equipment is returned to original order and/or replaced to ensure future rapid response.
- Aid with ongoing investigation.
- Prepare a written report on response activities.

5.3 SAFETY OFFICER

Safety personnel or designates will receive the initial notification of an emergency and provide first communications to essential personnel and secure the area.

Duties during an emergency are as follows:

- Safety will report muster and evacuation status to the Incident Commander and await further instruction.
- Provide traffic and personnel control at the scene as directed by the Incident Commander.
- Assist in controlling access to the emergency area.
- Maintain open radio communication (via radio or telephone intercom system).
- Keep a written record of events throughout the incident.
- Relay notification of 'all clear" order when directed by the Incident Commander.

- Maintain safety and security of the scene as directed by the ERC or Incident Commander.
- Direct all off-site inquiries regarding the emergency to the ERC or designate.
- Participate in a debriefing session for the emergency response.

5.4 PUBLIC INFORMATION OFFICER (PIO)

The Public Information Officer (PIO) is responsible for providing information to internal and external stakeholders. The PIO works with all members of the Command and General staff to gather information and to keep the team informed and acts as the focal point for Incident information.

The PIO role is directly linked to the Corporate Communications role on the Response Management Team at Head Office. The PIO advises the MLA or Goose Incident Commander on information dissemination and media relations.

For large multiple agency incidents, PIO's from the various organizations may form a Joint Information Centre (JIC) to coordinate their messages.

5.5 EXTERNAL LIAISON OFFICER (ELO)

The External Liaison Officer (ELO) is the point at the incident for assisting, coordinating, and communicating with regulators and stakeholders at the site of the incident.

The primary goal of the Elo is to ensure that all agencies and stakeholders are regularly communicated with, kept up-to-date and their concerns are communicated to the chain of command. The ELO will ensure that all external relations are maintained, and issues are addressed.

The ELO works closely with the PIO.

5.6 OPERATIONS SECTION CHIEF (OSC)

The Operations Section Chief (OSC) develops and directly manages all initial response incident tactical activities based on the Facility Response Plan and, after the Incident Command Post assumes control of the response, implements the Incident Action Plan(s) (IAP).

5.7 RESPONSE SITE COMMANDER (RSC OR SSS)

The Spill Site Supervisor (SSS) manages the First Response and is essentially the initial Incident Commander until replaced or until such time as the formal Incident Command Team in the Incident Command Post (ICP) assumes control.

5.8 PLANNING SECTION CHIEF (PSC)

The Planning Section Chief (PSC) oversees all incident-related data gathering and analysis regarding incident operations and assigned resources. Conducts planning meetings and prepares the Incident Action Plan (IAP) for each operational period. The Planning Section Chief is a member of the General Staff.

5.9 Documentation Unit Lead (DUL)

The Documentation Unit Lead (DUL) maintains accurate and complete incident files, including a record of the major steps taken to resolve the incident. The DUL provides duplication services to incident personnel and files, maintains and stores incident files for legal, analytical, and historical purposes.

This Unit compiles and publishes the Incident Action Plan (IAP) and maintains the files and records that are developed as part of the overall IAP and planning functions.

5.10 Logistics Section Chief (LSC)

The Logistics Section Chief (LSC) provides all the support needs for the incident such as ordering resources and providing facilities, transportation, supplies, equipment maintenance and fuel, food service, communications and medical services for incident personnel. The Logistics Section Chief is a member of the General Staff.

5.11 Finance/Administration Section Chief (FASC)

A Finance/Administration Section under the Finance/Administration Chief (FSC) is established when there is a specific need for financial and/or administrative services to support incident command activities. Large or evolving scenarios involve significant funding originating from multiple sources.

In addition to monitoring multiple sources of funds, the Section Chief must track and report to the IC/UC the accrued cost as the incident progresses. The Finance/Administration Section Chief is a member of the General Staff.

5.12 Procurement Unit Lead

The Procurement Unit Lead (PUL) administers all financial matters pertaining to vendor contracts.

This Unit coordinates with local jurisdictions to identify sources for equipment, prepares and signs equipment rental agreements, and processes all administrative requirements associated with equipment rental and supply contracts.

In some cases, the Supply Unit in the Logistics Section will be responsible for certain procurements.

5.13 Emergency Medical Personnel

Duties during an emergency are as follows:

- Respond when required as directed by the Incident Commander.
- Responsible for all decisions of medical-related situations on-site.
- Responsible for assessing, administering, and delegating emergency medical care.
- Advise the Incident Commander of the number and condition of any ill/injured personnel.
- Advise the ER Coordinator of off-site resources required.

- Maintain a log of events, actions and outcomes.
- Participate in a post-emergency debriefing session.

5.14 COMMUNICATIONS OFFICER

The Communications Officer manages the collection and dissemination of all information relating to an emergency, including:

- Government agencies, including those that may be involved in responding to any emergency.
- Communities (Hamlets, community groups and individuals); and
- Media.

The Communications Officer will be part of the Corporate Crisis Management Team identified on Figure 4-1 and will likely be a corporate executive such as the Vice President, Environment & Sustainability, or a designate.

If required, the Communications Officer or designate will control radio use and restrict it to emergency response only. The Communications Officer will also direct the collection, collation and management of all written information, photographs, drawings, and video recordings generated during the emergency. This includes the following records:

- A record of the chronology of events.
- Log of telephone calls.
- Log of written statements regarding the emergency (emails, press releases, etc.).
- A list of personnel on-site at the time of the emergency along with emergency contact information.

All other communications of an emergency by other project personnel will be prohibited, to limit possible uncontrolled dissemination of misinformation.

5.15 ENVIRONMENTAL SUPERINTENDENT

The duties of the Environment Superintendent during a spill emergency are detailed as follows:

- For major spills contact the ERC and report to the ICS.
- Assist the ERC in evaluating the initial situation and assessing the magnitude of the spill.
- Report the spill to the NWT-NU 24-hour Spill Report Line and the KIA depending on whether a specific threshold volume is triggered.
- Assist in developing an overall plan of action.
- Document all actions and decisions.
- Complete Government Agency notification processes.
- Act as the spokesperson with government agencies as appropriate.
- Collect photographic records of the spill and cleanup efforts.

- Report to the ERC and provide recommendations on resource requirements 9additional manpower, equipment, material) to complete the cleanup effort.
- Provide liaison with management to keep them informed of cleanup activities.
- Ensure that the spill is cleaned up and follow-up communication and reports are filed with the INAC and KIA.
- Assist in the accident/incident investigation process.
- Participate in post-emergency debriefing.
- Ensure that all involved departments complete reporting procedures.
- Ensure that spill reports submitted to INAC and KIA include photographic records and an updated map showing Universal Transverse Mercator (UTM) coordinates, date, and amount and nature of the spill.
- Implement a sampling procedure for the collection and analysis of confirmatory samples to identify and monitor possible contaminant levels resulting from the spill.
- Document the cause of the spill, effectiveness of the cleanup effort, and recommend appropriate measures to prevent a recurrence of the spill.
- Prepare and submit follow-up documentation required by appropriate regulators.

For marine spills at the OHF, the Environment Superintendent will be available to the Canadian Coast Guard during the entire incident.

5.16 ENVIRONMENTAL COORDINATOR

The Environmental Coordinator will liaise with the Incident Commander to advise on the required environmental response efforts once the scene has been assessed by the Incident Commander and all medical and/or fire emergencies are under control.

The Environmental Coordinator will:

- Directly proceed to the scene of the incident.
- Make recommendations for response methods and resources based on area sensitivities and incident severity through the Incident Commander as necessary.
- Make recommendations for additional resources through the Incident Commander as necessary.
- Participate in post-emergency debriefing.
- Maintain a log of events, actions, and outcomes.

5.17 SAFETY COORDINATOR

The duties of the Safety Coordinator during an emergency are detailed as follows:

- Contact the ERC.
- Respond to the scene and make direct contact with the Incident Commander.
- Establish perimeters around the area of the emergency and direct appropriate resource personnel responsible for traffic flow.

- Assist with identifying and assessment of potential hazards of the ERT response and notify the Incident Commander.
- Ensure appropriate personal protective equipment for involved ERT and non ERT personnel.
- Note pertinent information that may be relative to the investigation.
- Secure the area in coordination with site security.
- Participate in post-emergency debriefing.
- Assist in the accident/incident investigation and complete report.

5.18 TEAM LEADERS – (EMERGENCY RESPONSE TEAM)

The duties of the Team Leaders during an emergency are detailed as follows:

- Report to the scene of the incident.
- Work closely with the Incident Commander to determine appropriate response strategy for their respective work area.
- Contact departmental resources via radio as required during the emergency response.
- Direct ERT members in their respective tasks as required.
- Participate in a post-emergency debriefing session.

6.0 TRAINING AND EMERGENCY RESPONSE EXERCISES

6.1 GENERAL

Training and awareness are two major elements of spill prevention. All site staff and contractors will review the contents of the SCP during their on-site orientation and will be informed of where copies of the Plan are stored. The mandatory site orientation will provide hazard awareness training, identify the locations of spill kits and other response equipment, and discuss appropriate application. A more detailed description of the training to be provided to site staff is provided below.

B2Gold will ensure that relevant personnel involved in a response have received prior training and the requisite skills to safely minimize the impact of a spill to the environment.

The personnel directly linked to emergency response operations will receive training to familiarize themselves with the content of the SCP and the RMERP on a regular basis according to their duties and responsibilities. All completed training will be recorded in a training register, to be kept up to date by the ERT Coordinator. Training will be conducted to ensure adequate numbers of responders are available for all levels, times, and work shifts.

All training conducted will be documented in a training register that will include participants' names, dates and copies of any training materials provided. The register will be kept up to date by the ERT Coordinator. The training regime will be reviewed at a minimum annually but additionally when there is a change in operations, chemicals, or hazard information.

6.2 SITE ORIENTATION

Site orientation will be provided to all personnel to ensure employees are aware of:

- Relevant Project plans.
- Applicable Legislation.
- Environmental Receptors (i.e., surface water and sensitive areas).
- What First Responders are to do in case of a spill.
- The location of SDS sheets and Spill Report Forms.
- The location of the Spill Response Kits.
- The general locations of fire extinguishers and firefighting equipment.
- The location of the SCP.

6.3 ROLE SPECIFIC

Specific spill response training will be provided to those employees whose job function may have a higher probability of experiencing a spill, such as those handling chemicals, to ensure those individuals have appropriate knowledge and skills related to:

- Workplace Hazardous Materials Information Systems and TDGR training.
- Specialized handling and emergency/spill response procedures related to specific chemicals (e.g., explosives, cyanide, fuel) to minimize the risk of spills.
- Identify and avoid the conditions which may lead to a spill.
- Develop an understanding of the potential environmental impacts of a spill.
- Recognize the hazards associated with sources of ignition (smoking, electrical sparks) near a fuel source.
- Spill kit contents and appropriate use.

For employees involved in fuel handling, additional training will be provided regarding appropriate refueling techniques and drum handling procedures. Personnel not trained to handle chemical spills will not attempt to clean up spills; they are to contact emergency response personnel for clean-up assistance. Medical staff potentially involved in supporting response workers will receive role-specific training including information on the details of the Plan and SDSs.

6.4 EMERGENCY RESPONSE TEAM

Members of the ERT will be provided with a higher level of training to allow for safe and adequate response. The ERT members will receive a minimum of 8 hours of training during each two-month period, or as prescribed by the *Mines Act*. At a minimum, ERT training includes:

- Information provided as part of the Role-Specific Training.
- First Aid training.

- Fire extinguishers and water pump locations and use.
- Details of the SCP.
- How to identify, evaluate and mitigate the hazards posed by any spilled product by using appropriate personal protective equipment (PPE).

6.5 SPILL RESPONSE EXERCISES

Spill response exercises will be conducted to validate on-site capabilities, practice the internal and external notification processes, and evaluate the management of the response through the decisions and actions of the spill management team participating in the exercise(s).

The exercises will involve the application of realistic hands-on scenarios where the ERT will deploy the appropriate equipment to respond to the specific spill scenario developed for the exercise. The spill exercise may be broken down into two or more sessions to ensure adequate coverage. Records of all spill response exercises will be kept on file and posted to provide access for those who were unable to attend.

7.0 EMERGENCY RESPONSE TEAM CONTACT INFORMATION

Contact information for all key Back River emergency contacts involved in spill response is presented in Appendix A, Table A-1 through A-5. These contacts will be reviewed and updated with every review of the SCP.

8.0 PLANNING AND IMPLEMENTATION

Planning for the SCP started with the development of the Draft Environmental Impact Statement (DEIS) which identified existing (baseline) conditions, assessed potential impacts of the Project, developed conceptual mitigation strategies, and developed specific mitigation measures to execute these strategies. Conceptual strategies and plans have advanced with the Final Environmental Impact Statement (FEIS) and through Construction and will continue to be elaborated and executed throughout the Project life. Updates will incorporate relevant internal and public feedback.

8.1 DEFINITIONS AND SPILL QUANTITIES

For this Plan, a **major spill** is defined as an accidental release of product into the environment that has the potential for significant adverse impact and is a reportable quantity.

A **minor spill** is defined as any hazardous chemical spill that does not involve highly toxic, highly reactive, or explosive chemicals, in a situation that is not life threatening, nor poses immediate risk to the receiving environment. Furthermore, this type of spill presents a manageable physical or health hazard to personnel who, when wearing proper PPE, will not be exposed to any chemical at a level that exceeds any recognized action levels or permissible exposure limits.

Minimum reportable thresholds are provided by:

- Guidelines for Spill Contingency Planning, Appendix B-3: Immediately Reportable Spill Quantities (CIRNAC 2024).

- Transportation of Dangerous Goods Regulations – Part 8 – Accidental Release and Imminent Accidental Release Reporting Requirements.
- Northwest Territories-Nunavut Spills Working Agreement: Table 2 – General Guidelines for Assessing Spill Significance and Spill File Closure
- Northwest Territories-Nunavut Spills Working Agreement: Appendix A - Schedule 1 – Reportable Quantities for NT-NU Spills

The SCP is activated based on the lowest minimal reportable thresholds as shown in Table 8-1.

If a spill on-site meets or exceeds the minimum reportable thresholds, or is thought to exceed the minimum reportable thresholds, the spill will be reported by the Environmental Superintendent (or designate) to the **NWT-NU 24-Hour Spill Report Line**.

Accidental releases of runoff from mining areas not conforming to facility designs (e.g., tailings supernatant, Waste Rock Storage Area (WRSA) runoff from ponds, etc.), and from lined containment areas (i.e., tank farm berms) will be reported as "other contaminants" in Table 8-1.

Additional direction on the reporting of spills, including also TDGR requirements for reporting of spills of dangerous goods in transit, is provided in Section 10.

Procedures are in place that require all spills, including non-reportable spills, to be communicated by staff and responded to as needed.

Table 8-1 Externally Reportable Volumes (CIRNAC 2024, TDGR)

TDGA Class	Description of Contaminant	NT/NU Spill Reporting Threshold
1	Explosives	Any amount
2.1	Compressed gas (flammable)	Any amount of gas from containers with a capacity greater than 100 litres
2.2	Compressed gas (non-corrosive, non-flammable)	Any amount of gas from containers with a capacity greater than 100 litres
2.3	Compressed gas (toxic)	Any amount
2.4	Compressed gas (corrosive)	Any amount
3		
3.1, 3.2, 3.3	Flammable liquid (hydrocarbon fuels)	100 litres
4.1	Flammable solid	25 kg
4.2	Spontaneously combustible solids	25 kg
4.3	Water reactant solids	25 kg
5.1	Oxidizing substances	50 litres or 50 kg
5.2	Organic peroxides	1 litre or 1 kg
6	Toxic Substances	5 litres or 5 kg
6.1	Poisonous substances	5 litres or 5 kg
6.2	Infectious substances	Any amount
7	Radioactive	Any amount
8	Corrosive substances	5 litres or 5 kg

9.1 (in part)	Miscellaneous products or substances, excluding PCB mixtures	50 litres or 50 kg
9.1 (in part)	PCB mixtures of 5 or more parts per million	0. 5 litres or 0. 5 kg
9.2	Environmentally hazardous	1 litre or 1 kg
9.3	Dangerous wastes	5 litres or 5 kg
None	Other contaminants	100 litres or 100 kg
None	Any spill to water (any deleterious substance including MDMER parameters, seepage, fuel, other)	Any amount

8.2 INVENTORY OF FACILITIES

Facilities on-site for the storage of chemical, hazardous material and/or fuel at the **MLA** includes:

- Hazardous Materials Management Areas
- Freight Storage Areas
- Fuel Storage Areas

Refer to Figure 8-1 for the MLA facility arrangement.

Facilities on-site for the storage of chemical, hazardous material and/or fuel at the **Goose Property** includes:

- AN Storage and AN Facility
- Process Plant
- Assay Lab
- Power Plant
- Truck Shop/Dry Warehouse
- Freight Storage
- Fuel Unloading and Dispensing
- Laydown Storage
- Haul Truck Fueling Station
- Waste Oil Storage
- Lined Hazardous Materials Management Area
- Bulk Fuel Storage (1 x 10 ML and 1 x 15 ML tanks)
- Mobile and barrel fuel storage
- Landfarm.

Refer to Figure 8-1 and Figure 8-2 for MLA and Goose property spill kit locations, respectively. For spill response equipment inventory refer to Appendix B, Tables B1 through B3. As Project construction progresses, more details of specific products and expected amounts will be included in this Plan. A revised inventory of facilities and product quantities will be provided when needed to account for changes in operation and

technology and as directed by the NWB in the Type A Water Licence or other regulatory authorization where appropriate.

GENERAL NOTES

1. ALL MEASUREMENTS IN METRES UNLESS OTHERWISE NOTED
2. COORDINATE SYSTEM IS NAD83(CSRS) / UTM ZONE 13N

LEGEND

Spill Kit Location	

B2GOLD NUNAVUT

1800 – 555 BURRARD ST. BOX 220
VANCOUVER, BC
V7X 1M9
t:604.998.4175

outcome CONSULTANTS

151 HOLLAND AVE SUITE 200
OTTAWA, ONTARIO
K1Y 0Y2
t:613.729.2402

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B2Gold - Nunavut

BACK RIVER PROJECT- MARINE LAYDOWN AREA SPILL KIT LOCATIONS

OUTCOME PROJECT NUMBER:	DRAWN BY:	SCALE:
P2021-27	J.MILLS	1:4000
CLIENT PROJECT NUMBER:	**CHECKED BY:**	**PUBLISH DATE:**
6100	C.BARDOEL	2022-08-12

DRAWING NAME:	SHEET NUMBER:	REV:
6100_SABINA MLA BASE MAP.dwg	01	00

GOOSE LAKE

B2GOLD

SPILL KIT LOCATIONS

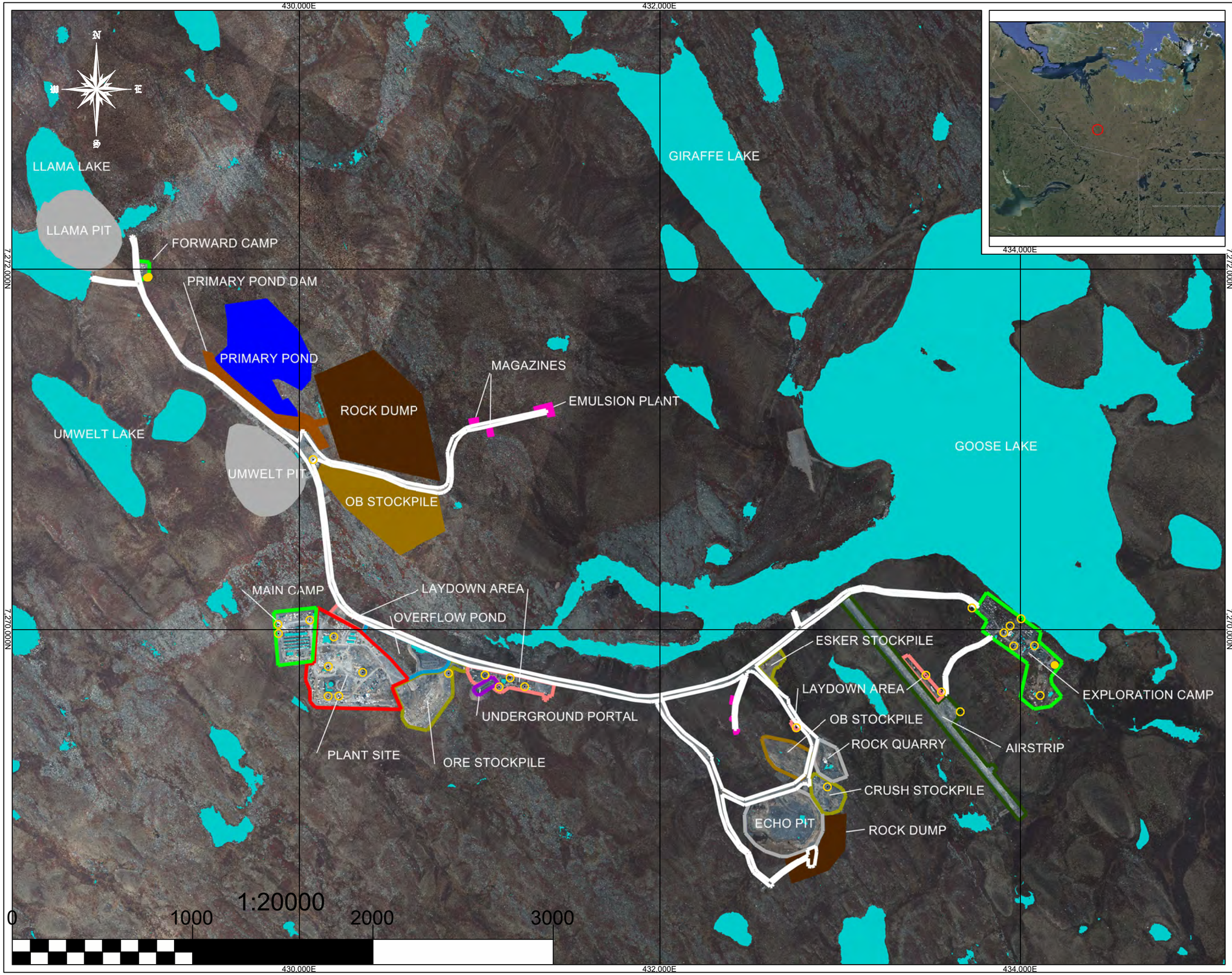
DATE:	Feb 15, 2024
TIME:	0900
SCALE:	1:20,000
DRAWN BY:	BBROWN-JOHN

LEGEND

- AIRSTRIP
- CAMPS
- EXPLOSIVES
- LAYDOWN
- OB STOCKPILES
- OVERFLOW POND
- PITS
- PLANT SITE
- PRIMARY POND
- PRIMARY POND DAM
- ROADS
- ROCK DUMP
- STOCKPILES
- UNDERGROUND PORTAL

NOTES

- Spill Kit Location



B2GOLD NUNAVUT

8.3 SPILL PREVENTION

Training and awareness are two major elements of spill prevention. All site staff and contractors will review the contents of the SCP during their on-site orientation and will be informed of where copies of the Plan are stored. The mandatory site orientation will provide hazard awareness training, identify the locations of spill kits and other response equipment, and discuss appropriate application. A more detailed description of the training to be provided to site staff is provided in Section 6 of this plan.

In addition to training, all work sites and hazardous materials storage facilities will be routinely inspected. Good housekeeping practices will be adopted with emphasis on storage facilities and loading zones.

General practices to be implemented by B2Gold that support spill prevention include:

- Assign spill response personnel and clearly publish their contact information.
- Provide easy access to current SDS for all hazardous materials on-site.
- Maintain updated inventory of hazardous materials present at each site (in the HMMP).
- Store materials in appropriate containers to the specified capacity, in areas adequately protected from weather and physical damage.
- Conduct regular inspections of storage facilities.
- Segregate incompatible materials.
- Provide training involving the SCP, Spill Kits, and other response equipment.
- Stock adequate spill response materials and equipment, and have them readily available for transportation, transfer, and storage of hazardous materials.
- Create an environment which promotes prompt communications of all spill incidents.

8.4 SPILL RESPONSE EQUIPMENT

Available heavy equipment and aircraft (including rotor wing) will be used as appropriate for emergency use to respond to spill incidents. Appropriately sized spill kits and spill response equipment are strategically located in vehicles and all Project sites and will be added as new areas of the Project are developed.

Each department is to be responsible for providing all necessary SDS and suitable spill response kits in their respective work areas. Spill Kits and SDSs are stored in marked areas, readily accessible to responders. The Spill Kit location maps for the MLA area as well as the Goose Property are identified in Figure 6-1 and Figure 6-2, respectively. Any spill kit location updates within either of these two areas will be applied to these reference maps as the Project develops and this Plan is updated.

Spill kits are customized to account for specific hazards and conditions in each work site. Customized spill kits particular for the activity and area will be selected for use on the site as required. At a minimum, each kit will contain:

- Sufficient hydrophobic absorbent material (e.g., oil absorbent booms, pads, and socks) to contain and cleanup potential drips, leaks, or spills.

- Gloves and heavy plastic bags to contain oily absorbent materials and contaminated soils or wastes.
- Barrier tape to keep personnel out of contaminated areas.
- Sorbent granular materials to soak up free oil.
- Other appropriate PPE such as disposal coveralls, rubber gloves, and safety goggles.

A vehicle outfitted with a self-contained collection of spill response materials for rapid deployment to spill sites will be utilized.

Reserve spill response equipment such as booms, socks, and pads will be available for responding to larger spill incidents, or to replenish materials used in the smaller equipment spill kits. Spill kits are inspected routinely and restocked after use.

A list of general spill response equipment and materials for both the MLA and Goose are provided in Appendix B, Table B-1 through B-2 respectively. A list of spill response equipment and materials for the emergency spill response trailer can be found in Appendix B, Table B-3. This list will vary by Project phase and response requirements.

8.5 Spill Response Procedures

Spills may result from any of the following situations:

- Leaks or ruptures in tanks, drums, or containers
- Equipment failure including valves, hoses, piping or containment structures
- Overfilling containers
- Improper storage
- Spills during transfer
- Accidents during transportation.
- Operator error (puncture drums or totes)

Procedures vary seasonally and based on the nature of the hazardous material spilled. The applicable SDS will be reviewed to ensure that the materials are being handled safely and appropriately. Response procedures specific to land, water, snow, and ice are presented in the following section.

9.0 GENERAL SPILL RESPONSE

All site personnel are briefed on the procedures to be followed to report a spill and initiate spill response. The following details the steps to be taken in the event of a spill. Steps are listed in order of importance; however, circumstances and conditions may alter the order of these steps to meet a specific situation. The Site Superintendent and Environmental Superintendent will be notified as soon as feasible for any spill. The first responder shall contact a supervisor or the Incident Commander, who will be responsible for initiating appropriate spill response.

The process of responding to multiple emergencies including spills is addressed in the RMERP.

9.1.1 Source Control

Identify the product and determine the source. Reduce or stop the flow of product without endangering anyone. This may involve very simple actions such as turning off a pump, closing a valve, sealing a puncture hole with almost anything handy (e. g., a rag, a piece of wood, tape, etc.), raising a leaky or discharging hose at a level higher than the product level inside the tank, or transferring fuel from leaking containers.

9.1.2 Control of Free Product

Prevent or limit the spread of the spilled material. Accumulate/concentrate spilled product in an area to facilitate recovery. Barriers positioned down-gradient of the spill will slow or stop the progression of the spill. Barriers can consist of absorbent booms, dykes, berms, or trenches (dug in the ground or in snow/ice).

9.1.3 Protection

Evaluate the potential dangers of the spill to protect sensitive ecosystems and natural resources. Block or divert the spilled material away from sensitive receptors. This can also be achieved by using various types of barriers.

9.1.4 Clean Up the Spill

Recover and contain as much free product as possible. Recover and containerize/treat contaminated soil, water, and snow. Pressure-wash contaminated bedrock surfaces, shorelines, ice and recover as much as possible oily water for containerization and/or treatment.

9.1.5 Report the Spill

Provide basic information such as date and time of the spill, type and amount of product discharged, photographic records, location and approximate size of the spill, actions already taken to stop and contain the spill, meteorological conditions and any perceived threat to human health or the environment.

9.2 RESPONSE BY SPILL LOCATION

Spills may occur at the Goose Property and the MLA year-round. As such, spills may occur to unfrozen land and water as well as frozen ground, snow, and ice.

Both the MLA and Goose Property are located far from any hospitals, schools, residential, commercial, or industrial buildings and any highways, public transit infrastructure, parks, forests. However, Project infrastructure is surrounded by wildlife habitat, and, at the Goose Property, there are numerous lakes and streams in the vicinity, with Goose Lake and its tributaries being the primary waterbody that could be affected by fuel spills. There are no streams at the MLA, but the MLA is located on the shore of the ocean (Bathurst Inlet).

Spills may also occur along the WIR route during the winter period only. Therefore, spills along the WIR will be onto snow and lake or ocean ice (frozen waterbody).

The location, weather conditions, and the time of year will influence the degree of environmental contamination that could result from a spill, as well as the response time and available resources. At both the Goose Property and the MLA, manpower and spill response equipment will be readily available, and road access around the properties will enable to rapid deployment of a response to spills.

9.2.1 Spills on Land

Initially use the equipment that is quickly available to build a berm to contain the spill and stop the material from entering any waterway. This can be built with soil, booms, lumber, snow, etc.

These barriers should be placed down gradient (down-slope) from the source of the spill and as close as possible to the source. Barriers slow the progression of flow and serve as containment to allow for recovery.

A plastic liner should be placed at the foot of and over the dykes to protect the underlying soil or other material and to facilitate recovery of the spill. Construct dykes in such a way as to accumulate a thick layer of free product in a single area (V shaped or U shaped).

Trenches are useful in the presence of permeable soil and when the spill is migrating below the ground surface. A plastic liner should be placed on the down-gradient edge of the trench to protect the underlying soil.

Large volumes of free product should be recovered, as much as possible, by using vacuums and pumps, and containerized. Mixtures of water and fuel may be processed through an oil-water separator. Absorbent sheets should be used to soak up residual spill to water, on the ground (soil and rock), and in vegetation.

9.2.2 Spills on Water

Response to spills on water includes the general procedures previously detailed.

Various containment, diversion and recovery techniques are discussed in the following sections. The following elements must be taken into consideration when conducting response operations:

- Type of waterbody or watercourse (lake, ocean, stream, river)
- Water depth and surface area
- Wind speed and direction
- Resonance and range of tides
- Type of shoreline
- Seasonal considerations (open-water, freeze-up, break-up, frozen)

If oil is spilled in a lake, containment can be achieved using mobile floating booms to intercept, control, contain and concentrate (i.e., increase thickness) the floating oil. One end of the boom is often anchored to shore while the other is towed by a boat or other means and used to circle the oil slick and return it close to shore for

recovery using a skimmer. Reducing the surface area of the slick increases its thickness and thereby improves recovery. Mechanical recovery equipment (i.e., skimmers and oil/water separators) will be mobilized, if required. However, in some lakes it may not be possible to deploy booms using a boat. In this case, measures are taken to protect sensitive and accessible shoreline. The oil slick is monitored to determine the direction of migration. In the absence of strong winds, the oil will likely flow towards the discharge of the lake. Measures are taken to block and concentrate the oil slick at the lake discharge using booms where it can subsequently be recovered using a portable skimmer, a vacuum, or sorbent materials.

In small slow-flowing rivers, streams, channels, inlets or ditches, inverted weirs (i.e., siphon dams) can be used to stop and concentrate moving oil for collection while allowing water to continue to flow unimpeded. In the case of floating oil in a stream or migration to a culvert (i.e., at a road crossing) a culvert block can be used to stop and concentrate moving oil for collection while allowing water to continue to flow unimpeded. In both cases, oil will then be recovered using a portable skimmer or sorbent materials.

In the case of spills in larger rivers with fast moving currents, diversion booming is used to direct the oil slick ashore for recovery. Single or multiple booms (i.e., cascading) may be used for diversion. Typically, the booms are anchored across the river at an angle. The angle will depend on the current velocity. Choosing a section of a river that is both wider and shallow will make boom deployment easier. Diversion booming may also be used to direct an oil slick away from a sensitive area to be protected.

9.2.3 Spills on Snow and Ice

In general, snow and ice will slow the movement of hydrocarbons. The presence of snow may also hide the oil slick and make it more difficult to follow its progression. Snow is generally a good natural sorbent, as hydrocarbons tend to be soaked up by snow through capillary action. However, the use of snow as a sorbent material is to be limited as much as possible. Snow and frozen ground also prevent hydrocarbons from migrating down into soil or at least slow the migration process. Ice prevents seepage of fuel into the water.

Response to spills on snow and ice includes the general procedures previously detailed. Most response procedures for spills on land may be used for spills on snow and ice. The use of dykes (i.e., compacted snow berms lined with plastic sheeting) or trenches (dug in snow or ice) slow the progression of the fuel and also serve as containment to allow recovery of the fuel. Free products are recovered by using a vacuum, a pump, or sorbent materials. Contaminated snow and ice is scraped up manually or using heavy equipment depending on volumes.

Should spills enter waterways beneath ice cover, ice augers and pumps will be used when feasible to recover fuel and other materials under ice. Slots may be cut in ice over slow-moving water to contain oil. Tiger torches may be used to burn the fuel in place, if unrecoverable by other methods and when feasible and safe to do so.

The contaminated snow and ice are placed in containers or within plastic lined berms on land. For contingency purposes, a contaminated snow storage site will to be designated and located near each of the main Project work sites to facilitate inspection and monitoring, in an area which will still be readily accessible once it is time to remove the snow (i.e., spring or summer), and at least 31 m away from any body of water or ditch. Once enough snow has melted, the oily water can be removed from the storage site and processed through an oil-

water separator that would be mobilized to site. Hydrocarbons recovered will be burned in the camp incinerator or shipped off-site.

9.2.3.1 Spills on the Winter Ice Road

Fuel and other materials will be transported by truck over the winter road each year, and a spill may occur if a truck accident were to occur, either due to a collision with another vehicle, or more likely, due to the truck slipping off the road. The remoteness of such an incident limits the ability to mount an immediate comprehensive response. Response to spills that occur because of Project traffic along the WIR will have varying response times, depending on the distance from nearby vehicles, the distance from a spill location along the WIR from either of the properties, and the weather conditions which could slow the response. Radio communication on the WIR is an important tool for communicating an incident and all vehicles transiting the roadways will be equipped with 2-way radio and/or satellite phone communication capabilities. Initial response will likely be left to the driver and the Winter Ice Road maintenance crew (Nuna). Each WIR transport truck will be equipped with spill response equipment and drivers will be trained for such potential accidents. Winter conditions along the WIR will help contain spills and reduce the potential of spills from entering local waterways. The general spill response procedures, and those for spills on snow and ice described in Section 9.0 of this plan provide appropriate guidance for such spills. The distinguishing factor with tanker or vehicle spills along the road is the remoteness of the spill location and therefore the delay in receiving assistance after notifying the environmental superintendent, and the priority on the health and safety of the driver and others involved.

Several preventive measures are in place to the minimize risk of spills during bulk fuel haul in addition to those listed above for bulk fuel transfer. These measures are explained in the Road Management Plan and this plan. Spill prevention practices specific to winter roads include:

- Inspection and maintenance of roadways and vehicles (Road Management Plan).
- Adhering to traffic management and road safety practices (Road Management Plan).
- General spill prevention (Section 8.3).

In addition, the Fuel Management Plan includes details on the safe handling and storage of fuel. Specifically, more information has been added to roles and responsibilities (Section 5), mitigation and adaptive management (Section 12), and potential environmental effects (Section 9.2), environmental monitoring (Section 9.7).

9.2.4 Spill Associated with Shipping

The Canadian Coast Guard is the lead federal agency for all ship-source spills or pollution incidents in water under Canadian jurisdiction. B2Gold recognizes our responsibility to manage the risks effectively and to be prepared to respond in the event of a spill. Response to spills that occur during the act of shipping will be covered under the vessel's SOPEP. The SOPEP is a required document that must be reviewed and approved by Transport Canada.

A tremendous amount of attention is paid to emergency preparedness and response to shipping in Canada and particularly in the Arctic waters. Transport Canada has put in place a significant legislative and regulatory framework that apply to all vessels within Canadian waters. Shipping companies bringing goods and fuel to the MLA must always remain in compliance with all regulatory requirements.

9.2.5 Spills during Bulk Fuel Transfer to Land

The *Canada Shipping Act* stipulates that operators of designated oil handling facilities must have an OPEP. B2Gold's OPEP outlines all prevention and response measures related to bulk transfer activities. The OPEP is reviewed, revised, and submitted to TC annually in years of bulk fuel transfer.

9.3 RESPONSE BY TYPE OF MATERIAL SPILLED

9.3.1 Fuel

Regular inspections will be conducted to ensure that there has not been a leak or that conditions within fuel storage areas could result in a leak. These inspections will include the fuel drums and storage containers, secondary containment sums and associated spill containment devices, any pumps and product-handling equipment, and overfill protection devices. Inspections will be recorded to include who completed the inspections, areas included in the visual inspection and any deficiencies noted. For additional information on fuel management refer to the Fuel Management Plan.

Fuel spills, leaks at fuel storage or transfer facilities or vehicle accidents will generally be handled by following these steps:

- Identify the source of the leak or spill.
- Stop leaks from tank or barrel by closing valves, provided it is safe to do so.
- Contact the Environmental Superintendent/Site Superintendent.
- Utilizing patching kits to seal leaks.
- Placing plastic sheeting at the foot of the tank or barrel to prevent seepage into the ground.
- Contain the spill and the source if possible.
- Take photographs of the spill site before and after the clean-up.

Small spills will be cleaned up by removing the contaminated soil and storing it in empty 205 L drums for backhaul and disposal at an approved hazardous waste disposal site. Should a large spill occur, cleanup and disposal efforts will be coordinated as necessary with the appropriate authorities and agencies.

9.3.1.1 Identification and Assessment of Diesel Environmental Emergency Scenarios

Project diesel containment volumes and maximum quantities necessitate additional and specific consideration of potential diesel spills per the Environmental Emergency Regulations (E2). The Regulations require identification of:

> *"any environmental emergency that could reasonably be expected to occur at the facility and that would likely cause harm to the environment or constitute a danger to human life or health, including the environmental emergency referred to in paragraph (e) and, if applicable, the environmental emergency that is more likely to occur than the environmental emergency referred to in paragraph (e) and that would have the longest impact distance outside the boundary of the facility"*

Where paragraph (e) requires:

> *"identification of the harm to the environment or danger to human life or health that would likely result from an environmental emergency involving the release of:*
>
> *(i) the maximum quantity of the substance that could be contained in the container system that has the largest maximum capacity, if a quantity of the substance is in a container system, and*
>
> *(ii) the maximum expected quantity of the substance that will not be in a container system, if a quantity of the substance is not in a container system.*

In the identification and presentation of the spill scenario in this section, it is implied that the initial spill response actions outlined above have first and foremost been addressed. The scenarios are designed for the purpose of identifying the appropriate specific actions and the resources required for a given incident and is intended as a guideline only.

B2Gold has developed a concordance table to conform with the Environmental Emergency Regulations which assesses the potential worst-case scenarios that may occur on-site. Detailed spill response scenarios and potential actions and resources required are outlined in Table 9-1 to Table 9-5. In each scenario the initial priority actions are to shut down the transfer/stop the leak and isolate the hazard area from all non-essential personnel.

Table 9-1 Diesel Fuel Spill – Worst Case Scenario in Container

Worst Case Scenario in Container [E2 4(2)(e)(i)]: Full Loss from Largest Bulk Diesel Fuel Container (10 ML)					
Source of Discharge	**Potential Loss**	**Measures to Prevent/Prepare for Scenario [E2 4(2)(g)]**	**Appropriate Response/Recovery Actions [E2 4(2)(g)]**	**Resources Required**	**Environmental Impact**
Unstoppable Breach of bulk fuel tank	10 million liters released into bulk fuel secondary containment catchment where it would be captured in full.	All bulk fuel tanks (and all other fuel storage containers) are located within appropriately sized secondary containment.	IMMEDIATELY SHUTDOWN FUEL TRANSFER Replace hose section(s)/faulty valves.	Response by site services. Recover free product with sorbents or skimmer. Dispose of contaminated materials in approved manner.	No environmental impact anticipated; no release beyond the boundaries of the containment berm.

Table 9-2 Diesel Fuel Spill – Worst Case Scenario Outside Container

Worst Case Scenario outside Container [E2 4(2)(e)(ii)]: Oil Loaded Tank Truck En route Tank Farm Fuel Spill					
Source of Discharge	**Potential Loss**	**Measures to Prevent/Prepare for Scenario [E2 4(2)(g)]**	**Appropriate Response/Recovery Actions [E2 4(2)(g)]**	**Resources Required**	**Environmental Impact**
Loaded tank truck/trailer (50,000L) leaves road while travelling to tank farm and at least one of the cargo compartments have ruptured.	20 -10,000 liters	Truck tanks are compartmentalized to reduce loss. Speed limits are imposed to reduce accident risk. Winter Ice Road route is visibly marked. Fuel transfer from MLA to Goose occurs in winter when all waterbodies are covered in ice, which limits contamination of waters or soils and facilitates effective retrieval.	**Spill to Ice:** 1. Contact or remove truck driver from unit and assign someone to attend to his welfare. 2. Fuel will be on ice surface which will facilitate containment and retrieval. 3. Contain spread and contact with snow by booming or berming with snow covered in tarp/impermeable liner. 4. Commence recovery of free product with sorbents or pump/hoses/tank. Ensure that snow/earth moving equipment and/or sufficient hand tools (shovels, picks, etc.) are available. Ensure liquid and solid contaminated waste temporary storage devices are brought to location quickly.	**Spill to Ice:** • Response by personnel on-site. • Recover free product with sorbents, pumps within temporary berms, tarps. • Earth/snow moving equipment available for berming/trenching, etc. Hand tools (shovels/picks, etc.).	Fuel will be on ice surface which will facilitate containment, make retrieval efficient, and allow complete removal from the environment. As a result, no lasting environmental impact is anticipated.

Table 9-3 Diesel Fuel Spill – Worst Case Scenario Outside Container

Worst Case Scenario outside Container [E2 4(2)(e)(ii)]: Oil Loaded Tank Truck En route Tank Farm Fuel Spill					
Source of Discharge	**Potential Loss**	**Measures to Prevent/Prepare for Scenario [E2 4(2)(g)]**	**Appropriate Response/Recovery Actions [E2 4(2)(g)]**	**Resources Required**	**Environmental Impact**
Loaded tank truck/trailer (50,000L) leaves road while travelling to tank farm and at least one of the cargo compartments have ruptured.	20 -10,000 litres	Truck tanks are compartmentalized to reduce loss. Speed limits are imposed to reduce accident risk. Winter Ice Road route is visibly marked. Fuel transfer from MLA to Goose occurs in winter when all waterbodies are covered in ice, which limits contamination of waters or soils and facilitates effective retrieval.	**Land Spill Only:** 1. IMMEDIATELY SHUT DOWN UNNECESSARY ACTIVITIES TO FREE UP MORE PERSONNEL. 2. Contact or remove truck driver from unit and assign someone to attend to his welfare. 3. Dig interceptor trench downhill of the spill location. Soils from trench placed on downhill side of trench to form berm in case trench overflows. If sufficient snow, lined snow berms can be created. 4. Commence recovery of free product with sorbents or pump/hoses/tank. Ensure that earth moving equipment and/or sufficient hand tools (shovels, picks, etc.) are available. 5. Ensure liquid and solid contaminated waste temporary storage devices are brought o location quickly. 6. Excavate contaminated soil, store and manage appropriately.	**Land Spill Only:** • Response by personnel on-site. • Recover free product with sorbents, pumps within temporary berms, tarps. • Earth/snow moving equipment available for berming/trenching, etc. Hand tools (shovels/picks, etc.).	Removal of contaminated soils, potentially to the full depth of the active layer may be required. Soil and vegetation loss would likely reduce habitat value. Closure of these areas would follow closure practices outlined in the approved Interim Closure and Reclamation Plan.
			Water Response if necessary: 1. If needed, deploy (additional) containment boom to control migration of spill. Consideration of protection booming of beach front or sensitive areas. 2. Deploy sorbents and/or skimmer and recover spill. 3. Monitor any free-floating oil that is unable to be contained. 4. Notifications of appropriate authorities.	Boat – near shore workboat with responders. Boom and accessories, additional booms as required to provide shoreline protection, skimmer. Shore crew to provide/deploy additional spill equipment.	The spilled product would be retrieved to the extent determined reasonable/beneficial (in consultation with relevant regulators and the KIA). Any residual contamination is anticipated to be of negative environmental impact, potentially moderate scale, and have a moderate duration of impact. These impacts will be monitored as deemed appropriate based on the size and location of the spill.

Table 9-4 Diesel Fuel Spill – Alternate Worst Case Scenario in Container

Alternate Worst Case Scenario in Container [E2 4(2)(f): Spill During Transfer of Fuel Between Fuel Truck & Tank					
Source of Discharge	**Potential Loss**	**Measures to Prevent/Prepare for Scenario [E2 4(2)(g)]**	**Appropriate Response/Recovery Actions [E2 4(2)(g)]**	**Resources Required**	**Environmental Impact**
Coupling or hose break / malfunction during transfer between loaded truck/trailer (50,000L), transfer pump, and bulk fuel tank during transfer of fuel.	20-1,200 litres.	As fuel truck to tank transfer takes place within the bulk fuel secondary containment catchment area. Equipment is routinely inspected and maintained to reduce risk of break/malfunction. Truck and tanks have shut off valves. Truck operator supervises all offloads. Bulk fuel tanks have fill gauges and overfill alarm.	IMMEDIATELY SHUT SITE ACTIVITIES ASIDE FROM SPILL RESPONSE. Replace hose section/faulty valve. Recover free product with sorbents or skimmer. Dispose of contaminated materials in approved manner.	Response by sit services. Sorbents and/or skimmer/vacuum pump. Dispose of contaminated materials in approved manner.	No environmental impact anticipated; no release beyond the boundaries of the containment berm.

Table 9-5 Diesel Fuel Spill – Alternate Worst Case Scenario in Container

Alternate Worst Case Scenario in Container [E2 4(2)(f): Spill During Transfer of Fuel Between Fuel Truck & Tank					
Source of Discharge	**Potential Loss**	**Measures to Prevent/Prepare for Scenario [E2 4(2)(g)]**	**Appropriate Response/Recovery Actions [E2 4(2)(g)]**	**Resources Required**	**Environmental Impact**
Rupture of fuel drum	205 L	All fuel drums are located with appropriately sized secondary containment berms, which are located on gravel site pads.	STOP LEAK Retrieve fuel using sorbents. Removal of contaminated materials (gravel/soils), if any.	Response by site services. Recover free products with sorbents. Dispose of contaminated materials in approved manner.	No significant environmental impact anticipated. All fuel drums are located within appropriately sized secondary containment berms, which are generally located on gravel site pads.
Spill from Jerry can	30 L	Jerry cans are stored in secondary containment or, at minimum, > 31 m away from water.	STOP SPILL Retrieve fuel using sorbents. Removal of contaminated materials (gravel/soils), if any.	Response by site services. Recover free products with sorbents. Dispose of contaminated materials in approved manner.	No significant environmental impact anticipated. All fuel drums are located within appropriately sized secondary containment berms, which are generally located on gravel site pads.

9.3.2 Domestic Sewage

Sewage treatment facilities at the MLA will consist of Pacto toilets; in the unlikely event that a spill occurs, it would be from a single unit and of small volume.

A sewage treatment plant (STP) will treat up to approximately 170 cubic metres per day (m^3/d) of domestic sewage at the Goose Property. The STP will is situated in the Plant Site area and, during the Construction Phase, treated sewage effluent will be land discharged to maximize attenuation distance prior to entering an outflow watercourse from Fox Lake and ultimately entering Goose Lake. During Operations, effluent will be discharged to the active tailings management facility; the ammonia loadings from this STP effluent discharge has been accounted for in the water and load balance. Analysis has confirmed that ammonia concentrations associated with STP effluent is not acutely toxic. If during Operations, STP effluent meets discharge requirements, B2Gold may choose to discharge on land consistent with Construction Phase STP effluent management.

Off-specification treated sewage during upset conditions will be discharged to the closest collection pond. Any discharges of sewage effluent from the collection pond will need to meet the applicable discharge criteria (refer to Landfill and Waste Management Plan). In-pond treatment by coagulation can be applied if required as a contingency. During Operations, effluent will be discharged to the active tailings storage facility (TSF).

A spill of untreated or treated sewage could occur from the system itself or from a ruptured pipeline. Any problems with the STP will be promptly reported to the Site Superintendent.

In the event of a power failure, the stand-by generator will be put into operation as soon as possible. Similarly, in the case of a pump failure, the backup pump will be put on-line. As necessary appropriate safety equipment and personal protective clothing will be available to site personnel.

Should a spill of untreated sewage occur from the STP or pipelines at the Goose Property, priority will be to contain the spill and prevent release of the untreated sewage into local watercourses. The spilled effluent and any affected water will be recovered and discharged into the active tailing's facility. It will not be necessary to remove affected ice or excavate affected soils.

9.3.3 Tailings or Reclaim Water

A spill of tailings or reclaim water may potentially occur. Though highly unlikely, a spill could occur from an overtopping or breach of the TSF embankment. Such a spill, however unlikely, could also occur from a tailings pipeline, or a reclaim water pipeline returning water from the TSF or TF to the Process Plant. Tailings or contact water may contain trace (< 1 mg/L) cyanide which can be toxic to aquatic organisms, but also breaks down rapidly and does not persist in the environment.

In the event of an unplanned release from the TSF, the emergency response plan will be implemented. The TSF embankments and supernatant water level in the TSF will be instrumented and regularly monitored as

described in the Tailings Management Plan. In the instance of a pipeline rupture, pressure sensors instrumented in the pipelines will signal a loss of pressure that will signal an alarm to shut-off the pumps, thereby limiting the volume of material that may be released.

Should a spill of tailings or reclaim water occur, priority will be to contain the spill and prevent the release of tailings or reclaim water into local watercourses. The spilled tailings or effluent will be recovered and disposed of in the active tailing's facility.

9.3.4 Chemicals

Initial response to chemical spills will first involve an assessment of the hazard of the spilled material by referring to the relevant SDS. Each response will vary based on the specific material. If the chemical is hazardous, ensure PPE is utilized (latex gloves, eye protection, etc.) before approaching the spill. As most chemicals are only used in extremely small quantities on-site, absorbent mats can be used to soak up spilled liquids then placed in appropriate containers for treatment and/or disposal.

Sodium cyanide is the main hazardous chemical that will be used in large quantities by the Project. It will be delivered by sealift in solid form in tote bags within shipping containers. They will be protected from the elements to prevent contact with water during transport and storage. Spillage, although unlikely, is possible during transport from the MLA to Goose Property over the WIR.

Sodium cyanide - is used in the Process Plant to extract the gold and a cyanide destruction process reduces residual cyanide concentrations in the tailings supernatant, as discussed in the previous section. A Cyanide Management Plan included as an appendix to the HMMP describes the measures to be undertaken for the safe handling of cyanide and other hazardous materials on the Project. Cyanide breaks down into carbon and nitrogen in the presence of sunlight and ammonia breaks down into other nitrogen compounds.

Hydrochloric acid – is used in the Process Plant for ore treatment, extraction, separation, purification, and water treatment. Personnel transporting hydrochloric acid (HCL) must have an SDS on-hand in the event of a release to the environment. HCL is highly soluble in water; however, this will be transported over the WIR during winter, which may minimize the potential of it becoming immediately soluble in water. Adequate PPE must be used when responding to a spill of HCL (half mask respirator with appropriate cartridges) as well as protective clothing (e.g., Tyvek suit) and rubber gloves. The material must be soaked up with inert absorbent material immediately and disposed of in suitable containers (e.g., plastic totes or plastic drums).

Hydrogen peroxide – is used in the Process Plant (for what). Personnel transporting hydrogen peroxide must have an SDS on-hand in the event of a release to the environment. Spills of hydrogen peroxide must be diluted with large amounts of water; absorbent and adsorbent materials must not be used to soak up spills as these may contain organics that could react with hydrogen peroxide (hydrogen peroxide is an oxidizing agent and can spontaneously combust in the presence of organic material). Once diluted enough ensure the material is recovered and placed into a plastic tote for disposal.

Response to spills would involve clean-up of mainly solids and any affected soil, snow or ice. Clean up will be undertaken by workers with appropriate training in the safe handling of the chemical (sodium cyanide). Any affected waters can be contained and recovered for disposal if this is practical, or can be monitored for degradation, attenuation, and dilution.

General guidelines for cleaning up spills of chemicals including sodium cyanide are like previously identified Sections 9.1.1 through 9.3.4

- For an accidental release to the land, depending on the topography, contain the discharge by constructing a perimeter dyke system.
- Collect the material through absorbent material, booming or absorbent matting. For release to water, depending on the circumstance, utilize damming, water diversion, skimming or booming to minimize the dispersion of the spilled material.
- Collect the contaminated soil and/or water as well as the absorbent materials used in the process afterwards for proper disposal in a certified waste handling facility. Collect any spilled material followed by placing same inside a container such as a 205-litre drum and seal with a lid.
- Label the drum(s), store within a designated area, keep closed and when available, transport to a licensed disposal facility for disposal.
- Ensure the spill area and equipment used to manage the spill has been cleaned prior to demobilizing from the spill area.
- Contact the appropriate regulatory groups through the notification procedure and advise of the spill situation depending on whether the spill is reportable or could adversely affect the environment.

The transport of sodium cyanide requires the development of ERAPs under Section 7 of the TDGR. The plans will outline what is to be done to respond to an actual or anticipated release of specific dangerous goods during their handling or transporting that could endanger public safety. The ERAPs require the approval of the Minister of Transport. With the permission of the supplier, a supplier's approved ERAP can be adopted and used by a user such as B2Gold.

9.4 HAZARDOUS MATERIALS ON-SITE

Various hazardous materials are anticipated to be stored on-site during all stages of construction and operations. The specific materials and quantities of hazardous materials being stored will vary depending on the Project stage. A list of the main hazardous materials to be transported to and stored on-site is provided within the Hazardous Materials Management Plan (HMMP). As the Project progresses, products and expected maximum quantities will be periodically updated in the HMMP.

Bulk diesel quantities are anticipated to reach 75 to 80 ML at both MLA and Goose Property. This diesel will primarily be stored in bulk 10 ML single-walled steel tanks located within impermeable secondary containment berms with capacity equal to the volume of the largest tank plus 10% of the volume of the remaining tanks, or 110% volume of the largest tank, whichever is greater. Diesel is primarily used for facility power generation, mobile and stationary equipment, and as an additive to create ANFO.

Safety Data Sheets are presented in Appendix E of this plan. SDS's are updated on site as materials have been procured and prior to sealift delivery to the MLA or air transport to the Goose Property and are included in this Plan on each update.

9.4.1 Ammonium Nitrate and Explosives

Ammonium nitrate (AN) may be spilled during handling and ammonium nitrate fuel oil may be spilled during handling or during use in the open pit or underground. AN dissociates readily in water to ammonia which, in its unionized form, may be toxic to fish and other aquatic organisms.

With adherence to Best Management Practices for AN storage and handling there is minimal risk of AN spillage. Storage on land, away from water, in containers protected from the elements, significantly reduces the risk of ammonia loss to water bodies. Release of these materials into a waterbody during the open water season is highly unlikely. Spill locations would be generally limited to single storage bags within the AN facility or ISO containers in the storage pad areas. These areas will be inspected regularly according to operating procedures.

General guidelines for cleaning up spills of these types of materials are similar to previously identified Sections 9.1.1 through 9.3.4. Potentially affected waters can be contained and recovered for disposal if this is practical, or can be monitored for degradation, attenuation, and dilution.

Spill prevention and response actions will include the following:

- Adhere to storage guidelines outlined in the Guidelines for Bulk Explosives Facilities – Minimum Requirements (NRCAN 2014),
- establish and use SOPs for handling and working around storage areas,
- ensure proper containers are used for the storage and transport of explosives and A,
- restrict access to authorized and trained personnel,
- conduct regular inspections of storage areas, containers, and transport vehicles with frequency driven by activity level,
- clean up dry AN according to established SOPs, to minimize likelihood of nitrates entering watercourses,
- manage and limit contact with snow and water, with anticipation of spring thaw/freshet period, and
- properly dispose of spill material and any impacted rock pad material, which could include placing within a blast pattern prior to initiation.

The transport of potential explosives will require the development of ERAPs under Section 7 of the TDGR. The plans will outline what is to be done to respond to an actual or anticipated release of specific dangerous goods during their handling or transporting that could endanger public safety. The ERAPs require the approval of the Minister of Transport. With the permission of the supplier, a supplier's approved ERAP can be adopted and used by a user such as B2Gold.

Simplified spill response scenarios for potential explosives are presented in Table 9-6 below. More information will be provided as part of the supplier ERAP when it is available.

Table 9-6 Simplified Spill Response Scenarios for Potential Explosives

Product	Location of Potential Spill	Potential Size of Spill	Response
Ammonium nitrate	Broken bags in the explosives storage area	1000 kg or more depending on the number of bags damaged	The blasting contractor or qualified mine personnel will clean up and salvage AN prill; damaged bags will be emptied into new bags and damaged bags burned in the incinerator.
	Broken tote bags in the mixing plant	Part of 1000 kg	
ANFO	Broken transport bags in the mixing plant	Up to 1000 kg	The blasting contractor will clean up and salvage ANFO; the plant area will be completely cleaned of ANFO and damaged bags will be burned in the incinerator.
	Spilled transport bags on the site delivery vehicle	1000 kg or more depending on the number of bags spilled	The blasting contractor will clean up and salvage ANFO. The spill area will be cleaned up and the spilled ANFO burned by the blasting contractor. The delivery truck will be cleaned if required.
Detonators and blasting caps	Transport to blast site	One or more containers of products	Will be cleaned up and disposed by explosive contractor.

9.5 RESPONSE TO FIRE

Various products, including fuel, may be flammable under certain circumstances. It is important to ensure that the spill does not present a risk of fire prior to commencing the cleanup. Site firefighting procedures can be found in the RMERP.

Water for firefighting will be provided from the fresh/firewater tank at the Goose Plant Site and the MLA. The tanks are sized considering facility design and applicable regulations to support firefighting (i.e., *Mine Health and Safety Act* and Regulations; National Fire Code). There will be firefighting equipment on-site, and the means to obtain additional water to support firefighting in an emergency. Water will likely be sourced from the existing pump houses at the site but may also be obtained directly from waterbodies near to the fire.

9.6 DISPOSAL

Appropriate disposal for any recovered product and contaminated soil, water or absorbent clean up material is regulated and must be authorized by the agency investigating the incident. Obtain approval from all appropriate government agencies before disposal.

Fuel-contaminated soil can be remediated at camp through land-farming or incineration. Any non-reusable recovered product, contaminated soil and clean up material, which cannot be incinerated, will be stored in

containers (e.g., lined megabags) and returned to camp prior to eventual disposal at an approved disposal/treatment site.

9.7 POST-SPILL MONITORING AND REMEDIATION

Should there be any concern of contaminants remaining in the area following clean-up, appropriate sampling and monitoring should be undertaken to determine residual contamination. Based on the results of the monitoring program the site should be remediated as necessary. For spill response monitoring, quality assurance / quality control measures and standard operating practices, using established monitoring protocols will be followed. Specific monitoring requirements will be implemented on a case by case basis as required. Additional monitoring may be directed and/or provided by the Lead Agency (i.e., lead governmental agency identified upon notification of spill to the hotline) and/or the Water Resources Officer.

9.8 SPILL FOLLOW-UP INVESTIGATION

The root cause of all spills will be investigated. An incident investigation will be performed by the Environmental Superintendent following every major spill. Minor spills as defined in Section 8.1 will be investigated by the appropriate supervisor. The likely cause of the spill will be determined, and remedial action will be taken to ensure that similar spills are prevented. Remedial action may involve:

- Additional training for personnel.
- Enhanced equipment maintenance or inspection program.
- Additional preventative infrastructure, such as containment berms, oil/water separators, etc.
- The performance of the spill response procedures will also be reviewed and updated as necessary.

10.0 SPILL REPORTING

10.1 MARINE SPILL REPORTING

Spills of a marine nature will be reported to the Canadian Coast Guard (Central and Arctic region):

- 1-800-265-0237 (24-hour).
- The fax number for transmission of the written report is (519) 337-2498.

Reporting of marine spills shall be conducted in accordance with Transport Canada Guideline TP-9834E, “Guidelines for Reporting Incidents Involving Dangerous Goods, Harmful Substances and /or Marine Pollutants”. B2Gold will report any presence of oily sheens on the water near vessels at the port site to the NT-NU Spill Line.

The Vessel Pollution and Dangerous Chemical Regulations, (SOR 2012-69) require that spills be reported to the nearest office of Transport Canada as follows:

Jaideep Johar
Manager, Technical services
Transport Canada, Marine Safety
Prairie and Northern Region
Tel: (204) 984-8618
Cell: (204) 880-0754
Email:joharj@tc.gc.ca

Craig D. Miller
Director, Marine Safety (PNR)
Transport Canada
PO Box 8550, 344 Edmonton Street, Winnipeg, MB, R3C 0P6
Email: craig.miller@tc.gc.ca
Tel: (204) 984-0397
Fax: (204) 984-8417

10.2 TDGR REPORTING

In addition, the TDGR has immediate and 30-day reporting requirements for dangerous goods accidents or incidents if the spill occurred during transport.

A release or anticipated release must be reported to the authorities when:

- the dangerous goods are, or could be, more than the quantity set out in in Section 8.1 in the TDG Regulations (which is reproduced below in Table 10-1), and

  if it could endanger public safety.

Table 10-1 TDGR Reporting requirements: Quantity of dangerous goods release and anticipated release

Class	Packing Group or Category	Quantity
1	II	Any quantity
2	Not applicable	Any quantity
3, 4, 5, 6.1 or 8	I or II	Any quantity
3, 4, 5, 6.1 or 8	III, or without packing group	30 L or 30 kg
6.2	A or B	Any quantity
7	Not applicable	A level of ionizing radiation greater than the level established in section 39 of the *Packaging and Transport of Nuclear Substances Regulations, 2015*
9	II or III, or without packing group	30 L or 30 kg

Immediate reporting is required by the TDGR to:

- The Local police,

- Nunavut Emergency Services at 1 800 693 1666,
- The person's employer,
- The consignor of the dangerous goods,
- The owner/lessee/charterer of the road vehicle involved (if applicable), and
- CANUTEC at 1-888-CAN-UTEC (1-888-226-8832) in the event of an emergency involving dangerous goods in transport (all modes). Including for railway vehicles, ships, aircrafts, aerodromes, or an air cargo facility; for Class 1 Explosives and Class 6.2 Infectious Substances; and for an accidental release from a cylinder that has suffered a catastrophic failure.

A **follow-up report** must be made by the employer of the person who had possession of the dangerous goods at the time of the accidental release, the "dangerous goods accident" or the "dangerous goods incident", or by the person if self-employed. The follow-up report must be made, in writing, within 30 days after the occurrence of the accidental release, the "dangerous goods accident" or the "dangerous goods incident". The follow-up report form is available online at https://tc.canada.ca/en/dangerous-goods/canutec/reporting-requirements

10.3 INTERNAL RECORD KEEPING

An internal log of all spills, no matter how small, will be kept and maintained by the Environmental Department. Each record will include date, location, material spilled, volume, reason for release, any negative impact, status of cleanup, and corrective actions taken. Photos (before, during and after cleanup) shall also be taken of all significant spills. To assist with internal tracking, a B2Gold Spill Form is included in Appendix C.

A record will document all significant changes that have been incorporated in the SCP subsequent to the latest annual review.

10.4 EXTERNAL REPORTING

In the event a spill exceeds the specified threshold volumes for regulated substances on-site the Northwest Territories and Nunavut external spill report form will be completed, which is provided in Appendix D.

11.0 POTENTIAL SCENARIOS

In the event a spill occurs at the Project site (Goose, MLA, or WIR) worst case, alternate worst case and other spill scenarios were considered in terms of the source of discharge, potential loss, measures to prevent and/or prepare for the scenario(s), appropriate response, and recovery action(s), required resources and potential environmental impact, which is summarized in Table 9-1 through 9-5.

12.0 ADAPTIVE MANAGEMENT

The SCP will be updated as needed to incorporate lessons learned from any incidents that may have occurred, amendments to legislation, new characteristics of the sites, the equipment on-site, new policies of the company, environmental issues and to provide updated information on new staff, external contact details and other changes. Changes will be tracked in writing. Changes to roles and responsibilities will also be incorporated into the RMERP, and where appropriate, the OPEP, as the emergency response team is the same.

Most important will be the review of aspects of the Plan affecting the safety of employees of the facility, contractors, and the public. Operational aspects of the Plan, as well as any paperwork that deals with the Plan, will be reviewed. All aspects of the Plan will be iteratively audited for effectiveness.

The updated version of the Plan will be distributed to appropriate regulatory groups and management. Relevant changes will be integrated into onboarding and routine instruction provided to all staff.

13.0 REMEDIATION & RECLAMATION

Closure and final remediation of spills reported to the Spill Hotline will be verified by the Lead Agency (refer to Spill Report Form in Appendix D). Material generated from cleanup of hazardous spills will be remediated and reclaimed as defined in the HMMP. In support of progressive reclamation, B2Gold may apply bioremediation treatment of hydrocarbon contaminated soil, snow, and ice at the MLA and Goose Property using naturally occurring microorganisms to metabolize and breakdown petroleum hydrocarbons in soils. For additional information, refer to the Landfarm Management Plan. Additional details pertaining to Closure are provided in the Interim Closure and Reclamation Plan.

14.0 REFERENCES

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APPENDIX A

BACK RIVER EMERGENCY CONTACTS

Table A-1: Key Corporate Back River Project Emergency Contacts

Title	Contact Name	Telephone No.
Senior Vice President & Chief Operating Officer	Bill Lytle	1.604.681.8371
Director of Sustainability	Ken Jones	1.604.681.8371
Corporate Environment & Permitting Manager	Damien Tredwill	+61 418 184 951
Environment Manager	Merle Keefe	1.902.318.5671
Health & Safety Manager	Darren Parry	1.604.681.8371
Director of Indigenous & Northern Affairs	Andrew Moore	1.613.314.0705
Director of Human Resources	Matthew Smallacombe	1.867.322.6844
Director of Corporate Communications	Cherry DeGeer	1.604.681.8371

Table A-2: Key Site Emergency Contacts

Title	Contact Name	Telephone No.
Emergency Response Coordinator & Incident Commander	Bradley Hogg Jeffery Peterson	250.910.0947 778.363.2425
Environmental Superintendent	Chris LeGoffe	867.336.1349
Environmental Coordinator	Thomas Bolt	825.522.2827
Safety Coordinator	Janine Bushey / Gerald Teichroeb	780.370.5840 /
Operations Superintendent	Jaymes Dircks / Clinton Wakefield	250.802.3390 / 604.768.6231
Emergency Medical Personnel	Advanced Medical Solutions (AMS)	*contacted via radio
Team Leaders	*situation dependant	*situation dependant
Communications Officer	Andrew Moore	1.613.314.0705

Table A-3: Key Government Contacts

Agency/Organization	Contact Name	Telephone/Fax No.
NWT/NU 24hr Spill Report Line		Phone: (867) 920-8130 Email: spills@gov.nt.ca
Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)	Water Resources Manager	Phone: (867) 975-4550 Email: nunavutwaters@aandc-aadnc.gc.ca
	Land Administration Manager	Phone: (867) 975-4280 Email: rlm-grt@rcaanc-cirnac.gc.ca.
	Northwest Territories' Regional Resource and land management	Phone:(867) 975-4549
	Environment Manager (NU)	nunavutenvironment@aandc-aadnc.gc.ca
		(NWT)Phone: (867) 979-5269

Canadian Coast Guard (in the event of a spill to the marine environment)		(NU)Phone: (867)979-5269
Department of Fisheries and Oceans (DFO)	fisheriesprotection@dfo-mpo.gc.ca	Phone: 1 (855) 852-8320
Environmental and Climate Change Canada (ECCC)	Manager of Enforcement	Phone: (867) 669-4730 Fax: (867) 669-6831
Government of Nunavut Department of Environment	Director Environmental Protection	Phone: (867) 975-7748 Fax: (867) 873–6924
Kitikmeot Inuit Association (KIA)	Lands Inspector	Phone: (867) 982-3310 x223
Nunavut Water Board (NWB)	Exec. Director Manager of Licensing	Phone: (867) 360-6338 Phone: (867) 360-6338
RCMP (Kugluktuk)		Phone: (867) 982-2111
RCMP (Yellowknife)		Phone: (867) 669-1111
	CRSP, Chief Mining & OHS Inspector of the NWT and NU	Phone: 867-920-3805
Transport Canada, Marine	Regional Preparedness & Response Officer	Phone: (780)-442-1945 Fax: (780-495-8607

Table A-4: Key External Response Aid Contacts

Organization	Equipment Location/Service	Contact	Phone Number
Staynor Response Services Ltd.	Spill Response Coordination Services	John Staynor	(604) 961-9935
Hope Bay Project	Melville Sound, adjacent to Bathurst Inlet, Nunavut		(416) 577-5829
Canadian Coast Guard (Nunavut)	Air portable unit in Hay River, Bulk Supplies in Iqaluit and Churchill		(867) 979-5260 (in Summer) 1-800-265-0237 (in Winter/Alternate)
Mackenzie Delta Response Corporation	Various locations N of 60		403-457-3661
Atlantic Emergency Response Team (ALERT)	Bay of Fundy, East Coast, Canada		(506) 202-4499
Eastern Canada Response Corporation Ltd.	Eastern Canada		(613) 230-7369
Western Canada Marine Response Corporation	West Coast, Canada		1-855-294-9116
Point Tupper Marine Services Ltd. (PTMS)	Nova Scotia, Canada		(902) 625-1711

* Refer to the OPEP for oil spill response in the marine environment.

Table A-5: Key Emergency Contacts in Case of Spills Affecting Wildlife

Name	Location	Phone Number	Purpose
Canadian Wildlife Services (CWS)	TBA	TBA	Knowing and providing information on the migratory bird resource and species at risk (under CWS jurisdiction) in the area of a spill (this includes damage assessment and restoration planning after the event) Minimizing the damage to birds by deterring unoiled birds from becoming oiled Ensuring the humane treatment of captured migratory birds and species at risk by determining the appropriate response and treatment strategies that may include euthanization or cleaning and rehabilitation.
Focus Wildlife	Vancouver, BC, Canada	1-800-578-3048; https://www.focuswildlife.org/	Oiled wildlife preparedness and response, including related permitting, and have mobile resources.
Cobequid Wildlife Rehabilitation Centre	Brookfield, NS	1-902-893-0253	Provide veterinary care and rehabilitation for wildlife
Nunavut Emergency Management	PO Box 1000, Station 700 Iqaluit, NU X0A 0H0	1-800-693-1666	Nunavut Emergency Management is responsible for developing the territorial emergency response plans, coordinating general emergency operations at the territorial and regional levels, and supporting community emergency response operations.
International Bird Rescue	California and Alaska	1-888-447-7143	Wildlife rehabilitation specialists, can manage all aspects of wildlife response

APPENDIX B

GENERAL SPILL RESPONSE EQUIPMENT

Table B-1: General Equipment Available for Emergency Spill Response at Goose

Mobile Equipment	
Grader	Winch Trucks
Cranes	Pickup Trucks
Snowmobiles	Generator Sets
Vacuum Truck	Fire Truck
Loaders	Aluminium Boats
Airport Rescue and Firefighting Vehicle	Fuel Trucks
Bulldozers	Bobcats
Forklifts	Haul Trucks
Water Trucks	Snow Cats
Excavators	Hazmat Truck
Temporary Containment Systems	
Booms	Spill Kits
Drums	Spill Absorbent Material
Tanks	Silt Fencing
Tailings Storage Facility	Lined Excavations
Emergency Transportation	
Aircraft (helicopter/fixed wing)	Snowmobiles
4-Wheel Drive Vehicles (e.g. Pickup trucks)	Boats
ATVs	Airport Rescue & Fire Fighting Truck (ARFF)
Ambulance	Rescue Truck
Tucker Snow Vehicle	SHERP (amphibious all terrain vehicle)
Communication Equipment	
Radios	Cell Phone
Telephone	Wireless Communication Systems
Satellite phone	Garmin InReach

Table B-2: General Equipment Available for Emergency Spill Response at the MLA

Additional B2Gold MLA-OHF Equipment On Hand at the MLA
WA470-8 MD0030011 wheel loader, 2015 Komatsu
Hydraulic excavator, MD0026361, 2017 Komatsu, PC200LC-8
2011 Terex crane RT780, white
2003 Cat Vibratory Smooth Drum Roller
Skid Steer
GMC Autocar Plow Truck (Pumpkin)
Kenworth Winch Tractor
2015 Ford F-350 (x4)
2012 International 24 passenger white
1998 Kenworth dump truck
1994 Cat 988 masted loader

2010 Grove 90 ton RT890E crane
2010 Caterpillar D6T LGP Crawler Tractor
160M2 AWD Grader w.V plow and with Wing
950G Wheel Loader w forks and bucket
2012 Prinoth BR350 snow groomer
6x6 Vacuum Truck
6x6 Off Highway 304 In. WB Bed Truck
6x6 Off Highway 294 In. WB Bed Truck
Crew Cab S/A Service Truck
T/A Fuel & Lube Truck
2006 Alliance JXR 40-4.16 truck-mounted concrete boom pump, and spare parts, winter packaging
Lafarge concrete trucks (x6)
2000 Sterling L8500 T/A Batcher truck
IT28 Wheeled Loader
(14) 30,000L double walled tanks (empty)
(5-6) Instant berms dim 30'X40'X3'
26 ft. landing craft
10 and 15 ML Bulk Fuel Tank
10 and 15 ML tank berm
Various Instaberms associated with the smaller bulk fuel tanks

Table B-3: Environmental Emergency Spill Response Trailer Equipment List

Spill Response Trailer Equipment		
QTY	**PRODUCT**	**DESCRIPTION**
1	THC-10000 8.5x24	Trailer, Vee-nose Double Slant Series, 8.5' x 24' Dual Axle, VHW8824TA3, Ramp, Extra height package, Beaver Tail, Reinforced ramp option, 16" stringer reinforcement, 6"plus for 6' 8" internal height, 11,000gvw, 6000lb payload, 6 stud wheels, Dome lights, VIN#_____ Trailer Width 8' 6" Trailer Height 9' Trailer Length 25' 1"
1	Trailer SRT10000 - Production Release Bundle	The SRT10000 contains sufficient material to cope with spills of up to 10000 liters. With options this will require a larger trailer, 22' It is well equipped for areas where staff is not necessarily prepared to protect themselves and the environment. Pipeline construction sites, truck yards, refueling depots, supply stations, response centres, First Nations communities, forestry camps, pipeline sites, remote mines It is ideal for high-risk areas such as sites near lakes and rivers, foreshore, fish farms, oyster and kelp operations. o Hydrocarbons o Water-based liquids o Hazmat Liquids such as acids and alkalis
5	SIM-782472	Shelf, Industrial Metal Heavy Duty 14g 84h" x 24d" x 72w", complete with additional horizontal shelf retainers.
1	MeshExpanded	Expended Aluminum Mesh Safety Tread Ramp , 3/4" x 1/8" Raised, sheet
12	SRT-Tote-30	Tote, Equipment, Heavy Duty Homz Durabilt 30 gallon
2	SRT-Tote-17	Tote, Equipment, Heavy Duty Homz Durabilt 17 Gallon
36	SRT-1212	Pad, US-M-WH - Heavy Weight Oil Absorbent (100 pc)
8	SRT-1212H	Pad, US-B-YH - Heavy Weight Hazmat Absorbent (100 pc)
4	SRT-UNIV-H	Pad, US-B-GH - Heavy Weight Universal Absorbent (100 pc)
16	SRT-510	Boom, 5" x 10' Linkable Oil Absorbent (4 ea)
10	SRT-0396-E	Sock, WS-820 - 3" x 96" Oil Absorbent (Each)
20	SRT-0348-E	Sock, WS-440 - 3" x 48" Oil Absorbent (Each)
20	SRT-H348-E	Sock, YS-440 - 3" x 48" Hazmat Absorbent, Yellow (each)
10	SRT-U396-E	Sock, GS-820 - 3" x 96" Universal Absorbent (Each)
4	SRT-01818	Pillow, Absorbent - Hydrocarbon - 18" x 18" (10 pc)
5	Cable Ties14	Zap Strap Cable Tie 14" Black 100pc
1	SRT-DRUM-OH-REC	Drum, Steel Open Head 45 Gallon Reco (w/lid & bolt ring)
2	LightLEDCeiling	Light 48" LED LED T5 Integrated Single Fixture, 4FT, 2200lm, 6500K, pr
1	PowerBulkheadSplitter	Power Fitting Splitter GCP2 15 Amp 125V AC Port Plug with Dual 18-Inch Integrated Extension Cords, for shorepower
1	Cable18	Cable 18' 16/3 Extension Cord All Weather, used for trailer interior lights
1	AnchorDRing1/4	Anchor Point D-Ring Loop 1 1/2" 1200lb 24pc - 12 per trailer
30	StrapRubber36	Strap, Tie Down, Rubber 32" Adjustable
2	Strap1500	Strap, HD Tie Down, 1500lb 1" x 15" (4)
1	Tarp20x30	Tarp HD 10mil 20x30' Terratuff
1	Poly10x100	Poly Sheet Heavy Black 6mil 10x100

10	SandBag14x26/10	Sandbag Burlap 14" x 26 10oz, per 20, with tie-strings, CID A-A-52141
1	Lock Hitch	Lock, Universal Coupler Lock Hitch, Master Lock, High Security
1	Lock Latch	Lock, Latch Hidden Puck, 4-pack, key same
20	HookS1	Hook 'S' 1" Plated
1	Mallet	Mallet Dead Blow 3lb
1	WhiteBoard	White Board Magnetic Dry Erase 36" x 24", marker, eraser, magnets
1	WheelShock	Wheel Shock, 5" x 11" x 7". Heavy Duty Nylon Rubber, 4-pack
40	Labor-Rig	Labor - Custom assembly/sort/package, rigging, prep, fit-out, pre-delivery, load, QC/QA
1	Wheel	Tire and Wheel, Emergency Spare
1	Docs	Documentation Fee
5	BC Tire Fee	British Columbia Tire Advanced Disposal Fee
1	Consumable	Consumable Supplies & Materials, Hardware, HazMat Waste, Fasteners, Paint, Disposables, Labels. Everything that allows this trailer to be filled.
2	===> UPGRADE BUNDLE - HARBO T6 BOOM	Containment Boom Bundle - rapid deployment boom for inland and inshore waterways. Four 15m section of boom and deployment hardware. Compliant LSEP requirements.
8	SRT-RapidDeployHarboBoom	Harbo T6 Self-Expanding Rapid Deployment Oil Boom, Multi Use 320mm/15m in Cartridge Each cartridge contains 15m (50ft) of boom, that can be deployed rapidly by a single person within minutes.
16	AnchorClaw5	Anchor - Claw 5lb Galvanized
32	Shackle316	Shackle Screw Pin 3/16" bow, Secure line and anchor to boom
80	Shackle14	Shackle Screw Pin 1/4" bow, Secure line and anchor to boom
32	Shackle12	Shackle, bow 1/2" Screw Pin Galv 2 Ton
16	Buoy10Anchor	Buoy 10" Commercial Grade Orange Boom Anchor
16	BuoyAnchorRetrieval	Buoy 9" White Anchor Retrieval Marker
4	Chain14100Galv	Chain 14" x 100', galvanized
32	Rope38100	Rope 3/8 Polyprop Diamond Braided 50'
4	RopePoly38	Rope Poly Floating 3/8"630' . Use one for every system of boom carried. Cut to length as required.
2	TapeInsulation	Tape Electrical Insulation 10-pack
2	TieWire	Tie Wire - 300' 16g - Rebar/shackle mousing
2	Knife25mm	Knife Utility Olfa #H-1 Rubber Grip 25mm
2	Blade25mm	Knife Blade Utility Olfa 25mm 20pc HBB20 XHD
2	BoltCutter24Fuller	Bolt Cutter 24" Task
2	PliersSlip8	Pliers Slip Joint 8"
8	Cable Ties14	Zap Strap Cable Tie 14" Black 100pc
4	Tarp20x30	Tarp HD 10mil 20x30' Terratuff
16	SRT-Tote-30	Tote, Equipment, Heavy Duty Homz
		Durabilt 30 gallon
8	PFDIndustrialTC	PFD Floatation Vest, radio pocket, XL, TC approved
1	Dustpan17NoSpark	Dust Pan 17" Non-spark, OSHA/CSA
1	ForkPitch	Pitch/spading Fork 45" Garant
1	Chisel1	Chisel Cold 1"' w/Guard Stanley FATMAX
1	Crescent12	Crescent Adjustable Wrench 12" Vise Grip
1	Crescent10	Crescent Adjustable Wrench 10" Vise Grip
1	Crescent6	Crescent Adjustable Wrench 6" Vise Grip
1	DrumWrench	Wrench Drum Plug/Bung, non sparking
1	TapeMeas25	KMS Tape Measure 25' 1 1/4" Milwaukee

1	Hacksaw	Hacksaw Pro Square Frame Fuller
1	HacksawBlade	Hacksaw Blade 12" 18T Lennox
1	Hammer10	Hammer Sledge 10lb Hickory Handle Garant
1	Hammer4	Hammer Blacksmith 4lb Fiberglass Handle Garant Double Face
1	Hammer24	Hammer Framing Claw 24oz Estwing
1	Handsaw20	Handsaw 20" 9pt Course Cut Irwin
1	PipeWrench24	Pipe Wrench 24" Vise Grip HD
1	PliersFence10	Pliers Fencing 10"
1	PliersGrooveJoint10	Pliers Groove Joint Waterpump 9.5"
1	PliersGrooveJoint165	Pliers Groove Joint Waterpump 16.5"
1	PliersNeedle8	Pliers Needle Long Nose 8"
1	PliersDiagCut7	Pliers Diagonal Cutting/Side 7"
1	PliersSlip8	Pliers Slip Joint 8"
1	PliersTinSnip12	Pliers Tin Snip 13"
1	Prybar18	Pry/wrecking Bar 18" Xtreme Estwing
1	Prybar36	Pry/wrecking Bar 36" Xtreme Spring Steel Stanley FatMax
1	Crowbar36	Crowbar 36" Garant
2	Pulley	Pulley Snatch Block with Grease Fitting 22000lb/10t
2	Shackle34	Shackle, 3/4" WLL 4.75ton
2	Rope716200	Rope 12mm Polyester Braided 8400lb SWL1680lb 200'
4	Rope38100	Rope 3/8 Polyprop Diamond Braided 50'
10	Shackle12	Shackle, bow 1/2" Screw Pin Galv 2 Ton
1	===> UPGRADE BUNDLE - TOOLS - PART 2/2	Part 2 of 2- Tool Upgrade Bundle - All tools required to mitigate further risk to a spill, remediate and decon situation. Long handled digging tools, brooms, cutting, basic penetration, cutting and engineering hand tools. A large part of ECRC's LSEP recommendation.
1	MechanicToolSet	Mechanics Tool Set 128pc Crescent
1	ScrewDriverSet	Screw Driver Set, 42 piece
1	PliersEndCut8	Pliers end Cut 8"
1	Squeegee36	Squeegee Industrial Floor Steel 36", requires Handle Tapered
1	HandleTapered60	Handle 60" Squeegee Tapered for industrial squeegee
1	Shear1	Shear Pruner 1" HD Pro Corona
1	Shear7	Shear Scissors 7" Serated Olfa
1	SRT-9235	Hook, Lifting Ultra-Grate, Manhole Cover Hook , 26-Inch, 5/8"
1	ViseGrip10WR	Vise Grip 10" 10WR
1	ViseGrip11SP	Vise Grip C-Clamp style 11" Swivel
1	Wrecking	Wrecking Bar Crowbar 60" Carbon Steel
1	Crowbar36	Crowbar 36" Garant
1	ToolBeltLarge	Tool Belt JACKSON PALMER Professional Comfort-Rig With Suspenders
1	ShopTowel10	Towel Scott Blue Shop Towel (10)
10	TapeDuctRed	Tape Duct 1.88" x 60y Red
2	TapeFlagBlue	Tape Flagging 1" x 200' Blue
2	TapeFlagGrn	Tape Flagging 1" x 150' FluoroGreen
2	TapeFlagRed	Tape Flagging 1" x 200' Red
2	TapeFlagYel	Tape Flagging 1" x 300' Yellow

1	Strap500	Strap, Tie-Down3/4"X10'-600LB 4PK
1	Strap1500	Strap, HD Tie Down, 1500lb 1" x 15" (4)
20	StrapRubber36	Strap, Tie Down, Rubber 32" Adjustable
2	Tarp10x12	Tarp HD 10mil 10x12' Terratuff
2	SRT-Tote-30	Tote, Equipment, Heavy Duty Homz Durabilt 30 gallon
1	SRT-DRUM-OH-REC	Drum, Steel Open Head 45 Gallon Reco (w/lid & bolt ring)
1	===> UPGRADE BUNDLE - DITCH SIPHON	Accessory Bundle - Drainage Ditch capture and siphon system. Ideal for situations where spills run downhill and can be routed into a ditch for effective separation and absorbtion.
6	Pipe4PVCSOL10	Pipe PVC 4" x 10', Culvert Horizontal Siphon
6	Pipe4PVCSOL2	Pipe PVC 4" x 2', Culvert Vertical Siphon
6	Pipe4PVC90	Pipe PVC 4" 90 Degree Elbow, culvert siphon
6	Pipe4PVC45	Pipe PVC 4" 45 Degree Elbow, culvert siphon
5	Pipe4PVCCOU	Pipe PVC 4" Coupler F/F Siphon
1	Pipe4PVCSOL6	Pipe PVC 4" x 6', rebar casing
1	Pipe4PVCCAP	Pipe PVC 4" End Cap Solid Mueller, rebar casing
1	Pipe4PVCCO	Pipe PVC 4" Clean-out Adapter Mueller, rebar casing
		Mueller, rebar casing
1	PipePVCCement	Pipe PVC Cement 236ml
1	FenceSafety100	Fence Safety Barrier - for spill pad retention when using PVC siphon 4' x 100' Orange
20	ReBar10m6	Rebar 10m x 6' - for spill pad retention when using PVC siphon and 4' x 100' Safety Fence, Req 20
1	===> UPGRADE BUNDLE - SAFETY	Accessory Bundle - SAFETY. Generic safety equipment beyond PPE, yet for the safety and benefit of responders, victims, onlookers.
1	FAKBC1BN	First Aid Kit Level #1 w/Rescue Breather Nylon Pouch FAKBC1BN
2	Decal-FirstAidKitInside	Decal, OSHA Safety Sign, First Aid Kit Inside, Vinyl 10"x14"
1	Eyewash	Eyewash Station Secondary Dual 32oz
1	Guide ERG	Emergency Response Guide, Handbook, 4x5.5", Spiral Bound. Helps Satisfy 49 CFR 172.602 DOT Requirements
1	Guide HazMat	Hazardous Materials Compliance Pocketbook (2020 Edition) - 5" x 7"
1	AirHorn	Air Horn 8oz 115db@10' 1 mile
1	FireExt20	Fire Extinguisher, 20lb, Dry Chem, 10A:120B:C
1	Bracket-Fire-20	Bracket Ansul 14091 20lb Fire Extinguisher
1	Decal-FireExt	Decal, Fire Extinguisher , B-109
1	FlashlightMarauder2	Flashlight Olight Rechargeable 14000 Lumen, 1*Tailored 15000mAh/3.6V rechargeable Li-ion battery, 800m spot/flood. IPX8
1	TapeCau	Tape, Yellow, Caution Tape 3"x1000'
1	TapeDanger	Tape, Red, Danger Do Not Enter 3"x1000'
6	Paint Spray HiViz	Spray Paint HiViz Orange Marking Lo- VOC
1	Sign-SandwichBoard	Sign - Sandwich Board, Dry Erase, Aluminum, Magnetic 24x36"
2	Decal-NoSmoking	Decal, OSHA Safety Sign, No Smoking Flammable Vinyl 10:x14"
2	Decal-Eyewash	Decal, OSHA Safety Sign, Eye Wash Station 10"x14"
2	Decal-MusterPoint	Decal, OSHA Muster Point 10:x14"
1	WaterCan20	Water Can Potable 20L
2	WhistleSafety	Fox 40 Classic with Breakaway Lanyard
1	SRT-Tote-30	Tote, Equipment, Heavy Duty Homz Durabilt 30 gallon
1	===> UPGRADE BUNDLE	Accessory Bundle - FastDeploy Sorbent
	- FAST DEPLOY	System, ~2000 liters of hydrocarbon absorbent in a hurry. Based on E-track Systems for diverse compatibility.
4	SRT-WRB-H	Absorbent, Roll, 150' x 30", Sonic- bonded, Perforated, Heavy, White, Hydrocarbon

4	SRT-GRB-H	Absorbent, Roll, 150' x 30", Sonic- bonded, Perforated, Heavy, White, Gray All-Purpose
1	TapeVelcroFastDeploy	VELCRO Brand ONE_WRAP Tape ¾" x 25 Yard Double Sided Self Gripping Roll, Black
2	FD-Etrack4	Fast Deploy e-Track 4' x 2, req 2 set / trailer
4	FD-RodEnd	Fast Deploy e-Track Rod End, require 4/trailer
4	WasherFender12	Washer Fender 1/2" Plated Each
2	FD-Rod3496	Fast Deploy e-Track Rod AL 3/4 Shed 40 86", Require two per system
4	StrapRubber36	Strap, Tie Down, Rubber 32" Adjustable
1	Screw-14x112	Screw #14x112, plated, self-drilling, hex head, 100
2	Labor-Rig	Labor - Custom assembly/sort/package, rigging, prep, fit-out, pre-delivery, load, QC/QA
1	===> UPGRADE BUNDLE - POWER	Accessory Power Bundle. 4kw Generator, 300' extension, Dual
		Flood light, Fuel can, stabilizer, fogging oil, fuel-filter funnel, mini berm, equipment tote, synthetic engine oil, sparkplug. Everything that is required to bring power to worksite and decon areas.
1	Gen4200BE	Generator 4.2kw BE BE4200PS incl PDI/Freight 27"x20"x20" 108lb
2	LightWorkLED	Dual-head Led Work Light 20000 Lumen Led Work Light with Tripod 27.6-68.1"
3	Cable100	Cable 100' 12/3 Extension Cord All Weather
2	SRT-Tote-30	Tote, Equipment, Heavy Duty Homz Durabilt 30 gallon
1	BERM-364FB	Berm, Mini-Berm - 36" x 36" x 4" - Chem Shield
1	Labor-Rig	Labor - Custom assembly/sort/package, rigging, prep, fit-out, pre-delivery, load, QC/QA
1	StorageSeal	Storage Seal, Mercury Marine Engine Fogging Oil/Rust Inhibitor, sold in 12x 340g/case.
1	FuelStabilizer	Fuel Gasoline/Ethanol Stabilizer <12mths, Mercury Marine Quickstor
		32oz, sold in 6 x 32oz /case. Treats 312 gallons.
1	===> UPGRADE BUNDLE - RUPTURE SEALANT	Rupture Seal Bundle -
3	PailSmOrange10L	Pail & Lid, 10L Orange for sealant materials. Holds 20 wax sealant units, nitrile gloves, or 12 x Plug-n-Dike units. Need 2x per trailer
20	Rupture Wax Sealant	-40C Wax Emergency Sealing Material, tank/pipe ruptures, 3kg material
10	SRT-PND16	Sealant, Plug n' Dike, 16oz jar, ea
1	SealantSpreader	Sealant Spreader Trowel, 5/16" x 1/4" x 1/16" V-Notch, Carbon steel
6	GloveLatex/Neoprene	Glove, PVC, Neoprene Rubber/Latex, Green, 20 mil, 12 inch, pair Sz10
1	SealantFabric	Sealant Fabric, Acrylic Felt Fabric - 72" x 36" Inch Wide 1.6mm,
1	SheetVinylRuptureSeal	Sheet Vinyl PVC 2400 x 200mm, Rupture Sealant
1	Shear7	Shear Scissors 7" Serated Olfa
1	Strap500	Strap, Tie-Down3/4"X10'-600LB 4PK
1	SRT-Tote-30	Tote, Equipment, Heavy Duty Homz Durabilt 30 gallon
4	SRT-H1818	Pillow, Absorbent - Hazmat - 18" x 18" (10 pc)
1	SRT-WBB515	Boom, 5” x 15” Bilge/Storm Drain Absorbent (20 pc)
6	SRT-0G30	Sorbent, Oil Gator Premium Absorbent (30 lb. Bag)
6	XB25D	Sorbent, SRT-XB25D - XSORB Outdoor All-Purpose Absorbent (25 lb. Bag)
2	ShopTowel10	Towel Scott Blue Shop Towel (10)
1	SRT-36PSI36	Cover, Urethane Drain Protector II - 36" x 36"
4	SRT-3636N	Cover, Neoprene Storm Drain, 36" x 36" x 1/8"
2	SRT-8153PP	Containment Pool, 8153 Economy Model - 150 gal (568 L) Wall Height 12, Top dia. 64, Bottom dia. 76
2	SRT-DBAG	Bag, Disposal Yellow Hazmat HD (33" x 45" x 6 mil, 50 pc)

6	FIBC35x35x42UN	Bulk Bag Disposal, 1000Kg/2200lb 6:1 Chute bottom/duffle top. 4 lifting loops by 10". No liner. Document pocket. IMDG UN13H/Y/1019 / CAN/KOM 4-703 / 3783/1003. UN rated for packing groups I, II, III (X-Rated).
6	FIBC48x38x126Liner	Bulk Bag Disposal Liner, 6 mil poly 40x38x126"
1	SRT-GMT360	Container Waste Wheeled with Lid 360 Liter Yellow
2	SRT-9217	Insert, UltraTech Ultra Drain Guard Catch Basin (Oil & Sediment)
1	BERM-364FB	Berm, Mini-Berm - 36" x 36" x 4" - Chem Shield
4	WaderSteelToe11	Chest wader with Steel Toe Size 11, Compliant with CSA, Class 1 with steel toe/steel plate. Canvas upper with heavy-duty 0.65mm PVC coating. Static dissipative, chemical resistant. Adjustable elastic suspenders, drawstring/toggle waist PVC/nitrile outsole Front chest pocket, waist straps High-frequency heat-sealed 100% waterproof seams
2	PostPounder14	Post Pounder14lb
20	ReBar10m8	Rebar 10m x 8' - for silt curtain, 510 boom retention
6	Labor-Rig	Labor - Custom assembly/sort/package, rigging, prep, fit-out, pre-delivery, load, QC/QA
1	Freight	Freight
1	Customs	Customs, Duties and Brokerage that may be applicable
1	===> UPGRADE BUNDLE - PUMP3Trash	Engine-powered Trash Pump Upgrade Bundle - A 3" trash pump, Honda, 3 x 20' Rigid 2" suction and 6 x flat 50' outlet hoses. For suppression, transfer, dust control, decon, general wash-down and drainage requirements.
1	Pump3TrashBE	Pump Trash 3" Honda GX390 Engine 1400lpm 37psi 30m 389cc 144lbs, not intrinsically safe
4	HoseSuc3 CxE	Hose Suction Intake Rigid PVC 2' M/F w/N444/N10 GS F/Camlock M/E- Camlock 20'
8	HoseDisFlat3	Hose Discharge Lie-flat 3' M/F Cam Lock 50'
1	SRT-8150PP	Containment Pool, 8150 Sprung Steel Model - 150 gal (568 L) Wall Height 12, Top dia. 64, Bottom dia. 76
2	CamlockFNPT-MC-3	Fitting Camlock 3" Female NPT / Male C
2	CamlockMNPT-FC-3	Fitting Camlock 3" Male NPT / Female C
1	Footvalve3SS	Footvalve Strainer Trash Pump Intake 3" NPT, 304 Stainless, Viton Seal
1	Strainer3	Strainer Trash Pump Intake 3" NPT, not non-spark, plated
1	BERM-364FB	Berm, Mini-Berm - 36" x 36" x 4" - Chem Shield
4	GasCan20	Gasoline Can Vented 20L
1	Funnel10	Funnel 9" Cluthe Anti-splash
12	StrapRubber36	Strap, Tie Down, Rubber 32" Adjustable
2	SRT-Tote-30	Tote, Equipment, Heavy Duty Homz Durabilt 30 gallon
2	Labor-Rig	Labor - Custom assembly/sort/package, rigging, prep, fit-out, pre-delivery, load, QC/QA
1	===> UPGRADE BUNDLE - TOOLS - PART 1/2	Part 1 of 2- Tool Upgrade Bundle - All tools required to mitigate further risk to a spill, remediate and decon situation. Long handled digging tools, brooms, cutting, basic penetration, cutting and engineering hand tools. A large part of ECRC's LSEP recommendation.
1	ToolboxRollMilw	Toolbox, rolling modular PackOut (Client feedback - Replace Dewalt inferior boxes Jan23)
1	ToolboxOrgMilw3	Toolbox Organizer 3 Drawer PackOut (Client feedback - Replace Dewalt inferior boxes Jan23)
1	ToolboxOrgMilw2	Toolbox Organizer 2 Drawer PackOut (Client feedback - Replace Dewalt inferior boxes Jan23)
1	Saw Horse 1000	Saw Horse, Hi-Strength Plastic, Stanley, 2-pack, 1000lb per pr
2	Broom24Fine	Broom 24" Professional Stable Smooth Surface Fine
1	Broom24Coarse	Broom 24" Professional Stable Rough Surface Coarse
2	BroomCorn	Broom 14" Corn Industrial
1	AxePulaski35	Pulaski Fire Axe 3.5lb Fireman's Axe

1	Axe3534	Axe 3.5lb 34" Fibreglass Handle Garant
1	Rake24	Rake 24" 22 Tine Garant
1	Pick5	Pick/Mattock 5lb 36" Fibreglass Handle Garant
1	RakeTine15	Rake, 15 Tine Fibreglass 62" Handle
2	Shovel Non-Spark	Shovel Sparkless Aluminum Short
2	ShovelRd60	Shovel Steel Round Head 60" Fibreglass Handle Garant
2	ShovelSq60L	Shovel Steel Square Head 60" Fibreglass Handle Garant
1	Knife25mm	Knife Utility Olfa #H-1 Rubber Grip 25mm
1	Blade25mm	Knife Blade Utility Olfa 25mm 20pc HBB20 XHD
1	BoltCutter24Fuller	Bolt Cutter 24" Task
1	BowSaw12	Saw Combo Bow/Hacksaw 12"
1	Chisel3	Chisel Floor 3' w/Guard Stanley FATMAX
1	Pipe4PVCCOPLUG	Pipe PVC 4" Clean-out Adapter Spigit

APPENDIX C

B2GOLD INTERNAL SPILL REPORT FORM

B2Gold Nunavut INTERNAL SPILL REPORT

REPORT DATE: MONTH-DAY-YEAR	REPORT TIME
OCCURRENCE DATE: MONTH-DAY-YEAR	OCCURRENCE TIME
AREA	SITE
RESPONSIBLE PARTY OR VESSEL NAME	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION
ANY CONTRACTOR INVOLVED	CONTRACTOR ADDRESS OR OFFICE LOCATION
PRODUCT SPILLED	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METERS
SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METERS

SPILL SOURCE	SPILL CAUSE	AREA OF CONTAMINATION IN SQUARE FEET
FACTORS AFFECTING SPILL OR RECOVERY	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT

ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS

REPORTED TO ENVIRONMENT BY	POSITION	EMPLOYER	LOCATION CALLING FROM
ANY ALTERNATE CONTACT	POSITION	EMPLOYER	LOCATION CONTACT

Print Reset Submit

APPENDIX D

NWT-NU EXTERNAL SPILL REPORT FORM

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
Tel: (867) 920-8130 • Email: spills@gov.nt.ca

REPORT LINE USE ONLY

A	Report Date: MM DD YY	Report Time:	☐ Original Spill Report **OR** ☐ Update # _____ to the Original Spill Report	**Report Number:**
B	Occurrence Date: MM DD YY	Occurrence Time:		
C	Land Use Permit Number (if applicable):		Water Licence Number (if applicable):	
D	Geographic Place Name or Distance and Direction from the Named Location:		Region: ☐ NT ☑ Nunavut ☐ Adjacent Jurisdiction or Ocean	
E	Latitude: _____ Degrees _____ Minutes _____ Seconds		Longitude: _____ Degrees _____ Minutes _____ Seconds	
F	Responsible Party or Vessel Name:		Responsible Party Address or Office Location:	
G	Any Contractor Involved:		Contractor Address or Office Location:	
H	Product Spilled: ☐ Potential Spill	Quantity in Litres, Kilograms or Cubic Metres:	U.N. Number:	
I	Spill Source:	Spill Cause:	Area of Contamination in Square Metres:	
J	Factors Affecting Spill or Recovery:	Describe Any Assistance Required:	Hazards to Persons, Property or Environment:	
K	Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials:			

L	Reported to Spill Line by:	Position:	Employer:	Location Calling From:	Telephone:
M	Any Alternate Contact:	Position:	Employer:	Alternate Contact Location:	Alternate Telephone:

REPORT LINE USE ONLY

N	Received at Spill Line by:	Position:	Employer:	Location Called:	Report Line Number:

Lead Agency: ☐ EC ☐ CCG/TCMSS ☐ GNWT ☐ GN ☐ ILA ☐ AANDC ☐ NEB ☐ Other: _____

Significance: ☐ Minor ☐ Major ☐ Unknown

File Status: ☐ Open ☐ Closed

Agency:	**Contact Name:**	**Contact Time:**	**Remarks:**
Lead Agency:			
First Support Agency:			
Second Support Agency:			
Third Support Agency:			

APPENDIX E

SAFETY DATA SHEETS (SDS)

DeFoam 3000

Wastewater Defoamer Designed for Biological Plants

DeFoam 3000 is a 100% concentrated defoamer, formulated to rapidly deflate foam by creating a monomolecular film. This film spreads across the water surface, quickly collapsing foam. DeFoam 3000 does not contain any emulsifiers, making it safe and effective in biological wastewater processes. It can be used in aerobic or anaerobic processes, wherever foaming is a concern.

DeFoam 3000 is composed of a concentrated blend of essential oils that works to quickly flatten the foam. Its concentration means even a small dose of DeFoam will take care of large amounts of foaming. For best results, apply directly to the surface of the foam. To get rid of foaming filaments like *Microthrix* and *Nocardia*, our Foam Buster and Qwik-Zyme L address the root cause of foaming and eliminate problematic filaments.

Say No to Silicone Defoamers

Industrial defoaming agents are often silicone-based, and we strongly recommend against them in biological systems. The silicone formulas are harmful to bacterial life, and interfere with settling. DeFoam 3000 does not contain silicone, and works with your wastewater plant's biology.

DeFoam 3000 breaks the surface tension of foam bubbles to release trapped gases and eliminate foam.

Use DeFoam 3000 in:

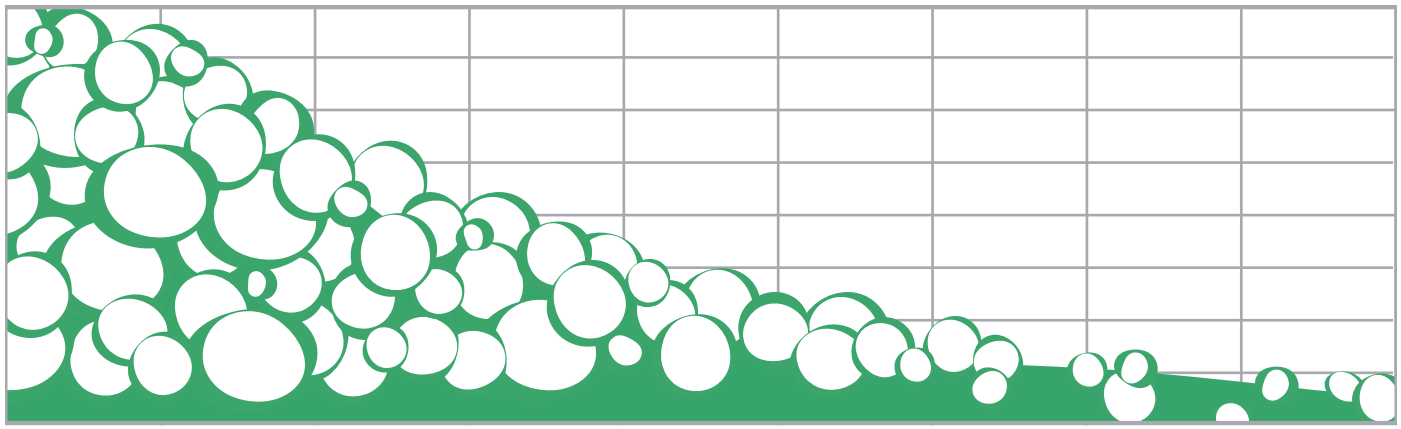
Anaerobic Digesters

Aeration Basins

Anywhere with Foam

Figure 1:

DeFoam 3000, added at hour 1, works quickly to eliminate foam



Hour 1 Hour 2

The Bugman AQUAFIX Inc.

PO Box 8682
Madison, WI
53708-8682

P: 888.757.9577
F: 866.636.1864

info@teamaquafix.com
www.teamaquafix.com

Dose Rates

DeFoam 3000

DeFoam 3000 Dosing:

- Starts working immediately; brings foam under control within 1-2 hours
- Pour the product directly on top of foam, or as close as possible
- Typical applications will require reapplying every 8-24 hours
- Dose charts are a typical starting point; adjust as needed to meet desired results

Available Sizes:

- 5 gal case
- 55 gal drum
- 275 gal tote

Wastewater Treatment Plant	
Daily Average Flow	Daily Dose
100,000 GPD	1 pt - 1 qt
500,000 GPD	1 qt - 1 gal
1 MGD	2 qt - 2 gal

Anaerobic Digester	
Digester Capacity	Initial Dose*
500,000 gal	1-5 gal
1,000,000 gal	5-10 gal

*Contact your Technical Rep for assistance with maintenance dosing in anaerobic digesters.

Notes:

Safety Data Sheet

SECTION 1 – IDENTIFICATION

Name, Address, and Telephone of the Responsible Party

Dyno Nobel Inc.
6440 S. Millrock Drive, Suite 150
Salt Lake City, Utah 84121
Phone: 801-364-4800 Fax 801-321-6703
E-Mail: dnna.hse@am.dynonobel.com www.dynonobel.com

SDS #: 1020
Date: 07/20/2020
Supersedes: 09/10/2018

Product Identifier
Product Name: Superprill
Formula: NH4NO3

Other Means of Identification
Synonyms: Superprill™, Prilled Ammonium Nitrate, Industrial Grade LoDAN, Ammonium Nitrate, Industrial Grade HiDAN, Ammonium Nitrate, Agricultural Grade

Intended Use of the Product
Industrial applications

Emergency Telephone Number
FOR 24 HOUR EMERGENCY, CALL CHEMTREC (USA) 800-424-9300
CANUTEC (CANADA) 613-996-6666

SECTION 2 – HAZARD(S) IDENTIFICATION

Classification of the Substance or Mixture
Classification (GHS-US)

Ox. Sol. 3	H272
Eye Irrit. 2A	H319

Label Elements
GHS-US Labeling
Hazard Pictograms (GHS-US) :

GHS03 GHS07

Signal Word (GHS-US) : Warning
Hazard Statements (GHS-US) : H272 - May intensify fire; oxidizer
H319 - Causes serious eye irritation
Precautionary Statements (GHS-US) : P210 - Keep away from heat, sparks, open flames, hot surfaces. - No smoking
P220 - Keep/Store away from combustible materials, clothing, incompatible materials
P221 - Take any precaution to avoid mixing with combustibles, organic material, clothing, incompatible materials
P260 - Do not breathe fume, dust.
P264 - Wash hands, forearms, and other exposed areas thoroughly after handling
P270 - Do not eat, drink or smoke when using this product.
P273 - Avoid release to the environment.
P280 - Wear protective gloves, protective clothing, eye protection
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337+P313 - If eye irritation persists: Get medical advice/attention
P370+P378 - In case of fire: Use water only on AN fires.
P405 - Store locked up.
P501 - Dispose of contents/container according to local, regional, national,

DYNO Dyno Nobel
Groundbreaking Performance®

territorial, provincial, and international regulations*
*Do not perform hot work on contaminated equipment.

Other Hazards
Other Hazards: Aquatic Acute 3 H402
H402 – Harmful to aquatic life

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Name	Product identifier	% (w/w)	Ingredient Classification (GHS-US)
Ammonium nitrate	(CAS No) 6484-52-2	98 - 100	Ox. Sol. 3, H272 Eye Irrit. 2A, H319

Full text of H-phrases: see section 16

SECTION 4 - FIRST AID MEASURES

Description of First Aid Measures
General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
Inhalation: If symptoms occur, go into fresh air and ventilate suspected area. Seek medical attention.
Skin Contact: Remove contaminated clothing. Wash with soap and water followed by rinsing with water. Seek medical attention if irritation develops or persists. Wash contaminated clothing before reuse.
Eye Contact: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists.
Ingestion: Rinse mouth. Do NOT induce vomiting. Seek medical attention.

Most Important Symptoms and Effects Both Acute and Delayed
General: Irritation to eyes, skin and respiratory tract.
Inhalation: May cause irritation to the respiratory tract, sneezing, coughing, burning sensation of throat with constricting sensation of the larnyx and difficulty breathing.
Skin Contact: May cause skin irritation.
Eye Contact: Causes serious eye irritation.
Ingestion: Ingestion is likely to be harmful or have adverse effects.
Chronic Symptoms: None known.
Indication of Any Immediate Medical Attention and Special Treatment Needed
If exposed or concerned, get medical advice and attention. If ingested, may cause methemoglobenemia – emergency response should treat appropriately, such as by intravenous administration of methylene blue.

SECTION 5 - FIRE-FIGHTING MEASURES

Extinguishing Media
Suitable Extinguishing Media: Evacuate the area for 1 mile if ammonium nitrate is involved in a fire. Only water shall be used on ammonium nitrate fires. Dry chemical, foams, steam and smothering devices are not effective and can lead to possible explosion of the ammonium nitrate. General extinguishers may be used on fires **not involving the ammonium nitrate** such as conveyors, electrical equipment, tires, bearings, general plant equipment or the like when only minimal amounts of ammonium nitrate are present. For large fires use unmanned monitor nozzles if available.
Unsuitable Extinguishing Media: Dry chemical, carbon dioxide, or regular foam.
Special Hazards Arising From the Substance or Mixture In intense fires, the ammonium nitrate can melt and detonate from confinement or strong shocks. Evacuation of at least 1 mile is recommended if the ammonium nitrate is involved in a fire.
Fire Hazard: May intensify fire; oxidizer. Will accelerate the burning of other combustibles, resulting in more rapid spread of fire.
Explosion Hazard: Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and

injuries. Smothering, contact with organic material, or combustible material may cause an explosive situation.
Reactivity: May cause or intensify fire; oxidizer. May accelerate the burning of other combustible materials. Smothering, contact with organic material, or combustible material may cause an explosive situation.
Advice for Firefighters
Precautions for Firefighting: Evacuate the area for 1 mile if ammonium nitrate is involved in a fire. Only fires which are in the initial or beginning stage or those involving minimal amounts of ammonium nitrate in a manufacturing setting or in an area where ammonium nitrate is stored or in vehicles transporting ammonium nitrate should be attacked using manual fire extinguishing methods (fire extinguishers, hose streams, etc.) that require a human operator. If a fire in an area where ammonium nitrate is stored or in vehicles transporting ammonium nitrate progresses beyond the incipient stage or involves the ammonium nitrate, evacuation is required. Fire fighters downwind from a fire should wear self-contained breathing apparatus. Fire fighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves and rubber boots.
Hazardous Combustion Products: Nitrogen oxides. Toxic fumes are released. Carbon oxides (CO, CO_2). Ammonia.
Additional Information: If a fire has not reached the ammonium nitrate, cool the ammonium nitrate or container thereof to prevent the fire from reaching it. Ammonium nitrate does not burn by itself and thus needs to be kept separate from combustible materials. Ammonium nitrate is an oxidizer and will significantly increase the burning rate of combustible materials.
When in confinement and in the presence of a strong detonation sources the material can explode when subject to sudden shock, pressure, or high temperatures. Avoid temperatures above 210 C (410 F) which may cause thermal decomposition or explosion, especially in confined or poorly ventilated spaces.
Do not allow run-off from fire fighting to enter drains or water courses.
Reference to Other Sections: Refer to section 9 for flammability properties. Not flammable.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures
General Measures: Handle in accordance with good industrial hygiene and safety practice. Avoid breathing (dust, vapor, mist, gas). Avoid getting in eyes or on skin. Keep away from combustible material.
For Non-Emergency Personnel
Protective Equipment: Use appropriate personal protection equipment (PPE).
Emergency Procedures: Evacuate unnecessary personnel.
For Emergency Personnel
Protective Equipment: Use appropriate personal protection equipment (PPE).
Emergency Procedures: Ventilate area.

Environmental Precautions
Prevent entry to sewers and public waters.

Methods and Material for Containment and Cleaning Up
For Containment: Avoid generation of dust during clean-up of spills. Use a broom for small spills do not mix with other materials.
Methods for Cleaning Up: Collect spillage for possible reuse. Clean up spills immediately and dispose of waste safely. Contact competent authorities after a spill. Do not take up in combustible material such as: saw dust or cellulosic material.
Reference to Other Sections
See heading 8, Exposure Controls and Personal Protection

SECTION 7 - HANDLING AND STORAGE

Precautions for Safe Handling
Additional Hazards When Processed: When heated to decomposition, emits toxic fumes. Smothering, contact with organic material, or combustible material in a fire situation may be an explosive situation. Do not puncture or incinerate container.
Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work.

Conditions for Safe Storage, Including Any Incompatibilities
Technical Measures: Comply with applicable regulations 29 CFR 1910.109(i).
Storage Conditions: Store in a dry, cool and well-ventilated place. Keep container closed when not in use. Keep/Store away from combustible materials, ignition sources, and incompatible materials.
Incompatible Materials: Strong acids. Strong bases. Strong oxidizers. halogens (F, Cl, Br, I). Chlorine compounds, chlorinated inorganics (potassium, calcium and sodium hypochlorite) and hydrogen peroxides. Organic materials. Combustible materials.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters
No Occupational Exposure Limits (OELs) have been established for this product or its chemical components.

Exposure Controls
Appropriate Engineering Controls: Ensure all national/local regulations are observed. Ensure adequate ventilation, especially in confined areas.
Personal Protective Equipment: Approved safety glasses. Gloves. If insufficient ventilation: wear respiratory protection. Protective clothing when appropriate as indicated by air monitoring or if engineering controls are insufficient.

Materials for Protective Clothing: Chemically resistant materials and fabrics.
Hand Protection: Wear protective gloves.
Eye Protection: Approved safety glasses
Skin and Body Protection: Not available
Respiratory Protection: Use NIOSH-approved air-purifying or supplied-air respirator where airborne concentrations of vapor or mist are expected to exceed exposure limits.
Other Information: When using, do not eat, drink or smoke.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	:	Solid
Appearance	:	Colorless to off-white prills
Odor	:	Odorless
Odor Threshold	:	Not available
pH	:	Not available
Relative Evaporation Rate (butylacetate=1)	:	Not available
Melting Point	:	170 °C (337°F)
Freezing Point	:	Not available
Boiling Point	:	177 - 210 °C Decomposition (350 - 410°F)
Flash Point	:	Not available
Auto-ignition Temperature	:	Not available
Decomposition Temperature	:	Not available
Flammability (solid, gas)	:	Not flammable
Lower Flammable Limit	:	Not available
Upper Flammable Limit	:	Not available
Vapor Pressure	:	Not available
Relative Vapor Density at 20 °C	:	Not available
Relative Density	:	Not available

Specific Gravity	:	1.72 - 1.00 (Poured bulk density)
Solubility	:	Soluble in water. Water: 192 g/100 ml @ 20 °C (68 °F); 118 g/100 ml @ 0 °C (32 °F)
Partition coefficient: n-octanol/water	:	Not applicable. (inorganic)
Viscosity	:	Not available
Explosion Data – Sensitivity to Mechanical Impact	:	Not sensitive to mechanical impact. May be sensitive to supersonic explosively driven projectile impacts.
Explosion Data – Sensitivity to Static Discharge	:	Not sensitive to static discharge.

SECTION 10 - STABILITY AND REACTIVITY

Reactivity: May cause or intensify fire; oxidizer. May accelerate the burning of other combustible materials. Smothering, contact with organic material, or combustible material may cause an explosive situation.

Chemical Stability: May intensify fire; oxidizer.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: Extremely high temperatures. Overheating. Open flame. Combustible materials. Sources of ignition. Incompatible materials.

Incompatible Materials: Strong acids. Strong bases. Strong oxidizers. Halogens. Chlorine compounds, chlorinated inorganics (potassium, calcium and sodium hypochlorite) and hydrogen peroxides.

Hazardous Decomposition Products: Nitrogen oxides. Toxic vapors. Ammonia. Nitric acid

SECTION 11 - TOXICOLOGICAL INFORMATION

Information on Toxicological Effects – Product

Acute Toxicity: Not classified

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: Not classified

Serious Eye Damage/Irritation: Causes serious eye irritation.

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: May cause respiratory irritation.

Symptoms/Injuries After Skin Contact: May cause skin irritation.

Symptoms/Injuries After Eye Contact: Causes serious eye irritation.

Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: None known.

Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Ammonium nitrate (6484-52-2)	
LD50 Oral Rat	2217 mg/kg
LC50 Inhalation Rat	> 88.8 mg/l/4h
ATE CLP (oral)	2217.000 mg/kg body weight

SECTION 12: ECOLOGICAL INFORMATION

Toxicity Not classified
Persistence and Degradability

Superprill	
Persistence and Degradability	Not established.

Bioaccumulative Potential

Superprill	
Bioaccumulative Potential	Not established.

Ammonium nitrate (6484-52-2)	
BCF fish 1	(no bioaccumulation expected)
Log Pow	-3.1 (at 25 °C)

Mobility in Soil Not available
Other Adverse Effects
Other Information: Avoid release to the environment.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Collect spillage for possible reuse. Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.
Additional Information: Clean up even minor leaks or spills if possible without unnecessary risk.

SECTION 14 - TRANSPORT INFORMATION

14.1 In Accordance with DOT

Proper Shipping Name : AMMONIUM NITRATE with not more than 0.2% total combustible material, including any organic substance, calculated as carbon to the exclusion of any other added substance
Hazard Class : 5.1
Identification Number : UN1942
Label Codes : 5.1

Packing Group : III
ERG Number : 140

14.2 In Accordance with IMDG

Proper Shipping Name : AMMONIUM NITRATE
Hazard Class : 5.1
Identification Number : UN1942
Packing Group : III
Label Codes : 5.1
EmS-No. (Fire) : F-H
EmS-No. (Spillage) : S-Q

14.3 In Accordance with IATA

Proper Shipping Name : AMMONIUM NITRATE
Packing Group : III
Identification Number : UN1942
Hazard Class : 5
Label Codes : 5.1

ERG Code (IATA) : 5L

14.4 In Accordance with TDG

Proper Shipping Name	:	AMMONIUM NITRATE with not more than 0.2 per cent combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance
Packing Group	:	III
Hazard Class	:	5.1
Identification Number	:	UN1942
Label Codes	:	5.1

SECTION 15 - REGULATORY INFORMATION

US Federal Regulations

Superprill	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard

Ammonium nitrate (6484-52-2)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

US State Regulations

Ammonium nitrate (6484-52-2)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List

Canadian Regulations

Superprill	
WHMIS Classification	Class C - Oxidizing Material Class D Division 2 Subdivision B - Toxic material causing other toxic effects

Ammonium nitrate (6484-52-2)	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
WHMIS Classification	Class C - Oxidizing Material Class D Division 2 Subdivision B - Toxic material causing other toxic effects

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision date : 07/20/2020

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Ox. Sol. 3	Oxidizing solids Category 3
H272	May intensify fire; oxidizer

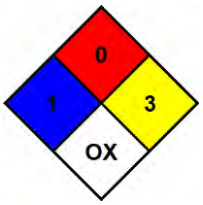
H319	Causes serious eye irritation

NFPA Health Hazard : 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.

NFPA Fire Hazard : 0 - Materials that will not burn.

NFPA Reactivity : 3 - Capable of detonation or explosive reaction, but requires a strong initiating source or must be heated under confinement before initiation, or reacts explosively with water.

NFPA Specific Hazard : OX - This denotes an oxidizer, a chemical which can greatly increase the rate of combustion/fire.



Party Responsible for the Preparation of This Document

Dyno Nobel Inc.
6440 S. Millrock Drive, Suite 150
Salt Lake City, Utah 84121
Phone: 801-364-4800

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LEAR CHEMICAL RESEARCH CORP.
P.O. Box 1040 Station B - Mississauga, Ontario L4Y 3W3

MATERIAL SAFETY DATA SHEET

Emergency Telephone Number: 800-256-2548 905-890-3466 (night)905-564-7077
Poison Control Center: Poisondex Alert System
Dangerous Goods Emergency: CANUTEC 613-996-6666 & CCOHS 905-572-2981

SECTION I - PRODUCT IDENTIFICATION & USE

Product Name: **ACF-50® NON-FLAMMABLE AEROSOL**
Product Code: 10013
Company ID: Manufacturer-Lear Chemical Research Corp.
Application: ACF-50® is an industrial product designed to prevent and treat corrosion on non-ferrous and ferrous metals, protect electronic equipment, and to lubricate/penetrate mechanized parts.

SECTION II - COMPOSITION

Chemical Composition: ACF-50 is a proprietary blend of ultra pure synthetic and organic hydrocarbons. ACF-50 has been tested as a complete complex mixture (prior to aerosolizing) and is considered Non-toxic by EPA/OECD guidelines. Inhalation was not performed and a suggested exposure limit is listed below. All other untested components are listed in Section III.

SECTION III - HAZARDOUS COMPONENTS

Chemical Names:	CAS #	OSHA/ACGIH	% vol
ACF-50 (Oil mist)	NA	5 mg/m³ TWA (suggested)	90-95
Tetrafluoroethane 1,1,1,2 (propellant)	811-97-2	PEL/TLV None established 1000 ppm TWA (suggested)	5-10

SECTION IV- PHYSICAL/ CHEMICAL CHARACTERISTICS

Boiling Point:	>212 F ° (aerosol concentrate)	Specific Gravity (H ² 0=1):	.90
Vapor Pressure:	NA	Melting Point (Deg F)	not applicable
Vapor Density:	Heavier than air (Air=1)	Evaporation Rate:	Slower (Butyl acetate=1)
Solubility:	Slight emulsification with H²O	Odor:	Non-descript Scent
Appearance:	Purple Aerosol Liquid	pH:	not determined

SECTION V- FIRE AND EXPLOSION HAZARD DATA

Product: Non-flammable Aerosol **Auto-ignition Temp.** >410 F°
Flash Point: Flame extension 0 cm
Flammable Limits: Not applicable
Extinguishing Media: Use media appropriate for surrounding material.
Fire Fighting Procedures: Cool containers with water spray to prevent pressure build-up, auto-ignition or explosion. Self Contained Breathing Apparatus (SCBA) may be required if containers rupture under thermal conditions.
Fire Explosion Hazards: Aerosol cans are an explosion risk when exposed to fire.
Fire Hazard Identification: NFPA NPCA-HMIS Health -0 Flammability-1 Reactivity-1

SECTION VI - REACTIVITY DATA

Stability: Stable
Incompatibility: Avoid Oxidizing materials (Liquid or compressed oxygen, peroxides, chlorine), strong alkalis.
Hazardous Decomposition: Thermal conditions produce normal products of combustion including: Hydrogen fluoride, Carbon Oxides (CO- C0²), Nitrogen oxides (N0²-NO), Sulfur oxides (S0²SO3).
Polymerization: Will not occur

SECTION VII - TOXICOLOGICAL PROPERTIES

ACF-50 Bulk Liquid has been tested (oral, eye, dermal) as a complete mixture and is considered "Non-Toxic" according to EPA/OECD and FHSA guidelines.

Primary Routes of entry:

Acute Oral:	LD50 > 5000 mg/kg	**Acute Eye:**	LC50 > 5000 mg/kg
Acute Dermal:	LD50 > 5000 mg/kg	**Acute Vapor (est.)**	LC50 > 5000 ppm -Rat-Aliphatic hydrocarbon LC50 > 5000 ppm -Rat-Petroleum distillate

Tetrafluoroethane 1, 1, 1, 2

Acute Dermal:	None determined	**Acute Inhal.**	LC50 > 500,000 ppm (Rat)
Acute Eye:	None determined		
Carcinogenicity:	ACF-50 Liquid Ingredients:	Non-carcinogenic, according to NTP, IARC, OSHA or ACGIH.	
	Tetrafluoroethane 1, 1, 1, 2:	Non-carcinogenic, according to NTP, IARC, OSHA or ACGIH.	
Sensitization:	Non-sensitizer		
Mutagenic effects:	No	**Tetragenic:**	No
Reproductive:	No	**Developmental:**	No

POTENTIAL EFFECTS OF OVEREXPOSURE:

Inhalation: May cause headache, nausea, or dizziness. Overexposure to vapor may cause CNS depression or confusion. Tetrafluoroethane is rapidly equilibrated in tissue after inhalation and eliminated with expelled air. May act as simple asphyxiant if air is displaced by vapor.

Skin: May cause drying, chapping of skin. Chilling sensation with liquid evaporation.

Eyes: May cause redness of eyes and tearing. Chilling sensation with liquid evaporation.

Ingestion: Not likely to occur. However should small amounts be ingested then liquid may cause irritation to mouth & throat. Aspiration into the lungs may cause chemical pneumontis, which can be fatal.

SECTION VIII - EMERGENCY AND FIRST AID PROCEDURES

Skin: Remove excess by wiping, followed by washing with soap and water.

Eyes: Copious warm water flush for 15 minutes, lifting upper and lower lids. If irritation persists contact a physician.

Inhalation: Evacuate to fresh air. If breathing is difficult administer oxygen. If breathing stops apply CPR and call a physician.

Ingestion: Not likely to occur. However should it occur: **DO NOT INDUCE VOMITING.** Give 1/2 pint of milk to drink. If vomiting takes place, naturally, lean victim forward to prevent aspiration into lungs. Aspiration into the lungs may cause chemical pneumontis, which can be fatal. Physician's assessment is mandatory. Note to Physician: Consult standard literature for Hydrocarbon poison.

SECTION IX - PREVENTIVE MEASURES

Spills-Leaks : Absorb using inert material (dry clay, commercial sorbents) and collect residue into suitable disposal container.

Waste Disposal: Dispose in approved landfill site or incinerate at licensed waste reclaimer facility. Follow all Local, State and Federal Requirements. See **Section X** for further instructions.

Storage: Contents under pressure. Do not store above 120 F. Store in well ventilated area.

Respiratory Protection: None normally needed - Unless atomizing in enclosed space, then use approved NIOSH organic mist/vapor respirator.

Protective Equipment: Not applicable for aerosol containers.

Hygienic Practices: Wash hands and face with soap and water after use. Launder soiled clothing.

SECTION X - REGULATORY INFORMATION

U.S. Federal Regulations: **Tetrafluoroethane 1, 1, 1, 2**

TSCA Inventory. All components Listed
SARA Extreme Hazard: NO
CERCLA: NO
SARA Toxic Chemical: NO
TITLE III Hazard Classification Section 311, 312:

Fire:	No	**Chronic:**	Yes	**Pressure:**	Yes
Reactivity:	No	**Acute:**	Yes		

SECTION XI - TRANSPORTATION INFORMATION

TDG Road / Rail Classification: **CONSUMER COMMODITY**
DOT/IMO Label: **NON-FLAMMABLE GAS**
HAZARD CLASS: **2.2**

AIR-IATA Class:	**Aerosols, non-flammable, n.o.s. (each not exceeding 1L capacity)**	**2.2**	**UN1950**	**Non-flammable gas** (Hazard label)

Lear Chemical and its affiliates assume no responsibility for injury to anyone caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, Lear Chemical Research Corp. and affiliates assume no responsibility for injury to anyone caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee and third persons assume the risk in their use of the material.

Date Issued: July 2005 Prepared by: Lear Chemical Research Corp.

7480 Bath Road
Mississauga, Ontario L4T 1L2
Tel. 905 676-1777
Fax 905 676-0582

SAFETY DATA SHEET

Revision Date: 27-MAR-2017 **Revision Number:** 1A

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Trade Name: ALUMINUM SULPHATE, 48% SOLUTION
Synonyms: None
Chemical Family: Coagulant
Product Code: NC001

1.2 Recommended use and restrictions on use

Application: Laboratory Chemical
Uses Advised Against: No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier: Northland Chemical Inc.
7480 Bath Road
Mississauga, Ontario L4T 1L2
Tel. (905) 676 1777
Fax (905) 676-0582

1.4. Emergency telephone number

CANUTEC: (613) 996-6666
FOR CHEMICAL EMERGENCY ONLY

2. Hazard(s) Identification

2.1 Classification in accordance with the Hazardous Products Regulation, 2015

Corrosive to Metals, Category 1, May be corrosive to metals
Eye Irritation, Category 2A; Causes serious eye irritation

2.2. Label Elements

Hazard Pictogram(s)

Signal Word	Danger
Hazard Statements	H290 – May be corrosive to metals. H318 – Causes serious eye irritation

Precautionary Statements

Prevention	P280 - Wear protective gloves/protective clothing/eye protection/face protection P264 – Wash hands thoroughly after handling
Response	P305 + P351 + P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing. P310 – Immediately call a POISON CENTRE or doctor/physician. P390 Absorb spillage to prevent material damage.

2.3 Hazards not otherwise classified

Advice: Causes eye, skin and respiratory tract irritation. Gastrointestinal irritation.

3. Composition/information on Ingredients

Substance	CAS Number	PERCENT (w/w)	GHS Classification
Aluminum Sulphate Hydrate	10043-01-3	45 - 55	Corrosive to metals, Category 1 Serious Eye Irritation, Category 2A

4. First-Aid Measures

4.1. Description of first aid measures

Inhalation	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Eyes In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Skin Remove contaminated clothing. Wash with soap and water. Get medical attention if irritation persists. Launder clothing before reuse.

Ingestion Do not induce vomiting. Drink 1 or 2 glasses of water. Never give any liquids by mouth if person is unconscious or convulsing. Get immediate medical attention.

4.2 Most important symptoms/effects, acute and delayed

No information available.

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. Fire-fighting measures

5.1. Extinguishing media

Conditions of Flammability Not flammable or combustible

Suitable Extinguishing Media Product does not burn. As appropriate for surrounding materials, Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Extinguishing media which must not be used for safety reasons: None known.

5.2 Specific hazards arising from the substance or mixture

Special Exposure Hazards

Decomposition in fire may produce - Sulphur oxides, Aluminum oxide

5.3 Special protective equipment and precautions for fire-fighters

Special Protective Equipment for Fire-Fighters

Full protective clothing and approved self-contained breathing apparatus required for firefighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid creating and breathing dust. See Section 8 for additional information.

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas by using inert absorbent material (e.g. sand). Cover the drains.

6.3. Methods and material for containment and cleaning up

Clean-up methods - small spillage

Dilute residues with water and then neutralize with lime or limestone powder to a solid consistency. Shovel or sweep up. Must be disposed of in accordance with local and national regulations.

.

Clean-up methods - large spillage

Remove spill using a vacuum truck. Dilute residues with water and then neutralize with lime or limestone powder to a solid consistency. Shovel or sweep up remaining material. Must be disposed of in accordance with local and national regulations.

7. Handling and storage

7.1. Precautions for Safe Handling

Danger for slipping. The work place and work methods shall be organized in such a way that direct contact with the product is prevented or minimized. For personal protection see SDS section 8.

Conditions for safe storage, including any incompatibilities
Avoid freezing. Keep away from incompatible materials. For quality reasons:
Keep at temperatures below 30 °C.
Keep at temperatures above 0 °C. Handling operations become difficult due to increased viscosity.

Materials for packaging
Suitable material: plastic (PE, PP, PVC), polyester with fibreglass reinforcement, concrete coated with epoxy, titanium, acid-resistant steel, rubber-coated steel

Materials to avoid:
Avoid contact with unalloyed steel or galvanized surfaces., non-acid proof metals (for example aluminium, copper and iron), hypochlorites, chlorites, sulphites, Bases

Storage stability:
Other data Stable under recommended storage conditions.

7.2. Conditions for safe storage, including any incompatibilities
Storage Information Close container when not in use. Do not reuse empty container.

8. Exposure Controls/Personal Protection
Special Exposure Hazards None anticipated

8.1 Occupational Exposure Limits

Substances	**CAS Number**	**Ontario TWAEV**	**ACGIH TLV-TWA**
Aluminum Sulphate	10043-01-3	2 mg/m^3	2 mg/ m^3

8.2 Appropriate engineering controls
Engineering Controls Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.

8.3 Individual protection measures, such as personal protective equipment
Personal Protective Equipment If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection	Not normally needed. Use a NIOSH/MSHA approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Hand Protection	Handle with appropriate work gloves such as PVC or neoprene.
Skin Protection	Wear chemical resistant clothing appropriate for the work environment. Cover exposed skin.
Eye Protection	Wear appropriate protective eyeglasses or chemical safety goggles to protect against exposure.
Other Precautions	None known.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State:	liquid
Color:	colourless, clear
Odor:	not significant
Odor Threshold:	No data available

Property Remarks/ - Method	**Values**
pH (1% Solution):	ca. 2
Freezing Point/Melting Point	-10°C
Boiling Point/Range	110 – 120 °C
Flash Point	Not applicable
Flammability (solid, gas)	Does not sustain combustion
Upper flammability limit	No data available.
Lower flammability limit	No data available
Evaporation rate	No data available
Vapour Pressure	No data available
Vapour Density	No data available
Specific Gravity	1.30 – 1.34 g/cm^3
Water Solubility	Completely soluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	Not oxidizing

9.2. Other information

VOC Content (%)	No data available

10. Stability and Reactivity

10.1. Reactivity

Corrosive to metals.

10.2. Chemical Stability
Stable under normal storage conditions.

10.3. Possibility of Hazardous Reactions
Contact with certain metals may form hydrogen gas, which in turn may form explosive mixtures of gases with air.

10.4. Conditions to Avoid
Avoid temperatures below crystallization range
Avoid storage at high temperatures.

10.5. Incompatible Materials
Avoid contact with unalloyed steel or galvanized surfaces, non-acid proof metals (e.g. aluminum, copper and iron). Hypochlorites, chlorites, sulphites. Bases.

10.6. Hazardous Decomposition Products
Hazardous decomposition products formed under fire conditions. - Sulphur oxides

11. Toxicological Information
11.1 Information on likely routes of exposure
Principle Route of Exposure Eye or skin contact, inhalation.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Acute Toxicity

Toxicology data for the components

Substances	CAS	LD50 Oral	LD50 Dermal	LC50 Inhalation
Aluminum Sulphate	10043-01-3	>2000 mg/kg (Rat)	>5000 mg/kg	No data available

Inhalation May be harmful if inhaled. Causes respiratory tract irritation.

Eye Contact May cause eye irreversible eye damage.

Skin Contact May causes skin irritation, dry skin.

Ingestion May be harmful if swallowed.

11.3 Toxicity data

Chronic Effects/Carcinogenicity

Carcinogen: No component of this product, present at levels greater than or equal to 0.1%, is identified as a probable, possible or confirmed human carcinogen by IARC, ACGIH, NTP, or OSHA.

Mutagen: Results are negative.

Reproductive Effects: Not believed to be toxic for reproduction.

Developmental Effects: No data available

Teratogen: No data available

Specific target organ toxicity - single exposure: No data available

Specific target organ toxicity - repeated exposure: No data available

Respiratory or Skin sensitization: No data available

Aspiration Hazard: No data available

Synergistic effects: No data available

12. Ecological Information Substances

12.1. Toxicity

Ecotoxicity Effects

Product Ecotoxicity Data No data available

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Aluminum Sulphate	10043-01-3	No information available	37 mg/L LC50 96H (freshwater fish)	No information available	136 mg/L EC50 15 min (Water flea) 38.2 mg/L EC50 48 H (Water flea)

12.2. Persistence and degradability

No information available

12.3. Bioaccumulative potential

This product is not expected to bioaccumulate.

12.4. Mobility in soil

No information available.

12.5 Other adverse effects

May lower the pH of water and thus be harmful to aquatic organisms.

13. Disposal Considerations

13.1. Waste treatment methods

Disposal Method	Classified as hazardous waste. Must be disposed of according to federal, state, and local regulations.
Contaminated Packaging	Follow all applicable national or local regulations.

14. Transport Information

Canadian TDG	UN number: 3264
TDG:	
Description of the goods:	UN3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S (ALUMINUM SULPHATE)
Class:	8
Packing Group:	III

15. Regulatory Information

Canadian DSL Inventory:	All components listed on inventory or are exempt.
US TSCA Inventory:	All components listed on inventory or are exempt.
California Proposition 65:	This product does not contain any Proposition 65 listed chemicals.

WHMIS Classification: E, Corrosive Material

HMIS Rating: Health: 2, Flammability: 0, Reactivity: 0

16. Other Information

Preparation Information

Prepared by:	Technical Department Tel. 905 676 1777
Revision Date:	2017 March 27
Reason for Revision:	Change to GHS format

Key or legend to abbreviations and acronyms

bw	– body weight
CAS	– Chemical Abstracts Service
EC50	– Effective Concentration 50%
LC50	– Lethal Concentration 50%
LD50	– Lethal Dose 50%
mg/kg	– milligram/kilogram
mg/L	– milligram/liter
NIOSH	– National Institute for Occupational Safety and Health
NTP	– National Toxicology Program
OEL	– Occupational Exposure Limit
PEL	– Permissible Exposure Limit
ppm	– parts per million
STEL	– Short Term Exposure Limit
TWA	– Time-Weighted Average
TWAEV	– Time-Weighted Average Exposure Value
UN	– United Nations
H	– hour
mg/m3	– milligram/cubic meter
mm	– millimeter
mmHg	– millimeter mercury
w/w	– weight/weight
d	– day

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Ammonia Inhalant Solution

Safety Data Sheet

according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

Date of issue: 06/02/2014 Version: 1.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture

Trade name : Ammonia Inhalant Solution

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : OTC drug used to treat or prevent fainting

Use of the substance/mixture : For professional use only

1.3. Details of the supplier of the safety data sheet

James Alexander Corporation
845 Route 94 Blairstown
NJ 07825

Tel: (908) 362-9266

Note: The CHEMTREC emergency number is to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to JAC at (908) 362-9266.

1.4. Emergency telephone number

Emergency number : Chemtrec (800) 424-9300

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Flam. Liq. 2 H225
Skin Corr. 1B H314
Eye Dam. 1 H318
Carc. 1A H350

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US) :

GHS02 GHS05 GHS08

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H225 - Highly flammable liquid and vapour
H314 - Causes severe skin burns and eye damage
H318 - Causes serious eye damage
H350 - May cause cancer

Precautionary statements (GHS-US) : P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking
P233 - Keep container tightly closed
P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical, lighting, ventilating equipment
P242 - Use only non-sparking tools
P243 - Take precautionary measures against static discharge
P260 - Do not breathe dust, fume, gas, mist, spray, vapours
P264 - Wash hands thoroughly after handling
P280 - Wear eye protection, protective clothing, protective gloves
P301+P330+P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P308+P313 - IF exposed or concerned: Get medical advice/attention
P310 - Immediately call a POISON CENTER or doctor/physician
P321 - Specific treatment (see on this label)
P363 - Wash contaminated clothing before reuse
P370+P378 - In case of fire: Use dry chemical powder, alcohol-resistant foam, carbon dioxide (CO_2), water spray, sand, earth for extinction
P403+P235 - Store in a well-ventilated place. Keep cool
P405 - Store locked up
P501 - Dispose of contents/container to comply with applicable local, national and international regulation.

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS-US)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

Full text of H-phrases: see section 16

3.2. Mixture

Name	Product identifier	%	GHS-US classification
Ethyl alcohol	(CAS No) 64-17-5	30 - 40	Flam. Liq. 2, H225 Carc. 1A, H350
Ammonia	(CAS No) 7664-41-7	15 - 20	Flam. Gas 2, H221 Compressed gas, H280 Acute Tox. 3 (Inhalation:gas), H331 Skin Corr. 1B, H314

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation : Remove to fresh air and keep at rest in a position comfortable for breathing. If breathing stops, give artificial respiration. In case of breathing difficulties administer oxygen. by trained personnel. Seek medical attention immediately.

First-aid measures after skin contact : Immediately flush skin with plenty of water for at least 15 minutes. Remove/Take off immediately all contaminated clothing. Do not rub the skin and eyes after direct contact with the product. Seek medical attention immediately. Wash contaminated clothing before reuse.

First-aid measures after eye contact : In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately get medical attention.

First-aid measures after ingestion : If the person is fully conscious, make him/her drink water. Never give an unconscious person anything to drink. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician. If swallowed, rinse mouth with water (only if the person is conscious).

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries : Causes severe skin burns and eye damage. This material or its emissions may affect the central nervous system and/or aggravate pre-existing disorders.

Symptoms/injuries after inhalation : May cause cancer by inhalation. Prolonged and repeated inhalation of decomposition products may cause a pulmonary oedema. Depression of the central nervous system, headaches, dizziness, drowsiness, loss of coordination. Irritating to the respiratory system, may cause throat pain and cough. Difficulty in breathing.

Symptoms/injuries after skin contact : May cause severe burns.

Symptoms/injuries after eye contact : Causes serious eye damage. Can cause blindness.

Symptoms/injuries after ingestion : May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract. Ingestion may cause nausea, vomiting and diarrhea.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Alcohol resistant foam. Dry powder. Carbon dioxide. Sand.

Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Highly flammable liquid and vapour.

Explosion hazard : May form flammable/explosive vapour-air mixture.

Reactivity : Thermal decomposition generates : Corrosive vapours. Reacts violently with acids. An exothermic reaction may occur.

5.3. Advice for firefighters

Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.

Protective equipment for firefighters : Do not enter fire area without proper protective equipment, including respiratory protection.

Other information : Containers may swell and Burst during a fire due to internal pressure caused by heat. Vapours are heavier than air and may travel considerable distance to an ignition source and flash back to source of vapours. Alcohols burn with a pale blue flame which may be extremely hard to see under normal lighting conditions. Personnel may be able to feel the heat of the fire without seeing flames. Extreme caution must be exercised in fighting alcohol fires.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Eliminate all ignition sources if safe to do so. Use special care to avoid static electric charges. No naked lights. No smoking. Stop leak if safe to do so. No action shall be taken involving any personal risk or without suitable training. Wear protective clothing. For further information refer to section 8 : Exposure-controls/personal protection.

6.1.1. For non-emergency personnel

Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment : Equip cleanup crew with proper protection.

Emergency procedures : Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Consult the appropriate authorities about waste disposal. Ensure all national/local regulations are observed.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : Handle empty containers with care because residual vapours are flammable.

Precautions for safe handling : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Personal protective equipment should be selected based upon the conditions under which this product is handled or used. Use personal protective equipment as required. Provide good ventilation in process area to prevent formation of vapour. Do not breathe gas, fumes, vapour or spray. No naked lights. No smoking. Use only non-sparking tools. Never use pressure to empty container. Ground/bond container and receiving equipment. Take care to allow internal pressure to escape from container before releasing closures. Remove closure carefully; internal pressure may be present. Keep closure up to prevent leakage. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

Hygiene measures : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Use explosion-proof machinery, apparatus, ventilation facilities, tools etc. Ensure the ventilation system is regularly maintained and tested. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of mists and/or vapors below the recommended exposure limits. Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment. A washing facility/water for eye and skin cleaning purposes should be present. Comply with applicable regulations.

Storage conditions : Keep only in the original container in a cool well ventilated place. Keep in fireproof place. Keep container tightly closed. Protect containers against physical damage. Detached outside storage is preferable. Inside storage should be in an NFPA approved flammable liquids storage room or cabinet. Store in corrosion-proof area at temperatures below 77 degrees F (25oC). Store away from direct sunlight or other heat sources.

Incompatible materials : Avoid mixing with acids, most common metals, strong oxidizing agents, brass, zinc, chlorine, aluminum, copper, bronze, mercury, dimethyl sulfate and acetyl chloride.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Ammonia (7664-41-7)		
USA ACGIH	ACGIH TWA (ppm)	25 ppm
USA ACGIH	ACGIH STEL (ppm)	35 ppm
USA OSHA	OSHA PEL (TWA) (mg/m³)	35 mg/m³
USA OSHA	OSHA PEL (TWA) (ppm)	50 ppm

Ethyl alcohol (64-17-5)		
USA ACGIH	ACGIH STEL (ppm)	1000 ppm
USA OSHA	OSHA PEL (TWA) (mg/m³)	1900 mg/m³
USA OSHA	OSHA PEL (TWA) (ppm)	1000 ppm

8.2. Exposure controls

Appropriate engineering controls : Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of mists and/or vapors below the recommended exposure limits. Use explosion-proof ventilating equipment.

Personal protective equipment : Avoid all unnecessary exposure. A hazard assessment of the work area for PPE requirements should be conducted by a qualified professional pursuant to OSHA regulations. For certain operations, additional Personal Protection Equipment (PPE) may be required. Protective goggles. Gloves. Protective clothing.

Hand protection : Wear protective gloves. rubber gloves. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

Eye protection : Chemical goggles or face shield.

Skin and body protection : Wear suitable protective clothing. Chemical resistant safety shoes.

Respiratory protection : Wear a self-contained breathing apparatus and appropriate personal protective equipment (PPE). Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals. Care must be taken to assure that any respirator chosen is capable of protecting the user from both ammonia and ethyl alcohol vapors.

Other information : Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Liquid
Appearance	:	Clear.
Colour	:	Red.
Odour	:	Pungent ammonia odour.
Odour threshold	:	No data available
pH	:	No data available
Relative evaporation rate (butyl acetate=1)	:	No data available
Melting point	:	No data available
Freezing point	:	No data available
Boiling point	:	> 35 °C (> 95 °F)
Flash point	:	< 10 °C (< 50 °F - Pensky Martens Closed Cup)
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Flammability (solid, gas)	:	No data available
Vapour pressure	:	No data available
Relative vapour density at 20 °C	:	No data available
Relative density	:	No data available
Density	:	0.891 (Specific Gravity @ 25 °C)
Solubility	:	Soluble in water.
Log Pow	:	No data available
Log Kow	:	No data available
Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	No data available
Explosive properties	:	No data available
Oxidising properties	:	No data available
Explosive limits	:	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Thermal decomposition generates : Corrosive vapours. Reacts violently with acids. An exothermic reaction may occur.

10.2. Chemical stability

Not established.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures. Open flame.

10.5. Incompatible materials

Avoid mixing with acids, most common metals, strong oxidizing agents, brass, zinc, chlorine, aluminum, copper, bronze, mercury, dimethyl sulfate and acetyl chloride.

10.6. Hazardous decomposition products

Thermal decomposition generates : Fume. Carbon monoxide. Carbon dioxide. May release flammable gases. Corrosive vapours. Ammonia. Nitrogen oxides. release of highly flammable gases/vapours hydrogen.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	:	Not classified (Based on available data, the classification criteria are not met)

Ammonia (7664-41-7)	
LD50 oral rat	350 mg/kg
LC50 inhalation rat (ppm)	2000 ppm/4h

Ethyl alcohol (64-17-5)	
LC50 inhalation rat (mg/l)	124.7 mg/l (Exposure time: 4 h)

Skin corrosion/irritation : Causes severe skin burns and eye damage.

Serious eye damage/irritation : Causes serious eye damage.

Respiratory or skin sensitisation : Not classified
(Based on available data, the classification criteria are not met)

Germ cell mutagenicity : Not classified
(Based on available data, the classification criteria are not met)

Carcinogenicity : May cause cancer.

Ethyl alcohol (64-17-5)	
IARC group	1 - Carcinogenic to humans

Reproductive toxicity : Not classified
(Based on available data, the classification criteria are not met)

Specific target organ toxicity (single exposure) : Not classified
(Based on available data, the classification criteria are not met)

Specific target organ toxicity (repeated exposure) : Not classified
(Based on available data, the classification criteria are not met)

Aspiration hazard : Not classified
(Based on available data, the classification criteria are not met)

Potential Adverse human health effects and symptoms : Based on available data, the classification criteria are not met.

Symptoms/injuries after inhalation : May cause cancer by inhalation. Prolonged and repeated inhalation of decomposition products may cause a pulmonary oedema. Depression of the central nervous system, headaches, dizziness, drowsiness, loss of coordination. Irritating to the respiratory system, may cause throat pain and cough. Difficulty in breathing.

Symptoms/injuries after skin contact : May cause severe burns.

Symptoms/injuries after eye contact : Causes serious eye damage. Can cause blindness.

Symptoms/injuries after ingestion : May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract. Ingestion may cause nausea, vomiting and diarrhea.

SECTION 12: Ecological information

12.1. Toxicity

Ammonia (7664-41-7)	
LC50 fishes 1	0.44 mg/l (Exposure time: 96 h - Species: Cyprinus carpio)
EC50 Daphnia 1	25.4 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 fish 2	0.26 - 4.6 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus)

Ethyl alcohol (64-17-5)	
LC50 fishes 1	12.0 - 16.0 ml/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)
EC50 Daphnia 1	9268 - 14221 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 fish 2	> 100 mg/l (Exposure time: 96 h - Species: Pimephales promelas)
EC50 Daphnia 2	10800 mg/l (Exposure time: 24 h - Species: Daphnia magna)

12.2. Persistence and degradability

Ammonia Inhalant Solution	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

Ammonia Inhalant Solution	
Bioaccumulative potential	Not established.

Ammonia (7664-41-7)	
Log Pow	-1.14 (at 25 °C)

Ethyl alcohol (64-17-5)	
Log Pow	-0.32

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Do not re-use empty containers. Ensure all national/local regulations are observed. Consult the appropriate authorities about waste disposal.

Additional information : Handle empty containers with care because residual vapours are flammable.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

In accordance with DOT

Transport document description : UN2924 Flammable liquids, corrosive, n.o.s. (Ammonia, Ethanol), 3, II

UN-No.(DOT) : 2924

DOT NA no. : UN2924

DOT Proper Shipping Name : Flammable liquids, corrosive, n.o.s.
(Ammonia, Ethanol)

Department of Transportation (DOT) Hazard Classes : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120

Hazard labels (DOT) : 3 - Flammable liquid
8 - Corrosive

DOT Symbols : G - Identifies PSN requiring a technical name

Packing group (DOT) : II - Medium Danger

DOT Special Provisions (49 CFR 172.102) : IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized.
T11 - 6 178.274(d)(2) Normal..... 178.275(d)(3)
TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: (image) Where: tr is the maximum mean bulk temperature during transport, tf is the temperature in degrees celsius of the liquid during filling, and a is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula: (image) Where: d15 and d50 are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively.
TP27 - A portable tank having a minimum test pressure of 4 bar (400 kPa) may be used provided the calculated test pressure is 4 bar or less based on the MAWP of the hazardous material, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.

DOT Packaging Exceptions (49 CFR 173.xxx) : 150

DOT Packaging Non Bulk (49 CFR 173.xxx) : 202

DOT Packaging Bulk (49 CFR 173.xxx) : 243

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 1 L

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 5 L

DOT Vessel Stowage Location : B - (i) The material may be stowed ‘‘on deck’’ or ‘‘under deck’’ on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) ‘‘On deck only’’ on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.

DOT Vessel Stowage Other : 40 - Stow ‘‘clear of living quarters’’

Additional information

Other information : No supplementary information available.

ADR

Transport document description : No additional information available

Transport by sea

No additional information available

Air transport

No additional information available

SECTION 15: Regulatory information

15.1. US Federal regulations

Ammonia Inhalant Solution	
RQ (Reportable quantity, section 304 of EPA's List of Lists) :	588 lb

Ammonia (7664-41-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on SARA Section 302 (Specific toxic chemical listings) Listed on SARA Section 313 (Specific toxic chemical listings)	
RQ (Reportable quantity, section 304 of EPA's List of Lists) :	100 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	500
SARA Section 313 - Emission Reporting	1.0 % (includes anhydrous Ammonia and aqueous Ammonia from water dissociable Ammonium salts and other sources, 10% of total aqueous Ammonia is reportable under this listing)

Ethyl alcohol (64-17-5)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

Ammonia (7664-41-7)	
Listed on the Canadian DSL (Domestic Sustances List) inventory.	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas Class D Division 1 Subdivision A - Very toxic material causing immediate and serious toxic effects Class E - Corrosive Material

Ethyl alcohol (64-17-5)	
Listed on the Canadian DSL (Domestic Sustances List) inventory.	
WHMIS Classification	Class B Division 2 - Flammable Liquid Class D Division 2 Subdivision B - Toxic material causing other toxic effects

EU-Regulations

Ammonia (7664-41-7)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) substances.

Ethyl alcohol (64-17-5)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) substances.

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Not classified

Classification according to Directive 67/548/EEC or 1999/45/EC

Not classified

15.2.2. National regulations

Ammonia (7664-41-7)
Listed on the AICS (the Australian Inventory of Chemical Substances) Listed on Inventory of Existing Chemical Substances (IECSC) Listed on the Japanese ENCS (Existing & New Chemicals Substances) inventory. Listed on the Korean ECL (Existing Chemical List) inventory. Listed on New Zealand - Inventory of Chemicals (NZIoC) Listed on Inventory of Chemicals and Chemical Substances (PICCS) Poisonous and Deleterious Substances Control Law Listed on the Canadian Ingredient Disclosure List

Ethyl alcohol (64-17-5)
Listed on IARC (International Agency for Research on Cancer) Listed on the AICS (the Australian Inventory of Chemical Substances) Listed on Inventory of Existing Chemical Substances (IECSC) Listed on the Japanese ENCS (Existing & New Chemicals Substances) inventory. Listed on the Korean ECL (Existing Chemical List) inventory. Listed on New Zealand - Inventory of Chemicals (NZIoC) Listed on Inventory of Chemicals and Chemical Substances (PICCS) Listed on the Canadian Ingredient Disclosure List

15.3. US State regulations

Ethyl alcohol (64-17-5)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
Yes	Yes			

SECTION 16: Other information

Other information : None.

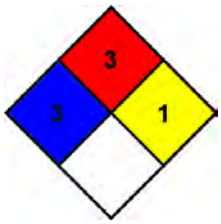
Full text of H-phrases: see section 16:

Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3
Carc. 1A	Carcinogenicity, Category 1A
Compressed gas	Gases under pressure : Compressed gas
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Flam. Gas 2	Flammable gases, Category 2
Flam. Liq. 2	Flammable liquids Category 2
Skin Corr. 1B	Skin corrosion/irritation Category 1B
H221	Flammable gas
H225	Highly flammable liquid and vapour
H280	Contains gas under pressure; may explode if heated
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H331	Toxic if inhaled
H350	May cause cancer

NFPA health hazard : 3 - Short exposure could cause serious temporary or residual injury even though prompt medical attention was given.

NFPA fire hazard : 3 - Liquids and solids that can be ignited under almost all ambient conditions.

NFPA reactivity : 1 - Normally stable, but can become unstable at elevated temperatures and pressures or may react with water with some release of energy, but not violently.



SDS US (GHS HazCom 2012)

This Material Safety Data Sheet is intended only as a guide to the appropriate precautionary handling of the material by a person trained in, or supervised by a person trained in, the safe handling of chemical materials. James Alexander Corporation (JAC), expressly disclaims all express or implied warranties of merchantability and fitness for a particular purpose with respect to the product or information provided herein. All information appearing herein is based upon data obtained from the manufacturer(s) and/or recognized technical sources. While the information is believed to be accurate, JAC makes no representations as to its accuracy or sufficiency. Conditions of use are beyond JAC's control and therefore, users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein and does not relate to its use in combination with any other material or in any other process.

SAFETY DATA SHEET

Revision date: 09-Nov-2021

Revision Number 10

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product identifier

Product Name	AMMONIUM NITRATE
Product Code(s)	000022017701

Other means of identification

Proper shipping name	AMMONIUM NITRATE
UN number	1942
CAS No.	6484-52-2
Synonyms	Nitropril, Anopril, Marbyl, Ammonium nitrate prills, LDAN, Low density ammonium nitrate, PPAN, Porous prilled ammonium nitrate

Recommended use of the chemical and restrictions on use

Recommended use	Explosives manufacture. Restricted to professional users. This material is classified as a Security Sensitive Ammonium Nitrate (SSAN). Various government controls may apply to this material.
Uses advised against	No information available.

Supplier

Orica Australia Pty Ltd
ABN: 99 004 117 828
1 Nicholson Street
Melbourne 3000
Australia

Telephone Number: +61 3 9665 7111
Facsimile: +61 3 9665 7937

Emergency telephone number

Emergency telephone number	**AUSTRALIA: 1 800 033 111 (ALL HOURS)** **INTERNATIONAL AUSTRALIA: +61 3 9663 2130 (ALL HOURS)**

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

2. HAZARDS IDENTIFICATION

GHS Classification

Classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG).

Classified as a hazardous chemical in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS).

Various regulations/controls/authorisations/licences may apply governing the manufacture, importation, exportation, use, handling, storage, sale/supply, transport and disposal of ammonium nitrate. Ammonium nitrate in Australia is considered a security sensitive material and loss, theft, attempted theft and unexplained discrepancies shall be reported to authorities. Record keeping and licensing of individuals shall be required and maintained.

Oxidizing solids	Category 3
Serious eye damage/eye irritation	Category 2

SIGNAL WORD
Warning

Label elements

Flame over circle
Exclamation mark

Hazard statements
H272 - May intensify fire; oxidizer
H319 - Causes serious eye irritation

Precautionary Statements - Prevention
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
Keep away from clothing and other combustible materials
Take any precaution to avoid mixing with combustibles
Wash hands thoroughly after handling
Wear protective gloves / protective clothing / eye protection / face protection
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
In case of fire: Use extinguishing media as outlined in Section 5 of this Safety Data Sheet to extinguish.
Precautionary Statements - Storage
No storage statements
Precautionary Statements - Disposal
Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

Other hazards which do not result in classification
AUH031 - Contact with acids liberates toxic gas
AUH044 - Risk of explosion if heated under confinement
Poisons Schedule (SUSMP) None allocated

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS No.	Weight-%
Ammonium nitrate	6484-52-2	>98% w/w
Other minor ingredients	-	<2% w/w

4. FIRST AID MEASURES

Description of first aid measures

General advice For advice, contact a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor. Show this safety data sheet to the doctor in attendance.

Emergency telephone number	Poisons Information Center, Australia: 13 11 26 Poisons Information Center, New Zealand: 0800 764 766
Inhalation	Remove to fresh air. If breathing is difficult, (trained personnel should) give oxygen. Immediately give oxygen if victim turns blue (lips, ears, fingernails). Give artificial respiration if victim is not breathing. Get medical attention immediately if symptoms occur.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get medical attention if irritation develops and persists.
Skin contact	Wash off immediately with soap and plenty of water for at least 15 minutes. Nitrates can be absorbed through cut, burnt or broken skin. Call a physician if symptoms occur. Take off contaminated clothing and wash before reuse.
Ingestion	Clean mouth with water and drink afterwards plenty of water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention.
Self-protection of the first aider	Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Use personal protective equipment as required. Avoid contact with skin, eyes, and clothing. Do not breathe dust. See section 8 for more information.

Most important symptoms and effects, both acute and delayed

Symptoms	Irritation. Nitrates can be absorbed through cut, burnt or broken skin.

Indication of any immediate medical attention and special treatment needed

Note to physicians

Treat symptomatically. Treat as for exposure to nitrates. May cause methemoglobinemia. Clinical findings: The smooth muscle relaxant effect of nitrate salts may lead to headache, dizziness and marked hypotension. Cyanosis is clinically detectable when approximately 15% of the haemoglobin has been converted to methaemoglobin (ferric iron).

Symptoms such as headache, dizziness, weakness and dyspnoea occur when methemoglobin concentrations are 30% to 40%; at levels of about 60% stupor, convulsions, coma and respiratory paralysis occur and the blood is a chocolate brown colour. At higher levels death may result. Spectrophotometric analysis can determine the presence and concentration of methemoglobin in the blood.

Treatment:
1. Give 100% oxygen.
2. In cases of (a) ingestion: use gastric lavage, (b) contamination of skin (unburnt or burnt): continue washing to remove salts.
3. Observe blood pressure and treat hypotension if necessary.
4. When methaemoglobin concentrations exceed 40% or when symptoms are present, give methylene blue 1 or 2 mg/kg body weight in a 1% solution by slow intravenous injection. If cyanosis has not been resolved within one hour a second dose of 2 mg/kg body weight may be given. The total dose should not exceed 7 mg/kg body weight as unwanted effects such as dyspnoea, chest pain, vomiting, diarrhoea, mental confusion and cyanosis may occur. Without treatment methaemoglobin levels of 20-30% revert to normal within 3 days.
5. Bed rest is required for methaemoglobin levels in excess of 40%.
6. Continue to monitor and give oxygen for at least two hours after treatment with methylene blue.
7. Consider transfer to centre where haemoperfusion can be performed to remove the nitrates from the blood if the condition of the patient is unstable.

Effects from exposure to decomposition products including nitrogen dioxide (possible decomposition component) can include chest discomfort, shortness of breath and possible pulmonary oedema, the onset of which may be delayed. The exposed person should be

kept under medical surveillance for 24 hours for delayed onset of pulmonary oedema.

Further observation for 2-3 weeks may be required to detect the onset of the inflammatory changes of bronchiolitis fibrosa obliterans.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media

Suitable Extinguishing Media — Water spray. Flood fire area with water from a distance.

Unsuitable extinguishing media — Carbon dioxide (CO2). Dry chemical.
Extinguishing methods based on smothering are ineffective in the case of oxidizing agents.

Specific hazards arising from the chemical

Specific hazards arising from the chemical — WARNING:
Explosion risk in case of fire, especially if contaminated or confined. Molten product may explode from friction, shock or containment. In the case of an intense fire evacuate all personnel to at least 1000 m.

Oxidizing substance. Increases intensity of a fire, even in the absence of oxygen. Ammonium nitrate on its own is not combustible, however, it supports the combustion of other materials. Contact with combustible material may cause fire. Decomposes on heating emitting irritating white fumes and/or brown fumes. Brown fumes indicate the presence of toxic oxides of nitrogen. Containers may explode when heated.

Hazardous combustion products — Nitrogen oxides. Nitrous oxide. Ammonium nitrate fumes. Ammonia. Nitric acid.

Special protective actions for fire-fighters

Special protective equipment for fire-fighters — WARNING:
A major fire may involve a risk of explosion. Evacuate area immediately. Allow fire to burn out. An adjacent detonation may also involve the risk of explosion. Heating can cause decomposition of the material, which can lead to the containers exploding. Confinement of material may result in detonation.

In the case of an intense fire evacuate all personnel to a least 1000 metres. Police and emergency personnel should be notified immediately. If possible remove vehicles and further heat and ignition sources from area. Do not return to areas until the site has completely cooled down.

Decomposes on heating emitting irritating white fumes and/or brown fumes. Brown fumes indicate the presence of toxic oxides of nitrogen. On detection of fire the compartment(s) should be opened up to provide maximum ventilation. Fire-fighters to wear self-contained breathing apparatus and suitable protective clothing if there is a risk of exposure to products of combustion/decomposition. If safe to do so, remove containers from path of fire. If safe to do so, prevent molten material from being confined in drains, pipes, etc. If safe to do so, cool containers and adjacent areas with flooding quantities of water until well after fire is out.

Hazchem code — 1Y

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions — Keep people away from and upwind of spill/leak. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Do not touch damaged containers or

spilled material unless wearing appropriate protective clothing. Evacuate personnel to safe areas. Ensure adequate ventilation. Avoid contact with skin, eyes, and clothing. Use personal protective equipment as required. Wash thoroughly after handling.

Other information

Keep combustibles (wood, paper, oil, etc) away from spilled material. Ventilate the area. Refer to protective measures listed in Sections 7 and 8.

In the case of a transport accident notify the Police, Regulatory Authorities and Orica Australia Pty Ltd (Telephone: 1800 033 111 -- 24 hour service) and/or Orica New Zealand Ltd (Telephone: 0800 734 607 -- 24 hour service) or Orica International (Telephone: +61 3 9663 2130 -- 24 hour service Australia).

For emergency responders

Use personal protection recommended in Section 8.

Environmental precautions

Environmental precautions

Prevent entry into waterways, sewers, basements or confined areas. Do not flush into surface water or sanitary sewer system. Prevent product from entering drains. Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

Methods for containment

Prevent further leakage or spillage if safe to do so. Keep ammonium nitrate out of confined areas, including sewers, due to risk of explosion.

Methods for cleaning up

Clean up spillages immediately. Contain - prevent run off into drains and waterways. Wear protective equipment to prevent skin and eye contact and breathing in dust. Sweep or vacuum up, but avoid generating dust. Collect in properly labelled containers or drums for disposal (loose fitting lids). Use clean shovel/equipment. DO NOT return spilled material to original container. Ensure that contaminated material (clothing, pallets) is thoroughly washed.

This material is classified as a Security Sensitive Ammonium Nitrate (SSAN). Spillage recovery needs to be appropriately documented and material accurately accounted for.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling

Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation. Avoid generation of dust. Do not breathe dust. Avoid contact with skin, eyes, and clothing. Take off contaminated clothing and wash before reuse. Use personal protection equipment. Wash thoroughly after handling. Keep out of reach of children. Handle with care. Do not mix with other chemicals.

General hygiene considerations

Remove and wash contaminated clothing and gloves, including the inside, before re-use. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes, and clothing. Wear suitable gloves and eye/face protection.

Conditions for safe storage, including any incompatibilities

Storage Conditions

Store in a cool, dry, well ventilated place and out of direct sunlight. Store away from sources of heat or ignition. Store away from combustibles including organic materials, reducing agents, metal powders, strong acids, nitrites, chlorates, chlorides and permanganates. Keep containers closed when not in use - check regularly for spills.

Concrete floors are recommended for storage. If ammonium nitrate is to be stored in bulk, the surface must be treated so that it is resistant to attack. Bulk ammonium nitrate should not be stored on a bituminous floor. Floors drains, recesses or other areas of possible confinement should be eliminated to prevent entrapment/confinement of molten (flowing)

ammonium nitrate during a fire.

This product when stored in a confined, unventilated space/hold can give off ammonia or other odour and lead to the depletion of oxygen within this space and other confined spaces. It is therefore essential that ventilation is carried out prior to entry.

Ensure ammonium nitrate is stored securely and in accordance with regulations/controls issued by relevant authority. The secure storage of ammonium nitrate within Australia includes but is not limited to the use of site security plans, locking the facility/container with physical restraining items, validation and record keeping of all stock, and where deemed necessary through a risk management approach constant surveillance.

Incompatible materials

Ammonium nitrate is incompatible with, and must be stored away from, tetranitromethane, dichloroisocyanuric acid, trichloroisocyanuric acid, bromates, chlorates, chlorites, hypochlorites, perchlorates, chloroisocyanurates, nitrites, powdered metals, strong acids, reducing agents, permanganates, combustible materials, brass, bronze, copper, zinc. Incompatible with combustible materials.

Poisons Schedule (SUSMP)

None allocated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Limits

No value assigned for this specific material by Safe Work Australia. However, Workplace Exposure Standard(s) for dusts and decomposition product(s):

Dusts not otherwise classified: 8hr TWA = 10 mg/m^3
Nitrogen dioxide: 8hr TWA = 5.6 mg/m^3 (3 ppm), 15 min STEL = 9.4 mg/m^3 (5 ppm)

As published by Safe Work Australia Workplace Exposure Standards for Airborne Contaminants.

TWA - The time-weighted average airborne concentration of a particular substance when calculated over an eight-hour working day, for a five-day working week.

STEL (Short Term Exposure Limit) - the airborne concentration of a particular substance calculated as a time-weighted average over 15 minutes, which should not be exceeded at any time during a normal eight hour work day. According to current knowledge this concentration should neither impair the health of, nor cause undue discomfort to, nearly all workers.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Appropriate engineering controls

Engineering controls

Apply technical measures to comply with the occupational exposure limits.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

Individual protection measures, such as personal protective equipment

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, SAFETY SHOES, CHEMICAL GOGGLES, GLOVES, DUST MASK.

Eye/face protection	Goggles.
Skin and body protection	Wear suitable protective clothing. Overalls. Boots.
Hand protection	Impervious gloves.
Respiratory protection	If determined by a risk assessment an inhalation risk exists, wear a dust mask/respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716.
Environmental exposure controls	No information available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Solid
Appearance	Granules or Prills
Color	White to Off-white
Odor	Negligible
Odor threshold	No information available.

Property	Values	Remarks • Method
pH	4.5-5.2 (10% solution, 20°C)	
pH (as aqueous solution)	No data available	None known
Melting point / freezing point	160-169°C	
Boiling point / boiling range	Decomposes	None known
Flash point	Not applicable	
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	Not applicable	
Lower flammability or explosive limits	Not applicable	
Vapor pressure	Negligible	None known
Vapor density	No data available	None known
Relative density	0.72-0.78 g/cm³ (bulk density)	
Water solubility	Soluble in water	
Solubility(ies)	No data available	None known
Partition coefficient	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	ca. 210°C	
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known

Other information

10. STABILITY AND REACTIVITY

Reactivity

Reactivity Powerful oxidizing agent. Oxidizing agents may cause vigorous reactions. Contact with acids liberates toxic gas. Hygroscopic: absorbs moisture or water from surrounding air.

Chemical stability

Stability Stable under normal ambient and anticipated storage and handling conditions when free of contaminates including inorganic and organic materials. May explode under confinement and high temperature, but not readily detonated. May explode due to nearby detonations.

Explosion data

Sensitivity to mechanical impact Not available.

Sensitivity to static discharge Not available.

Possibility of hazardous reactions

Possibility of hazardous reactions Oxidizing agent. Supports combustion of other materials and increases intensity of a fire. Will react with organic materials, and reducing agents. Reacts with nitrites, chlorides, chlorates, permanganates, metal powders. When mixed with strong acids, and occasionally during blasting, it produces an irritating toxic brown gas, mostly of nitrogen dioxide. When molten (such as in a fire situation) may decompose violently due to shock or pressure.

Contamination with chlorine bleaches, pool chlorine, hypochlorites may result in the formation of explosive nitrogen trichloride. Heating can cause expansion or decomposition of the material, which can lead to the containers exploding.

Conditions to avoid

Conditions to avoid Heat, flames and sparks. Dust formation. Moisture. Incompatible materials. Avoid contact with combustible substances. Avoid contact with other chemicals.

Incompatible materials

Incompatible materials Ammonium nitrate is incompatible with, and must be stored away from, tetranitromethane, dichloroisocyanuric acid, trichloroisocyanuric acid, bromates, chlorates, chlorites, hypochlorites, perchlorates, chloroisocyanurates, nitrites, powdered metals, strong acids, reducing agents, permanganates, combustible materials, brass, bronze, copper, zinc. Incompatible with combustible materials.

Hazardous decomposition products

Hazardous decomposition products Nitrogen oxides. Nitrous oxide. Ammonium nitrate fumes. Ammonia. Nitric acid. When heated to decomposition (unconfined) ammonium nitrate produces nitrous oxide, white ammonium nitrate fumes and water. When mixed with strong acids, and occasionally during blasting, it produces an irritating toxic brown gas, mostly nitrogen dioxide. When molten it may decompose violently due to shock or pressure.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Information on likely routes of exposure

Product Information No adverse health effects expected if the chemical is handled in accordance with this Safety Data Sheet and the chemical label. Symptoms or effects that may arise if the chemical is mishandled and overexposure occurs are:

Inhalation Breathing in dust may result in respiratory irritation. Blasting may produce a toxic brown gas of nitrogen dioxide. Inhalation of the gas may result in chest discomfort, shortness of breath and possible pulmonary oedema, the onset of which may be delayed. Absorption of ammonium nitrate by inhalation, ingestion or through burnt or broken skin may cause dilation of blood vessels by direct smooth muscle relaxation and may also cause methaemoglobinaemia. May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination.

Eye contact Causes serious eye irritation. Dust contact with the eyes can lead to mechanical irritation.

Skin contact May cause irritation. Nitrates can be absorbed through cut, burnt or broken skin.

Ingestion Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Ingestion of larger amounts may cause defects to the central nervous system (e.g. dizziness, headache). May cause a lowering of blood pressure (hypotension).

Symptoms Irritation.

Numerical measures of toxicity - Product Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Ammonium nitrate	= 2217 mg/kg (Rat)	-	> 88.8 mg/L (Rat) 4 h

See section 16 for terms and abbreviations

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation No information available.

Serious eye damage/eye irritation Causes serious eye irritation.

Respiratory or skin sensitization Not classified.

Germ cell mutagenicity No information available.

Carcinogenicity No information available.

Reproductive toxicity No information available.

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Aspiration hazard No information available.

Chronic effects: NITRATES: Absorption of nitrates by ingestion, inhalation or through burnt or broken skin may cause dilation of the blood vessels by direct smooth muscle relaxation with a subsequent lowering of blood pressure and may also cause breathing difficulties, blueness of the skin (cyanosis) and methaemoglobinaemia. In humans and animals methaemoglobinaemia has occurred under untreated circumstances following the ingestion of nitrates.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity

Keep out of waterways.
Ammonium nitrate is a plant nutrient. Large scale contamination may kill vegetation and cause poisoning in livestock and poultry.

Ammonium nitrate was evaluated at 5, 10, 25 and 50 mg (NH4+)/L. The fertility of Daphnia magna was decreased at 50 mg/L. Post embryonic growth of crustacea was impaired at 10, 25 and 50 mg/L. Can stimulate weed and algal growth in static surface waters.

Considered to be of low toxicity to aquatic life.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Ammonium nitrate	-	LC50: 65 - 85mg/L (48h, Cyprinus carpio)	-	-

Persistence and degradability

Persistence and degradability Biodegradable.

Bioaccumulative potential

Bioaccumulation Bioaccumulation is not expected.

Chemical name	Partition coefficient
Ammonium nitrate	-3.1

Mobility

Mobility in soil Water soluble. Expected to be mobile in soil.

Other adverse effects

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation. Waste ammonium nitrate may be disposed of as a fertiliser, but this method of disposal must be agreed with the authorities.

As this material is classified as a Security Sensitive Ammonium Nitrate (SSAN) disposal of material needs to be appropriately documented and material accurately accounted for.

Contaminated packaging Dispose of contents/containers in accordance with local regulations. Empty containers must be either rendered totally unusable, or if to be recycled for use, decontaminated by rinsing thoroughly with water. Rinsing water needs to be disposed of carefully.

14. TRANSPORT INFORMATION

ADG

Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for Transport by Road and Rail; DANGEROUS GOODS.

UN number 1942
Proper shipping name AMMONIUM NITRATE
Hazard class 5.1
Packing group III
Hazchem code 1Y

IATA

UN number	1942
UN proper shipping name	AMMONIUM NITRATE
Transport hazard class(es)	5.1
Packing group	III

IMDG

UN number	1942
UN proper shipping name	AMMONIUM NITRATE
Transport hazard class(es)	5.1
Packing group	III
IMDG EMS Fire	F-H
IMDG EMS Spill	S-Q

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations

Australia
Classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG).

Classified as a hazardous chemical in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS).

Various regulations/controls/authorisations/licences may apply governing the manufacture, importation, exportation, use, handling, storage, sale/supply, transport and disposal of ammonium nitrate. Ammonium nitrate in Australia is considered a security sensitive material and loss, theft, attempted theft and unexplained discrepancies shall be reported to authorities. Record keeping and licensing of individuals shall be required and maintained.

See section 8 for national exposure control parameters

Poisons Schedule (SUSMP) None allocated

Major hazard (accident/incident planning) regulation
Verify that license requirements are met

Hazardous chemical	Threshold quantity (T)
Oxidizing material listed in Appendix A to the ADG Code	50

International Inventories

AIIC	All the constituents of this material are listed on the Australian Inventory of Industrial Chemicals.
NZIoC	All the constituents of this material are listed on the New Zealand Inventory of Chemicals.

Legend:
- Australian Inventory of Industrial Chemicals

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer Not applicable

The Stockholm Convention on Persistent Organic Pollutants Not applicable

The Rotterdam Convention Not applicable

16. OTHER INFORMATION

`Registry of Toxic Effects of Chemical Substances'. Ed. D. Sweet, US Dept. of Health & Human Services: Cincinatti, 2021

Reason(s) For Issue: 5 Yearly Revised Primary SDS

Issuing Date: 09-Nov-2021

This Safety Data Sheet has been prepared by Ixom Operations Pty Ltd (Toxicology and SDS Services).

Revision Note:
The symbol (*) in the margin of this SDS indicates that this line has been revised.

Key or legend to abbreviations and acronyms used in the safety data sheet
Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
C	Carcinogen		

Key literature references and sources for data used to compile the SDS

EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australian Industrial Chemicals Introduction Scheme (AICIS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine's PubMed database (NLM PUBMED)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set
RTECS (Registry of Toxic Effects of Chemical Substances)
World Health Organization

Disclaimer
This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since The Supplier cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Supplier representative or The Supplier at the contact details on page 1.

The Supplier's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.

End of Safety Data Sheet

AN Prill

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations And According To The Hazardous Products Regulation (February 11, 2015).

Revision Date: 11/20/2018 Date of Issue: 03/28/2014 Supersedes Date: 03/15/2011 Version: 2.0

SECTION 1: IDENTIFICATION

Product Identifier

Product Form: Substance

Product Name: AN Prill

CAS-No.: 6484-52-2

Product Code: 40002

Intended Use of the Product

Manufacture of Explosives.

Name, Address, and Telephone of the Responsible Party

Canada:

Orica Canada Inc.
301 Rue Hotel-de-Ville
Brownsburg-Chatham, QC
J8G 3B5
For SDS Requests:
1-855-26-ORICA (1-855-266-7422)
sds.na@orica.com
www.oricaminingservices.com

USA:

Orica USA Inc.
33101 E. Quincy Avenue
Watkins, CO 80137-9406
For SDS Requests: 1-855-26-ORICA (1-855-266-7422)
sds.na@orica.com

Mexico:

Orica Mexico Inc.
Boulevard Harold R. Pape No. 350
Colonia Telefonistas
Monclova, Coahuila.
C.P. 25758
For SDS Requests: 1-855-26-ORICA (1-855-266-7422)
sds.na@orica.com

Emergency Telephone Number

Emergency Number : **Canada:** 1-877-561-3636 (Orica Transportation Emergency Response)
USA: 1-800-424-9300 (CHEMTREC)
Mexico: 01-800- 002-1400

FOR CHEMICAL EMERGENCIES (24 HOUR) INVOLVING TRANSPORTATION, SPILL, LEAK, RELEASE, FIRE OR ACCIDENTS: **IN CANADA CALL:** THE ORICA TRANSPORTATION EMERGENCY RESPONSE SYSTEM AT **1-877-561-3636. IN THE U.S. CALL: CHEMTREC 1-800-424-9300. IN MEXICO CALL:** 01-800- 002-1400. **IN THE U.S.:** FOR LOST, STOLEN, OR MISPLACED EXPLOSIVES CALL: BATF **1-800-800-3855.** FORM ATF F 5400.5 MUST BE COMPLETED AND LOCAL AUTHORITIES (STATE/MUNICIPAL POLICE, ETC.) MUST BE ADVISED.

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

GHS-US/CA Classification

Ox. Sol. 3	H272
Eye Irrit. 2A	H319

Full text of hazard classes and H-statements : see section 16

Label Elements

GHS-US/CA Labeling

Hazard Pictograms (GHS-US/CA) :

GHS03

GHS07

Signal Word (GHS-US/CA) : Warning

Hazard Statements (GHS-US/CA) : H272 - May intensify fire; oxidizer.
H319 - Causes serious eye irritation.

Precautionary Statements (GHS-US/CA) : P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P220 - Keep away from clothing and other combustible materials.
P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.
P280 - Wear protective gloves, protective clothing, and eye protection.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P370+P378 - In case of fire: Use appropriate media (see section 5) to extinguish.
P501 - Dispose of contents/container in accordance with local, regional, national, territorial, provincial, and international regulations.

Other Hazards

Exposure may aggravate pre-existing eye, skin, or respiratory conditions. Overexposure may cause methemoglobinemia. Initial manifestation of methemoglobinemia is cyanosis, characterized by navy lips, tongue and mucous membranes, with skin color being slate grey. Further manifestation is characterized by headache, weakness, dyspnea, dizziness, stupor, respiratory distress and death due to anoxia. If ingested, nitrates may be reduced to nitrites by bacteria in the digestive tract. Signs and symptoms of nitrite poisoning include methemoglobinemia, nausea, dizziness, increased heart rate, hypotension, fainting and, possibly shock.

Unknown Acute Toxicity (GHS-US/CA)

No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Name : AN Prill
CAS-No. : 6484-52-2

Name	Product Identifier	% *
Ammonium nitrate	(CAS-No.) 6484-52-2	100

*Percentages are listed in weight by weight percentage (w/w%) for liquid and solid ingredients. Gas ingredients are listed in volume by volume percentage (v/v%).

SECTION 4: FIRST AID MEASURES

Description of First-aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

Inhalation: When symptoms occur: go into open air and ventilate suspected area. Obtain medical attention if breathing difficulty persists.

Skin Contact: Immediately drench affected area with water for at least 15 minutes. Immediately remove contaminated clothing. Get medical advice/attention.

Eye Contact: Immediately rinse with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists.

Ingestion: Rinse mouth. Do NOT induce vomiting. Obtain medical attention.

Most Important Symptoms and Effects Both Acute and Delayed

General: Causes serious eye irritation. Overexposure to this material may result in methemoglobinemia. Methemoglobinemia decreases the blood's ability to carry oxygen and results in symptoms such as dizziness, drowsiness, headache, shortness of breath, blue skin and lips, rapid heart rate, unconsciousness, and possibly death.

Inhalation: Prolonged exposure may cause irritation.

Skin Contact: Prolonged exposure may cause skin irritation.

Eye Contact: Contact causes severe irritation with redness and swelling of the conjunctiva.

Ingestion: Ingestion may cause adverse effects. Overexposure to this material may result in methemoglobinemia.

Chronic Symptoms: None known.

Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label at hand. Hot material burns skin, allowing rapid absorption through the skin and toxic effects can occur quite rapidly. Causes methemoglobinemia – emergency response should treat appropriately, such as by intravenous administration of methylene blue in addition to thermal burn treatment.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: WARNING. DO NOT FIGHT AMMONIUM NITRATE FIRES. Refer to ERG Guide 140. Water supplies, fire hydrants, or other suitable fire control devices such as portable fire extinguishers meeting the standards prescribed in IME SLP-14 should be readily identified for immediate use for small fires that have not engaged TGAN (Technical Grade Ammonium Nitrate) at the site. Flood burning ammonium nitrate with large volumes of low pressure water.

Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire. Attempts to smother a fire involving this product will be ineffective as it is its own oxygen source. Smothering this product could lead to decomposition and explosion. This product is more sensitive to explosion if contaminated with organic or oxidizable material or if heated while confined. Unless the mass of product on fire is flooded with water, re-ignition is possible. Dry chemical, foams, steam and smothering devices are not effective and can lead to possible explosion and should not be used to fight a fire near explosives. Any extinguishing media other than water may be ineffective, as this product is its own oxygen source.

Special Hazards Arising From the Substance or Mixture

Fire Hazard: May intensify fire; oxidizer.

Explosion Hazard: Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.

Reactivity: Oxidizer: increases the burning rate of combustible materials. Ammonium nitrate may become unstable at temperatures exceeding 204.4°C (400°F). Hazardous reactions may occur on contact with certain chemicals. Refer to incompatible materials.

Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire. Evacuate area in all directions for 1 mile or more if ammonium nitrate is involved in a fire due to unknown conditions at a facility during the emergency might not be known. Only fires which are in the initial (incipient) stage or those involving minimal amounts of ammonium nitrate should be attacked using manual fire extinguishing methods (fire extinguishers, hose streams, etc.) that require a human operator. If a fire in an area where ammonium nitrate is stored or in vehicles transporting ammonium nitrate progresses beyond the incipient stage or involves the ammonium nitrate, evacuation is REQUIRED. All responders assisting in an evacuation who must be located downwind of a fire involving ammonium nitrate should wear self-contained breathing apparatus.

Firefighting Instructions: WARNING. DO NOT FIGHT AMMONIUM NITRATE FIRES. Refer to ERG Guide 140. Do not use any extinguishing agent other than water; through fixed extinguishing system (sprinklers) as long as people need not be present for the system to operate.

Protection During Firefighting: When controlling fire before involvement of TGAN, fire-fighters should wear positive pressure self-containing breathing apparatus (SCBA) and full turnout gear.

Hazardous Combustion Products: Nitrogen oxides. Ammonia. Ammonium nitrate fumes.

Reference to Other Sections

Refer to Section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Avoid all contact with skin, eyes, or clothing. Avoid breathing dust. Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. Keep away from combustible material. Use only non-sparking tools.

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protective equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Ventilate area. Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit.

Environmental Precautions

Prevent entry to sewers and public waters.

Methods and Materials for Containment and Cleaning Up

For Containment: Contain solid spills with appropriate barriers and prevent migration and entry into sewers or streams. Use only non-sparking tools.

Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely. Recover the product by vacuuming, shoveling or sweeping. Do not take up in combustible material such as: saw dust or cellulosic material. Recover or recycle if possible. Use only non-sparking tools. Transfer spilled material to a suitable container for disposal. Contact competent authorities after a spill.

Reference to Other Sections

See Section 8 for exposure controls and personal protection and Section 13 for disposal considerations.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards When Processed: May cause or intensify fire; oxidizer. Avoid heating TGAN (Technical Grade Ammonium Nitrate) in a confined space above 170 °C (338 °F). Processes involving TGAN should be designed to avoid this possibility. Avoid localized heating of TGAN, potentially leading to development of high temperature areas. Owner/operators should ensure that facilities have implemented a "hot work" program consistent with OSHA requirements at 29 CFR 1910.252. Avoid the introduction of gasses in hot, high strength AN (Ammonium Nitrate) solutions. Ammonium nitrate does not burn by itself and thus needs to be kept separate from combustible materials. Ammonium nitrate is an oxidizer and will significantly increase the burning rate of combustible materials. When in confinement and in the presence of a strong detonating source, the material can explode when subject to sudden shock, pressure, or high temperatures.

Precautions for Safe Handling: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Avoid breathing vapors, mist, spray. Avoid contact with skin, eyes and clothing. Keep away from extremely high or low temperatures, ignition sources, and incompatible materials. - No smoking.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Proper grounding procedures to avoid static electricity should be followed. All TGAN (Technical Grade Ammonium Nitrate) storage sites should comply with 29 CFR 1910.109(i). At sites where compliance with any provision is impracticable, the owner/operator should demonstrate that an equivalent level of safety is maintained through alternative means. The owner/operator must comply with applicable regulations promulgated by DHS at 6 CFR 27, and USCG at 33 CFR 105. The owner/operator should conduct a thorough site vulnerability assessment to identify gaps in TGAN security and develop and implement appropriate security control measures that will mitigate these security gaps. Considerations should be given to deter, to delay, to detect, and to respond to the identified potential security issues. Owner/operators of TGAN storage sites should ensure that facilities are in full compliance with applicable requirements of the Emergency Planning and Community Right to Know Act. 42 U.S.C. §§ 11001 – 11050.

Storage Conditions: Keep container closed when not in use. Store in a dry, cool and well-ventilated place. Keep/Store away from direct sunlight, extremely high or low temperatures and incompatible materials. Keep in fireproof place.

Incompatible Materials: Avoid contamination of TGAN with combustible materials or organic substances including but not limited to; (i) organic chemicals, acids, or other corrosive materials, (ii) compressed flammable gases, (iii) flammable and combustible materials, solids or liquids, and (iv) other contaminating substances such as wood chips, organic materials, chlorides, phosphorus, finely divided metals, charcoals, diesel fuels and oils, sulfur. Avoid contamination of TGAN with inorganic materials that may contribute to its sensitivity to explosion, including chlorides and some metals, such as chromium, copper, copper alloys such as brass or bronze, cobalt, and nickel, and finely divided or powdered metals. Halogens.

Storage Temperature: < 210 °C (< 410 °F)

Special Rules on Packaging: Bins and structural materials/members in immediate contact with TGAN (Technical Grade Ammonium Nitrate) should be constructed of non-combustible materials. Bins should be kept padlocked at all times, except to load or unload TGAN. The contents of each bin should be clearly identified by the proper shipping name of the material, "AMMONIUM NITRATE" written in 2-inch high, capital letters below the NFPA fire diamond.

Specific End Use(s)

Manufacture of Explosives.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

For substances listed in section 3 that are not listed here, there are no established Exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), AIHA (WEEL), NIOSH (REL), OSHA (PEL), Canadian provincial governments, or the Mexican government.

Particulates not otherwise classified (PNOC)		
USA ACGIH	ACGIH TWA (mg/m³)	3 mg/m³ Respirable fraction 10 mg/m³ Total Dust
USA OSHA	OSHA PEL (TWA) (mg/m³)	5 mg/m³ Respirable fraction 15 mg/m³ Total Dust
Alberta	OEL TWA (mg/m³)	10 mg/m³ (total) 3 mg/m³ (respirable)
British Columbia	OEL TWA (mg/m³)	10 mg/m³ (nuisance dust-total dust) 3 mg/m³ (nuisance dust-respirable fraction)
Manitoba	OEL TWA (mg/m³)	10 mg/m³ (inhalable particles, recommended) 3 mg/m³ (respirable particles, recommended)
New Brunswick	OEL TWA (mg/m³)	3 mg/m³ (particulate matter containing no Asbestos and <1% Crystalline silica, respirable fraction) 10 mg/m³ (particulate matter containing no Asbestos and <1% Crystalline silica, inhalable fraction)
Newfoundland & Labrador	OEL TWA (mg/m³)	10 mg/m³ (inhalable particles, recommended) 3 mg/m³ (respirable particles, recommended)
Nova Scotia	OEL TWA (mg/m³)	10 mg/m³ (inhalable particles, recommended) 3 mg/m³ (respirable particles, recommended)
Nunavut	OEL STEL (mg/m³)	20 mg/m³ (insoluble or poorly soluble-inhalable fraction) 6 mg/m³ (insoluble or poorly soluble-respirable fraction)
Nunavut	OEL TWA (mg/m³)	10 mg/m³ (insoluble or poorly soluble-inhalable fraction) 3 mg/m³ (insoluble or poorly soluble-respirable fraction)
Northwest Territories	OEL STEL (mg/m³)	20 mg/m³ (insoluble or poorly soluble-inhalable fraction) 6 mg/m³ (insoluble or poorly soluble-respirable fraction)
Northwest Territories	OEL TWA (mg/m³)	10 mg/m³ (insoluble or poorly soluble-inhalable fraction) 3 mg/m³ (insoluble or poorly soluble-respirable fraction)
Ontario	OEL TWA (mg/m³)	10 mg/m³ (inhalable) 3 mg/m³ (respirable)
Prince Edward Island	OEL TWA (mg/m³)	10 mg/m³ (inhalable particles, recommended) 3 mg/m³ (respirable particles, recommended)
Québec	VEMP (mg/m³)	10 mg/m³ (including dust, inert or nuisance particulates-total dust)
Saskatchewan	OEL STEL (mg/m³)	20 mg/m³ (insoluble or poorly soluble-inhalable fraction) 6 mg/m³ (insoluble or poorly soluble-respirable fraction)
Saskatchewan	OEL TWA (mg/m³)	10 mg/m³ (insoluble or poorly soluble-inhalable fraction) 3 mg/m³ (insoluble or poorly soluble-respirable fraction)

Exposure Controls

Appropriate Engineering Controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation, especially in confined areas. Gas detectors should be used when flammable gases or vapors may be released. Proper grounding procedures to avoid static electricity should be followed. Ensure all national/local regulations are observed.

Personal Protective Equipment: Gloves. Protective clothing. Protective goggles.

Materials for Protective Clothing: Chemically resistant materials and fabrics. Wear fire/flame resistant/retardant clothing.

Hand Protection: Wear protective gloves.

Eye and Face Protection: Chemical safety goggles or safety glasses with side shield.

Skin and Body Protection: Wear suitable protective clothing.

Respiratory Protection: If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn. In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear approved respiratory protection.

Other Information: When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	:	Solid
Appearance	:	Grey or white prills
Odor	:	Odorless
Odor Threshold	:	Not available
pH	:	5 - 6 (0.1M solution in water)
Evaporation Rate	:	Not available
Melting Point	:	160 - 165 °C (320 - 329 °F)
Freezing Point	:	Not available
Boiling Point	:	Not available
Flash Point	:	Not available
Auto-ignition Temperature	:	Not available
Decomposition Temperature	:	Spontaneously decomposes at 210 °C (410 °F)
Flammability (solid, gas)	:	Not available
Lower Flammable Limit	:	Not available
Upper Flammable Limit	:	Not available
Vapor Pressure	:	0 mm Hg @20 °C (68 °F)
Relative Vapor Density at 20°C	:	Not available
Relative Density	:	1.72 (per prill)
Density	:	0.8 - 0.84 g/cm³
Specific Gravity	:	Not available
Solubility	:	76 g/ml, Soluble in alkalis, alcohols, acetone. Insoluble in ether.
Partition Coefficient: N-Octanol/Water	:	Not available
Viscosity	:	Not available
Oxidizing Properties	:	May intensify fire; oxidizer.

SECTION 10: STABILITY AND REACTIVITY

Reactivity: Oxidizer: increases the burning rate of combustible materials. Ammonium nitrate may become unstable at temperatures exceeding 204.4°C (400°F). Hazardous reactions may occur on contact with certain chemicals. Refer to incompatible materials.

Chemical Stability: Stable under normal conditions. May cause fire or explosion; strong oxidizer.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: Direct sunlight, extremely high or low temperatures, ignition sources, combustible materials, incompatible materials. Avoid shock and friction.

Incompatible Materials: Avoid contamination of TGAN with combustible materials or organic substances including but not limited to; (i) organic chemicals, acids, or other corrosive materials, (ii) compressed flammable gases, (iii) flammable and combustible materials, solids or liquids, and (iv) other contaminating substances such as wood chips, organic materials, chlorides, phosphorus, finely divided metals, charcoals, diesel fuels and oils, sulfur. Avoid contamination of TGAN with inorganic materials that may contribute to its sensitivity to explosion, including chlorides and some metals, such as chromium, copper, copper alloys such as brass or bronze, cobalt, and nickel, and finely divided or powdered metals. Halogens.

Hazardous Decomposition Products: Under normal conditions of storage and use, hazardous decomposition products should not be produced. Thermal decomposition generates toxic vapors.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on Toxicological Effects - Product

Acute Toxicity (Oral): Not classified

Acute Toxicity (Dermal): Not classified

Acute Toxicity (Inhalation): Not classified
LD50 and LC50 Data: Not available
Skin Corrosion/Irritation: Not classified
pH: 5 - 6 (0.1M solution in water)
Eye Damage/Irritation: Causes serious eye irritation.
pH: 5 - 6 (0.1M solution in water)
Respiratory or Skin Sensitization: Not classified
Germ Cell Mutagenicity: Not classified
Carcinogenicity: Not classified
Specific Target Organ Toxicity (Repeated Exposure): Not classified
Reproductive Toxicity: Not classified
Specific Target Organ Toxicity (Single Exposure): Not classified
Aspiration Hazard: Not classified
Symptoms/Injuries After Inhalation: Prolonged exposure may cause irritation.
Symptoms/Injuries After Skin Contact: Prolonged exposure may cause skin irritation.
Symptoms/Injuries After Eye Contact: Contact causes severe irritation with redness and swelling of the conjunctiva.
Symptoms/Injuries After Ingestion: Ingestion may cause adverse effects.
Chronic Symptoms: None known.

Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Ammonium nitrate (6484-52-2)	
LD50 Oral Rat	2217 mg/kg
LC50 Inhalation Rat	> 88.8 mg/l/4h

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

Ecology - General: Not classified.

Ammonium nitrate (6484-52-2)	
LC50 Fish 1	542 mg/l
EC50 Daphnia 1	555 mg/l

Persistence and Degradability

AN Prill (6484-52-2)	
Persistence and Degradability	Not established.

Bioaccumulative Potential

AN Prill (6484-52-2)	
Bioaccumulative Potential	Not established.

Ammonium nitrate (6484-52-2)	
BCF Fish 1	(no bioaccumulation expected)
Log Pow	-3.1 (at 25 °C)

Mobility in Soil Not available

Other Adverse Effects

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Destroy and dispose of in accordance with applicable local, state, provincial, territorial, federal and international regulations. Consult with an Orica technical representative.
Additional Information: Container may remain hazardous when empty. Continue to observe all precautions.
Ecology - Waste Materials: Avoid release to the environment.

SECTION 14: TRANSPORT INFORMATION

The shipping description(s) stated herein were prepared in accordance with certain assumptions at the time the SDS was authored, and can vary based on a number of variables that may or may not have been known at the time the SDS was issued.

In Accordance with DOT

Proper Shipping Name : AMMONIUM NITRATE
Hazard Class : 5.1
Identification Number : UN1942
Label Codes : 5.1
Packing Group : III
ERG Number : 140

In Accordance with IMDG

Proper Shipping Name : AMMONIUM NITRATE
Hazard Class : 5.1
Identification Number : UN1942
Label Codes : 5.1
Packing Group : III
EmS-No. (Fire) : F-H
EmS-No. (Spillage) : S-Q

In Accordance with IATA

Proper Shipping Name : AMMONIUM NITRATE
Identification Number : 5.1
Hazard Class : UN1942
Label Codes : 5.1
Packing Group : III
ERG Code (IATA) : 5L

In Accordance with TDG

Proper Shipping Name : AMMONIUM NITRATE
Hazard Class : 5.1
Identification Number : UN1942
Label Codes : 5.1
Packing Group : III

SECTION 15: REGULATORY INFORMATION

US Federal Regulations

AN Prill (6484-52-2)	
SARA Section 311/312 Hazard Classes	Physical hazard - Oxidizer (liquid, solid or gas) Health hazard - Serious eye damage or eye irritation

Ammonium nitrate (6484-52-2)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

US State Regulations

Ammonium nitrate (6484-52-2)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

Canadian Regulations

Ammonium nitrate (6484-52-2)
Listed on the Canadian DSL (Domestic Substances List)

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Date of Preparation or Latest Revision : 11/20/2018

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200 and Canada's Hazardous Products Regulations (HPR) SOR/2015-17.

GHS Full Text Phrases:

Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Ox. Sol. 3	Oxidizing solids Category 3
H272	May intensify fire; oxidizer
H319	Causes serious eye irritation

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NA GHS SDS 2015 (Can, US, Mex)

TECHNICAL DATA SHEET

NITROGEN PRODUCTS

AMMONIUM NITRATE

Industrial Grade

Properties

SDS #1020

AMMONIUM NITRATE % by weight typical	98.8–99.8
Water % by weight maximum	< 0.15
Bulk Density as manufactured	
g/cc	0.78 to 0.82
lbs/cuft	48.5 to 51.0
Bulk Density as received typical	
g/cc	0.80 to 0.86
lbs/cuft	50.0 to 53.0
Oil Absorption % by weight	> 6.0
Size Distribution as manufactured % by weight typical	U.S. Standard 6–20 > 98%
Total Organics % by weight	< 0.2%

Hazardous Shipping Description

- AMMONIUM NITRATE 5.1 UN1942 III or
- AMMONIUM NITRATE Fertilizer 5.1 UN2067 III

PRODUCT DESCRIPTION

Industrial Grade AMMONIUM NITRATE prills are specifically designed to be used as a solid oxidizer ingredient for explosive compositions such as ANFO, WR ANFO, Heavy ANFO emulsion and watergels. They are small-sized, low-moisture content, non-setting, porous spheres (prills) which are a lower density than agricultural grade AMMONIUM NITRATE used for fertilizer. The particle density of the prills is such that, when liquid fuel is properly applied to and mixed with them, the prills absorb the fuel uniformly which enhances reactivity. AMMONIUM NITRATE is highly soluble in water and does not precipitate with any common chemical. Industrial Grade AMMONIUM NITRATE is available in bulk by railcar or truck.

APPLICATION RECOMMENDATIONS

- Industrial Grade AMMONIUM NITRATE is used extensively in the mining industry and is intentionally made very porous to allow for the rapid uptake of liquid fuel oil. The prill is coated with a trace amount of waxy anti-caking material to enhance flowability and handling characteristics. Consult your Dyno Nobel representative for additional details, and information if needed.
- AMMONIUM NITRATE will decompose into ammonia and nitric acid fumes at 350°F.
- ALWAYS wash vessels containing AMMONIUM NITRATE thoroughly before attempting repairs requiring hot work.
- ALWAYS check with the bulk emulsion explosive or matrix manufacturer to ensure compatibility before using ANFO containing Industrial Grade prilled AMMONIUM NITRATE in Heavy ANFO or repumpable emulsion/ ANFO blends.
- ALWAYS keep doors, hatches and lids closed when not in use. Inspect all tanks and bins regularly for cracks and leaks.
- Industrial Grade prilled AMMONIUM NITRATE is susceptible to breakage from moisture, humidity, heat, temperature cycling, pressure and pneumatic or mechanical handling. Fines can result producing possible caking or lumping as well as decreased product flow characteristics / increased bulk density.

Product Disclaimer: Please see reverse side.

DYNO® Dyno Nobel

TECHNICAL DATA SHEET

AMMONIUM NITRATE

Industrial Grade

APPLICATION RECOMMENDATIONS - continued

- ALWAYS design storage and process facilities to minimize repeated pneumatic and mechanical handling. Whenever possible, choose mechanical rather than dispersed phase pneumatic methods to off-load or otherwise transfer AMMONIUM NITRATE prills.
- ALWAYS use an air transfer pressure of 7–8 psig to maintain prill quality where bulk deliveries are transferred to storage by pneumatic conveyance.
- NEVER exceed 8–10 psig air pressure in dispersed phase pneumatic transfer.
- ALWAYS use equipment especially designed to blend and load ANFO, Heavy ANFO or repumpable emulsion / ANFO blends. Bulk delivery equipment should be calibrated periodically to ensure quality.
- ALWAYS calibrate bulk delivery equipment to ensure quality.
- ALWAYS purge all hoses, piping, augers and especially bins or tanks that have integral augers before discontinuing loading or mixing. AMMONIUM NITRATE prill left in process equipment can make start up difficult and even cause damage.
- ALWAYS consider vibrators for bins, bulk trucks and railcars to assist with the flow of material.

TRANSPORTATION, STORAGE AND HANDLING

- Oxidizers must be transported, stored, handled and used in conformity with all applicable federal, state, provincial and local laws and regulations.
- For recommended good practices in transporting, storing, handling and using this product, see the Safety Library Publications of the Institute of Makers of Explosives and/or consult the many publications that address transportation, storage and handling of AMMONIUM NITRATE.
  - The Fertilizer Institute: AMMONIUM NITRATE Packaging, Handling, Transportation, Storage and Use.
  - Bureau of Mines: I 28.23:6773 Explosive Hazards of AMMONIUM NITRATE Under Fire Exposure.
  - International Fertilizer Industry Association: Handbook for the Safe Storage of AMMONIUM NITRATE Based Fertilizers.
  - Institute of Makers of Explosives: Recommendations for the Transportation of Explosives, Division 1.5 & AMMONIUM NITRATE Emulsions, Division 5.1 Bulk Packaging.
- NEVER allow unauthorized access to Industrial Grade AMMONIUM NITRATE at any step during transportation and storage.
- ALWAYS rotate inventory by using the oldest product first.
- ALWAYS choose bins and tanks that are designed to keep the weight of the bulk material from compacting into transfer augers that are located directly beneath them.
- ALWAYS empty and clean bulk tanks and bins routinely to prevent product build-up on walls.
- ALWAYS minimize inventory during warm weather and high humidity conditions. Packaged product may harden with temperature cycling; bulk material may cake, lump or break down (fines).
- ALWAYS keep prilled AMMONIUM NITRATE dry. Choose transportation, processing and storage containers or equipment without openings though which water or moisture can enter.

Industrial Grade AMMONIUM NITRATE is available in bulk by railcar or truck. lump or break down (fines).

- ALWAYS keep prilled AMMONIUM NITRATE dry. Choose transportation, processing and storage containers or equipment without openings though which water or moisture can enter.
- Industrial Grade AMMONIUM NITRATE is available in bulk by railcar or truck.

ADDITIONAL INFORMATION – Visit **dynonobel.com** for Brochures and Case Studies related to this product.

Product Disclaimer: Dyno Nobel Inc. and its subsidiaries disclaim any warranties with respect to this product, the safety or suitability thereof, or the results to be obtained, whether express or implied, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND/OR OTHER WARRANTY. Buyers and users assume all risk, responsibility and liability whatsoever from any and all injuries (including death), losses, or damages to persons or property arising from the use of this product. Under no circumstances shall Dyno Nobel Inc. or any of its subsidiaries be liable for special, consequential or incidental damages or for anticipated loss of profits.

SHRADERCANADA

2001

Autosense Brake & Parts Cleaner

Section 1: Chemical Product and Company Identification

Manufacturer / Supplier:	Shrader Canada Limited
Address:	830 Progress Court, Oakville, Ontario L6L 6K1
Revision Date:	11/24/2010
Product Use:	Cleaner
Chemical Family:	Mixture

Section 2: Composition/Information on Ingredients

Component Name:	%	LD50 and LC50	ACGIH TWA	Ecotoxicity - Aquatic Toxicity
Heptane 142-82-5	60-100	Inhalation LC50 Rat:103 g/m^3 4h	= 400 ppm TWA =500 ppm STEL	LC50 (96 h) cichlid fish: 375.0 mg/L. Cond: LC50 (24 h) goldfish: 4.0 mg/L. Cond: LC50 (24 h) mosquito fish: 4900 mg/L. Cond:
Isopropanol 67-63-0	1-5	Dermal LD50 Rabbit:12800 mg/kg Dermal LD50 Rat:12800 mg/kg Oral LD50 Rat:4396 mg/kg Inhalation LC50 Rat:72.6 mg/L 4h	= 200 ppm TWA =400 ppm STEL	LC50 (96 h) fathead minnow (31 days old): 61200 mg/L. Cond: flow-through LC50 (96 h) fathead minnow (29 days old): 94900 mg/L. Cond: flow-through EC50 (5 min) Photobacterium phosphoreum : 35390 mg/L
Carbon Dioxide 124-38-9	1-5	Inhalation LC50 Mouse:836 ppm 4h	= 5000 ppm TWA =30000 ppm STEL	Not Available

Section 3: Hazards Identification

Ingestion: Ingestion of small amounts during normal handling are not likely to cause injury. Larger amounts may cause effects similar to those described under inhalation. Ingestion of large amounts may cause stomach irritation. Symptoms include nausea, vomiting and diarrhea. Aspiration into the lungs during swallowing or subsequent vomiting may cause chemical pneumonitis, which can be fatal.

Inhalation: No hazard under normal conditions of use. High concentrations may cause respiratory irritation and central nervous system depression with results ranging from dizziness and headache to unconsciousness.

Skin Contact: Moderate to severe skin irritant, depending on duration of exposure.

Eye Contact: Moderate to severe eye irritant.

Chronic Effects: Reports have associated repeated and prolonged occupational overexposure to various organic solvents with internal organ, brain and nervous system damage.

Section 4: First Aid Measures

Ingestion: Do not induce vomiting. Never give anything by mouth if victim is rapidly losing consciousness, is unconscious or is convulsing. Drink two glasses of water. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Obtain medical attention immediately.

Inhalation: Not a hazard under normal use conditions. If inhaled, remove to fresh air. If breathing is difficult give oxygen. If not breathing give artificial respiration and get medical attention immediately.

Skin Contact: Wash with soap and water. Remove contaminated clothing and launder before reuse. Seek medical attention if irritation persists.

Eye Contact: Immediately flush eyes with large amounts of water for at least 15 minutes, lifting upper and lower lids. Remove contact lenses if any after the initial flushing and then continue flushing. Get medical attention if irritation persists.

Section 5: Fire Fighting Measures

Flash Point (°C): -8 °C
Flame Projection: > 100 cm. Aerosol will flashback.
NFPA Classification: Aerosol, Level 3
Lower Explosive Limit: 2.0 %
Upper Explosive Limit: 12.7 %
Autoignition Temp. (°C): 399

Sensitivity to Mechanical Impact:
Contents under pressure. Protect against physical damage.

Conditions of Flammability:
Extremely flammable. Contents under pressure. Sprayed product will project a flame on contact with an ignition source. Containers may explode if heated. Do not use on vehicles unless cool. Vapours are heavier than air and may travel or be moved along the ground to an ignition source at locations distant from material handling.

Sensitivity to Static Discharge:
Take precautionary measures against static discharges, such as bonding and grounding when dispensing.

Hazardous Combustion:
Carbon dioxide, carbon monoxide and other unidentified organic compounds.

Extinguishing Media:
Alcohol foam or water fog for large fires. Carbon dioxide or dry chemical for small fires. Use water spray to cool fire exposed containers and prevent bursting. Do not use a direct stream of water.

Section 6: Accidental Release Measures

Leak or Spill Procedures:
Contain spilled material. Avoid contamination of natural waterways. Wear suitable protective clothing. Follow applicable explosion and fire precautions during the response. Stop the spill at the source when safe to do so. For large spills, dike the area to prevent spreading. Pump excess to a salvage container. Absorb residues and small spills with a non-flammable absorbent material and collect adsorbate for disposal. For large quantities refer to the environmental ministry.

Section 7: Handling and Storage

Handling Procedures:
Extremely flammable. Keep away from heat, sparks, flame and other sources of ignition. Wear all appropriate personal protective equipment during use. Avoid skin and eye contact. Use with adequate ventilation. Avoid breathing vapours or mist. Use good personal hygiene. Avoid smoking, eating and drinking during use. Wash with soap and water after handling. Containers of this material may contain hazardous residues when emptied. Do not use on hot vehicles.

Storage Requirements:
Store in a cool, dry, well-ventilated area. Storage temperatures should not exceed 40°C. Keep from freezing. Keep away from children.

Section 8: Exposure Controls / Personal Protection

Respiratory:	Not normally required. If the TLV is exceeded, a NIOSH-approved respirator is advised.
Gloves:	Neoprene. Nitrile gloves.
Eyewear:	Safety glasses. Contact lenses should not be worn. They may contribute to the severity of the injury.
Clothing:	Sufficient clothing to prevent skin contact.
Ventilation:	Sufficient mechanical ventilation to maintain exposures below the TLV. General mechanical ventilation is not recommended as the sole means of controlling exposure. Make-up air should always be supplied to balance air exhausted.
Other protective equipment:	Emergency showers and eyewash facilities should be nearby. The selection of personal protective equipment will vary depending on the conditions of use.

Section 9: Physical and Chemical Properties

Physical State:	Aerosol
Color:	Not Available
Odour:	Not Available
Vapour Density (Air=1):	> 1
VOC %:	100
pH:	Not Applicable
Solubility in Water:	Negligible
Specific Gravity (H2O=1):	0.74 at 15°C
Viscosity:	< 14cSt @ 40°C

Section 10: Stability and Reactivity

Conditions of Instability:
Stable at ambient and moderately elevated temperatures and pressures.

Hazardous Polymerization:
Hazardous polymerization will not occur.

Hazardous Decomposition:
See hazardous combustion products.

Incompatible Materials:
Avoid strong oxidizers (e.g HOOH, HNO3).

Conditions of Reactivity:
Avoid excessive heat, sparks and open flame. Avoid contact with incompatible materials.

Section 11: Toxicological Information

Irritancy of Product:
Moderate to strong skin irritant, depending on duration of exposure. Moderate to severely irritating to eyes.

Sensitization to product:
Contains no known skin or respiratory sensitizers.

Carcinogenicity:
No components are listed as carcinogens by ACGIH, IARC, OSHA, or NTP.

Reproductive Effects:
Not Available

Teratogenicity:
Not Available

Mutagenicity:
Not Available

Synergystic Products:
Isopropanol increases the hepatoxic effects of chlorinated aliphatic hydrocarbons.

Section 12: Ecological Information

Environmental: Toxic to aquatic life. Aromatic hydrocarbons may be bioaccumulative but they have no food chain concentration potential. See composition/information on ingredients.

Biodegradability: Not available.

Section 13: Disposal Considerations

Waste Disposal: Contents under pressure. Do not puncture, incinerate or expose to heat even when empty. Reuse or recycling should be given priority over disposal under any circumstances. Do not dump unused contents into sewers, on the ground or into any body of water. Dispose of in accordance with municipal, provincial and federal regulations.

Section 14: Transportation Information

Road shipment: AEROSOLS, Class 2.1, UN1950, ERG #126.

Marine shipment: UN1950, AEROSOLS, Class 2.1, EmS# F-D, S-U.

Air Shipment: Aerosols, Flammable, Class 2.1, UN 1950, PI Y203/203.

Exemption: LTD QTY exemptions may be used if product is packaged in accordance with Schedule 1 of TDGR (Clear Language).

Product may be reclassified for air transportation if packaged in accordance to IATA regulations (i.e. Consumer Commodity, Class 9, ID 8000).

Section 15: Regulatory Information

WHMIS: A B5 D2B
CEPA: All components are listed on the Domestic Substances List (DSL).
CPR Compliance: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

Section 16: Other Information

HMIS Rating: 241B
Prepared By: Regulatory Compliance, Shrader Canada Limited
Information Tel #: 800-201-9486, 905-847-0222
Information Fax #: 905-847-5404

CANUTEC EMERGENCY: 613-996-6666

MATERIAL SAFETY DATA SHEET

Section 1 - Product and Company Information

Brand Name: BEAUTI-TONE
Item Number: A97-AU
Material Code: 1730-130
Chemical Family: GOLD LACQUER
Intended Use: AEROSOL-LACQUER
Preparation Date: 12 May 2009
Prepared By: AEROSOL **Phone Number:** 519-449-2441

Emergency Phone Number: (613) 996-6666

Supplier:

Home Hardware Stores Limited
6 Brian Drive
Burford, ON
N0E 1A0

Manufacturer:

Home Hardware Stores Limited
6 Brian Drive
Burford, ON
N0E 1A0

Section 2 - Composition/Information on Ingredients

CAS No.	Description	LC50 (ml/m^3)	LD50 oral (mg/kg)	LD50 Dermal (mg/kg)	Range
100-41-4	ETHYLBENZENE	8000 (rat)	3500 (rat)	17800 (rabbit)	0.1% - 1.0%
108-65-6	PROPYLENE GLYCOL MONOMETHYL ETHER ACETATE	10644 (rat)	8532 (rat)	5000 (rabbit)	1.0% - 5.0%
108-88-3	TOLUENE	17600 (rat)	5050 (rat)	12225 (rabbit)	15% - 40%
1330-20-7	XYLENE	13400 (rat)	5400 (rat)	1700 (rabbit)	1.0% - 5.0%
67-64-1	ACETONE	34000 (rat)	1750 (rat)	16000 (rabbit)	15% - 40%
74-98-6	PROPANE	N/AV	N/AV	N/AV	10% - 30%
75-28-5	ISOBUTANE	285000 (rat)	N/AV	N/AV	7.0% - 13%

Section 3 - Hazards Identification

Emergency Overview: Flammable aerosol. Contents under pressure.

Potential Health Effects

Routes of Entry: Eye contact, skin contact, skin absorption, inhalation, and ingestion.

Eye: May cause eye irritation.

Skin contact: May cause skin irritation.

Skin contact: Exposure to rapidly expanding gas or vapourizing liquid may cause frostbite (cold burn).

Inhalation: High gas, vapour, mist or dust concentrations may be harmful if inhaled.

Ingestion: May be harmful if swallowed.

Effects of Chronic Exposure to Product: Not available.

Effects Of Acute Exposure: HARMFUL-INHALATION, SKIN & EYE IRRITANT

Section 4 - First Aid Measures

Eye contact: Flush immediately with water for 15 mins. Get medical attention.

Inhalation: Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Get medical attention immediately. Substance may be harmful if swallowed.

Skin contact: Wash with soap and water.

Section 5 - Fire Fighting Measures

Flash Point:	LESS THAN -4C
Flash Point Method:	CLOSED CUP
Upper Flammable Limit:	13%
Lower Flammable Limit:	1%
Autoignition:	245 - 530C
Hazardous Combustion Products:	OXIDES OF CARBON
Means of Extinction:	WATER FOG, DRY CHEMICAL, FOAM
Conditions Of Flammability:	FLAMMABLE
Explosion Data	
Mechanical Impact:	NOT SENSITIVE
Static Discharge:	VAPOR MAY CATCH FIRE

Section 6 - Accidental Release Measures

Absorb spill with inert material. Do not use combustible materials such as saw dust.

Prevent material from entering sewers or confined spaces.

Dispose of in accordance with regional regulations.

Section 7 - Handling and Storage

Handling Procedures and Equipment: Use only in well vented areas.

Handling Procedures and Equipment: Avoid contact with eyes, skin, and clothing.

Handling Procedures and Equipment: Avoid breathing vapor, mist, or gas.

Storage Requirements: Keep away from heat, sparks and flame.

Storage Requirements: Keep away from sources of ignition.

Storage Requirements: Contents under pressure. Do not expose to heat or store above specified temperature.

Storage Requirements: Keep away from sources of ignition. Store away from sources of high heat. Keep away from food and drink.

Section 8 - Exposure Control/Personal Protection

Specific Engineering Controls: If user operations generate dust, fume, or mist, use ventilation to minimize exposure.

Specific Engineering Controls: Use adequate ventilation to reduce airborne vapour levels.

Specified Engineering Controls: Good general ventilation should be sufficient to control airborne levels.

Section 9 - Physical and Chemical Properties

Appearance:	OPAQUE GOLD LIQUID
Odour:	AROMATIC AND KETONE SOLVENT
Vapour Pressure:	55-65 PSIG @ 22C
Vapour Density:	>1 (AIR = 1)
Physical State:	AEROSOL
Boiling Point:	MIXTURE, -42 TO 143C
Freezing/Melting Point:	-95C
pH:	N/AP

Evaporation Rate:	FASTER THAN BUTYL ACETATE
Coefficient water/oil distr.:	N/AV
Odour Threshold:	N/AV
Specific Gravity:	0.7443

Section 10 - Stability and Reactivity

Stability: Yes.

Conditions to Avoid: High temperatures.

Conditions to Avoid: Sources of ignition, mechanical shock, high temperature.

Section 11 - Toxicological Information

Sensitization to Product: Not available.

Reproductive Toxicity: May affect reproductive system from toluene component (insufficient evidence).

Teratogenicity: Maternal toxicity from toluene and acetone in animals.

Mutagenicity: Not available.

Name of Toxicologically Synergistic Products: Contains ethylbenzene, its break down in the liver is inhibited by alcohol & other chemicals. Also contains xylene which, when combine with solvents (benzene, toluene, ethanol) enhances effects.

Irritancy of Product: Contains acetone, toluene, xylene and pigments which can cause moderate skin irritation and severe eye irritation. Pigment effect is from possible mechanical abrasion.

Section 12 - Ecological Information

Not Available.

Section 13 - Disposal Considerations

Contact your local municipal office for specific disposal guidelines in your region.

Section 14 - Transport Information

TDG Road Classification

Shipping Name:	AEROSOLS
Class:	2.1
Packing Group:	N/AP
UN #:	UN1950
Limited Quantity Exemption:	1 LITRE

Section 15 - Regulatory Information

WHMIS Classification:	A, B5, D2A, D2B
P.C.P. Registration #:	N/AP
EPA Registration #:	N/AP

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

Section 16 - Other Information

N/AV: Not available
N/AP: Not applicable
NR: Not regulated

Information for this material safety data sheet was obtained from sources considered accurate and reliable, and was prepared to the best of Home Hardware Stores Limited knowledge. Actual conditions of use and handling beyond seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, Provincial and local laws and regulations.

BIOBOR JF®

Material Safety Data Sheet
Effective 01/1/2013 Emergency Telephone Number 1-800-424-9300

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Information: **Biobor JF®**
Generic Description: Substituted Dioxaborinanes
Product Use: Biocide

TSCA NO.: n/a
Pesticide-exempt from TSCA
Inventory under TSCA § (2) (B) (ii)
CAS NO: 8063-89-6
EPA REG. NO. 65217-1

For customer service/technical information, contact:

Hammonds Fuel Additives, Inc.
910 Rankin Road
Houston TX 77073-4604
(800)548-9166

ChemTrec Emergency
(800)424-9300

HAZARD RATINGS

	HMIS	NFPA
Health	**1**	**1**
Fire	**2**	**2**
Reactivity	**0**	**0**

***=Chronic**

2. COMPOSITION/INFORMATION ON INGREDIENTS

Common Name	CAS#	Approximate % (w/w)
Substituted dioxaborinanes	See below*	95.0
Naphtha	8030-30-6	4.5
Non-hazardous and other ingredients below reportable levels		Balance

*2,2' - (1-methyltrimethylenedioxy) bis - (4-methyl-1, 3, 2-dioxaborinane);
2,2' - oxybis (4, 4, 6 - trimethyl-1, 3, 2-dioxaborinane) (CAS No.: 8063-89-6).

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: COMBUSTIBLE LIQUID AND VAPOR (FLAMMABLE IF SHIPPED BY AIR/VESSEL). INHALATION MAY CAUSE DIZZINESS, HEADACHE AND INCOORDINATION. INGESTION CAN CAUSE DIZZINESS, FAINTNESS, HEADACHE AND INCOORDINATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTE OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: May cause slight to mild irritation. May cause corneal opacity (clouding of the eye surface). Can cause burning sensation, tearing, and redness.

SKIN CONTACT: May cause slight to mild irritation. Prolonged or repeated contact may dry the skin and lead to irritation (i.e. dermatitis).

INHALATION (Breathing): (Irritating to the eyes, nose and respiratory tract. Can cause dizziness, headaches, and incoordination. Nausea, vomiting and stomach upset can occur.

INGESTION (Swallowing): (Irritating to the mouth, throat and stomach. May cause nausea, committing, pain and stomach upset (e.g., diarrhea). Can cause dizziness, faintness, headache and incoordination.]

TARGET ORGANS/CHRONIC EFFECTS: Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Skin.

CARCINOGENICITY:

	ACGIH	**IARC**	**NTP**	**OSHA**
Substituted dioxaborinanes	No	No	No	No
Naphtha	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation persist.

SKIN CONTACT: Immediately flush with water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Professionally wash clothing and shoes before re-use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point.....102° F 38.8° C Method.....: Tagliabue Closed Cup
Explosive limits: LEL (%) Not Determined UEL (%) Not Determined
Autoignition.....Not determined

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.).

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a buildup of internal pressure. Cool with water. Vapors can travel to a source of ignition (flame, electric motor, hot surface, cigarette etc.) and flash back. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH-approved positive pressure self-contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain materiel, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN-UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self-contained breathing apparatus in enclosed spaces, or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Use non-sparking tools and/or explosion-proof equipment. Stop ignition sources. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (800-424-8802) and to the appropriate state and local emergency response organizations.

7. *HANDLING AND STORAGE*

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. **WARNING:** Hot organic chemical vapors or mists can suddenly, and without warning, combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing, pouring and emptying. Open with non-sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking and using restroom facilities. Wash contaminated goggles, faceshield and gloves. Professionally launder contaminated clothing before re-use.

EMPTY CONTAINER PRECAUTIONS: Attention! This container hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV - No regulated ingredients.

OSHA - PEL

Naphtha

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA-approved equipment. Determine the appropriate type of consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self-contained breathing apparatus (SCBA)

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Yellow	Odor	:	Aromatic
Physical State	:	Liquid	Solubility	:	Moderately soluble
pH	:	Not Applicable	Boiling Point	:	529° F 276.1° C
Vapor Density	:	> 1 Air = 1	Evaporation Rt.	:	< 1 (n-Butyl alcohol)
VOC Material	:	Not Determined	Specific Gravity	:	1.05
%Non-Vol (w/w)	:	95			

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY:	Stable under normal conditions of use.
HAZARDOUS POLYMERIZATION:	Will not occur.
CONDITIONS TO AVOID:	High temperatures.
INCOMPATIBILITY WITH OTHER MATERIALS:	Water. Oxidizers.

11. TOXICITY INFORMATION

COMPONENTS:

Substituted dioxaborinanes:
Eye, skin, and respiratory tract irritant.

Oral	LD_{50}	Rat	3.16 ml/Kg
Dermal	LD_{50}	Rabbit	9.1 ml/Kg

Naphtha:
Eye, skin, and respiratory tract irritant.

12. ECOLOGICAL INFORMATION

No data are available on this product.

13 DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitability.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

	49 CFR	IATA	IMO
Flammable liquids, n.o.s. (mixed dioxaborinanes, naphtha)	Y	Y	Y

DOT Label	:	Flammable Liquid	UN/NA Id Num:	UN 1993
DOT Label No.	:	L152 (For Canadian Shipments F 154)		
Hazard Class	:	3 (IATA/49 CFR) 3.3 (IMO)		
Packing Group	:	III	WHMIS Label :	F 152

15. REGULATORY INFORMATION

FEDERAL:

This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:

Y- Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
N - Delayed (chronic) Health Hazard

Ozone-Depletiing Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat - No regulated ingredients.

SARA Section 313 Toxic Chemicals - No regulated ingredients.

STATE RIGHT-TO-KNOW:

Pennsylvania - New Jersey R-T-K

Substituted dioxaborinanes	8063-89-6	95.0
Naphtha	8030-30-6	4.5
Non-hazardous trade secret ingredient(s)	Proprietary Balance	

California - California Proposition 65

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Arsenic	7440-38-2	Trace *

Cancer Hazard.

*Trace = present at less than 0.01 percent.

CONEG - No data available.

CANADA:

This is a “controlled product” under the Canadian Workplace Hazardous Materials Information System (WHMIS).

Class B Division 3 Class D Division 2 Sub-division B

CEPA - NPRI - No regulated ingredients.

16. OTHER INFORMATION

USER’S RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

Brake Fluid DOT 3

SECTION 1. IDENTIFICATION

Product Identifier	Brake Fluid DOT 3
Other Means of Identification	15-810, 15-811, 15-813, 15-814, 15-818, 35-810AS, 35-810CQ, 35-810PC, 35-810PRES, 35-811AS, 35-811CQ, 35-811PRES, 35-811SO, 35-811WM, 35-813AS, 35-813CQ, 35-813SO, 35-813WM, 35-814AS, 35-814CQ, 35-814PRES, 35-814SO, 35-816C, 35-818AS, 35-818CQ, 85-818, 35-811CERT, 35-814CERT, 35-818CERT
Recommended Use	Please refer to Product label.
Restrictions on Use	None known.
Manufacturer/Supplier Identifier	Recochem Inc., 850 Montee de Liesse, Montreal, QC, H4T 1P4, Compliance and Regulatory Department, 905-878-5544, www.recochem.com
Emergency Phone No.	CANUTEC, 613-996-6666, 24 Hours
SDS No.	1515
Date of Preparation	May 04, 2017

SECTION 2. HAZARD IDENTIFICATION

Classification

Specific target organ toxicity (repeated exposure) - Category 2

Label Elements

Signal Word:
Warning

Hazard Statement(s):

H373 May cause damage to organs (blood, kidneys, liver, respiratory system) through prolonged or repeated exposure.

Precautionary Statement(s):

Prevention:

P260 Do not breathe fume, mist, vapours, spray.

Response:

P314 Get medical advice or attention if you feel unwell.

Storage:

Store in a well ventilated place. Keep cool. Keep container tightly closed. Store locked up.

Disposal:

Dispose of contents/container in accordance with applicable regional, national and local laws and regulations.

Other Hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture:

Chemical Name	CAS No.	%	Other Identifiers	Other Names
Triethylene glycol butyl ether	143-22-6	10-30		
Poly(oxy-1,2-ethanediyl), alpha-butyl- omega -hydroxy-	9004-77-7	10-30		
Diethylene glycol	111-46-6	1-5		
Trisodium phosphate	7601-54-9	1-5		
Diisopropanolamine	110-97-4	1-5		
Sodium hydroxide	1310-73-2	0.5-1.5		
Diethylene glycol monomethyl ether	111-77-3	0.5-1.5		

Notes

Use of Generic SDS:

If the concentration or actual concentration range of an ingredient of a particular hazardous product in the series is different from the concentration or actual concentration range disclosed for the rest of the series, either the concentration or the actual concentration range must be indicated beside that ingredient under item 3 (Composition/Information on ingredients) of the SDS. Furthermore, if any other specific information element(s) (such as flash point, numerical measure of toxicity, etc.) for a particular hazardous product in the series differs from that of the other products in the series (without affecting the classification), the information element relevant to that hazardous product must be disclosed on the SDS with an indication to which hazardous product each relates.

Source: Health Canada - Technical Guidance on the Requirements of the Hazardous Products Act and the Hazardous Products Regulations WHMIS 2015 Supplier Requirements - pg 117

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Remove source of exposure or move to fresh air. Get medical advice or attention if you feel unwell or are concerned.

Skin Contact

Avoid direct contact. Wear chemical protective clothing if necessary. Take off contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Rinse with lukewarm, gently flowing water for 5 minutes.

Eye Contact

Quickly and gently blot or brush chemical off the face. Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open. Remove contact lenses, if present and easy to do. Take care not to rinse contaminated water into the unaffected eye or onto the face. If eye irritation persists, get medical advice or attention.

Ingestion

Rinse mouth with water. Get medical advice or attention if you feel unwell or are concerned.

Most Important Symptoms and Effects, Acute and Delayed

No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Immediate Medical Attention and Special Treatment

Special Instructions

No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Not combustible. Use extinguishing agent suitable for surrounding fire.

Unsuitable Extinguishing Media

None known.

Specific Hazards Arising from the Product

Does not burn.
In a fire, the following hazardous materials may be generated: toxic chemicals.

Special Protective Equipment and Precautions for Fire-fighters

Review Section 6 (Accidental Release Measures) for important information on responding to leaks/spills.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

No special precautions are necessary. Use the personal protective equipment recommended in Section 8 of this safety data sheet.

Environmental Precautions

It is good practice to prevent releases into the environment. Do not allow into any sewer, on the ground or into any waterway.

Methods and Materials for Containment and Cleaning Up

Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Other Information

Report spills to local health, safety and environmental authorities, as required.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling

Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Conditions for Safe Storage

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10)

and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

	ACGIH TLV®		OSHA PEL		AIHA WEEL	
Chemical Name	TWA	STEL	TWA	Ceiling	8-hr TWA	TWA
Triethylene glycol butyl ether	Not established	Not established	Not established	Not established		
Diethylene glycol					10 mg/m3	
Trisodium phosphate	Not established	5 mg/m3	Not established	Not established		
Diisopropanolamine	Not established	Not established	Not established	Not established		
Sodium hydroxide	Not established	2 mg/m3	2 mg/m3	2 mg/m3		

Appropriate Engineering Controls

General ventilation is usually adequate.

Individual Protection Measures

Eye/Face Protection

Not required but it is good practice to wear safety glasses or chemical safety goggles.

Skin Protection

Not required, if used as directed.

Respiratory Protection

Not normally required if product is used as directed. For non-routine or emergency situations: wear a NIOSH approved air-purifying respirator with an appropriate cartridge.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Light amber. Particle Size: Not applicable
Odour	Ethereal
Odour Threshold	Not available
pH	Not applicable
Melting Point/Freezing Point	Not available (melting); -51 ºC (-60 ºF) (freezing)
Initial Boiling Point/Range	260 ºC (500 ºF)
Flash Point	138 ºC (280 ºF) (closed cup)
Evaporation Rate	Not available
Flammability (solid, gas)	Not applicable
Upper/Lower Flammability or Explosive Limit	Not available (upper); Not available (lower)
Vapour Pressure	Not available
Vapour Density (air = 1)	6
Relative Density (water = 1)	1.04 (estimated) at 20 ºC
Solubility	Not available in water; Not available (in other liquids)
Partition Coefficient, n-Octanol/Water (Log Kow)	Not available

Auto-ignition Temperature	Not available
Decomposition Temperature	Not available
Viscosity	Not available (kinematic); Not available (dynamic)

Other Information

Physical State	Liquid
Molecular Formula	Not applicable
Molecular Weight	Not applicable
Bulk Density	Not available
Surface Tension	Not available
Critical Temperature	Not available
Electrical Conductivity	Not available
Vapour Pressure at 50 deg C	Not available
Saturated Vapour Concentration	Not available

SECTION 10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions of use.

Chemical Stability

Normally stable.

Possibility of Hazardous Reactions

None expected under normal conditions of storage and use.

Conditions to Avoid

Water, moisture or humidity. Do not allow product to become dry. Prolonged exposure to high temperatures.

Incompatible Materials

Strong acids (e.g. hydrochloric acid), strong bases (e.g. sodium hydroxide), strong oxidizing agents (e.g. perchloric acid).

Hazardous Decomposition Products

Very toxic carbon monoxide, carbon dioxide; very toxic, flammable aldehydes; corrosive, oxidizing nitrogen oxides.

SECTION 11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Skin contact; eye contact.

Acute Toxicity

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
Triethylene glycol butyl ether	Not available	5300 mg/kg (male rat)	3.54 ml/kg bw (rabbit)
Poly(oxy-1,2-ethanediyl), alpha-butyl- omega -hydroxy-	Not available	Not available	Not available
Diethylene glycol	4600 mg/m3 (rat) (30-minute exposure)	12565 mg/kg (rat)	11890 mg/kg (rabbit)
Trisodium phosphate	Not available	4100 mg/kg (rat)	> 7940 mg/kg (rabbit)
Diisopropanolamine	Not available	4765 mg/kg (rat)	8000 mg/kg (rabbit)
Sodium hydroxide	Not available	Not available	1350 mg/kg (rabbit)
Diethylene glycol monomethyl ether	> 50000 mg/m3 (rat) (4-hour exposure)	6830 mg/kg (rat)	9404 mg/kg (rabbit)

LC50: Not applicable.

ATE: 19032.81 mg/kg (Rat)

ATE: 43941.28 mg/kg (Rabbit)

Skin Corrosion/Irritation

May cause mild irritation based on information for closely related chemicals.

Serious Eye Damage/Irritation

Human experience and animal tests show mild irritation.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

No information was located.

Skin Absorption

No information was located.

Ingestion

May be harmful If large amounts are swallowed based on information for closely related materials. May cause If large amounts are swallowed depression of the central nervous system.

Aspiration Hazard

Not known to be an aspiration hazard.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

May cause damage to organs based on studies in people. Harmful effects on the kidneys.
May cause damage to organs based on animal studies. Harmful effects on the liver, irritation of the respiratory system.
May cause respiratory tract injury. Blood tests may show abnormal results.

Respiratory and/or Skin Sensitization

Not known to be a respiratory sensitizer. Not known to be a skin sensitizer.

Carcinogenicity

Chemical Name	IARC	ACGIH®	NTP	OSHA
Triethylene glycol butyl ether	Not Listed	Not designated	Not Listed	Not Listed
Poly(oxy-1,2-ethanediyl), alpha-butyl- omega -hydroxy-	Not Listed	Not designated	Not Listed	Not Listed
Diethylene glycol	Not Listed	Not designated	Not Listed	Not Listed
Trisodium phosphate	Not Listed	Not designated	Not Listed	Not Listed
Diisopropanolamine	Not Listed	Not designated	Not Listed	Not Listed
Sodium hydroxide	Not Listed	Not designated	Not Listed	Not Listed
Diethylene glycol monomethyl ether	Not Listed	Not designated	Not Listed	Not Listed

Reproductive Toxicity

Development of Offspring

Not known to harm the unborn child.

Sexual Function and Fertility

May cause effects on sexual function and/or fertility based on limited evidence.

Effects on or via Lactation

Not known to cause effects on or via lactation.

Germ Cell Mutagenicity

No information was located.

Interactive Effects

No information was located.

SECTION 12. ECOLOGICAL INFORMATION

This section is not required by WHMIS.
This section is not required by OSHA HCS 2012.

Ecotoxicity

Acute Aquatic Toxicity

Chemical Name	LC50 Fish	EC50 Crustacea	ErC50 Aquatic Plants	ErC50 Algae
Triethylene glycol butyl ether	2400 mg/L (Pimephales promelas (fathead minnow); 96-hour; static)			
Poly(oxy-1,2-ethanediyl), alpha-butyl- omega -hydroxy-	Not available			
Diethylene glycol	75200 mg/L (Pimephales promelas (fathead minnow); 96-hour; fresh water)	10000 mg/L (Daphnia magna (water flea); 48-hour)		Not available
Trisodium phosphate	88300 ug/L (Western Mosquito Fish; 24 hr; fresh water; static)	Not available		
Diisopropanolamine	> 1000-2200 mg/L (Zebra Fish; 96-hour; static)	Not available		
Sodium hydroxide	125 mg/L (Western Mosquito Fish; 96-hour)	40.38 mg/L (Daphnia magna (water flea); 48-hour)		
Diethylene glycol monomethyl ether	5741 mg/L (Pimephales promelas (fathead minnow); 96-hour)	1191 mg/L (Daphnia magna (water flea); 48-hour)		

Chronic Aquatic Toxicity

Chemical Name	NOEC Fish	EC50 Fish	NOEC Crustacea	EC50 Crustacea
Triethylene glycol butyl ether	Not available		Not available	
Poly(oxy-1,2-ethanediyl), alpha-butyl- omega -hydroxy-	Not available		Not available	
Diethylene glycol	Not available		Not available	Not available
Trisodium phosphate	Not available		Not available	
Diisopropanolamine	Not available		Not available	
Sodium hydroxide	Not available		Not available	
Diethylene glycol monomethyl ether	Not available		Not available	

Persistence and Degradability

No information was located.

Bioaccumulative Potential

No information was located.

Mobility in Soil

No information was located.

Other Adverse Effects

There is no information available.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14. TRANSPORT INFORMATION

Not regulated under Canadian TDG regulations. Not regulated under US DOT Regulations.

Environmental Hazards	Not applicable
Special Precautions	Not applicable

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

Proof of Dangerous Goods Classification

Date of Classification	March 13, 2017
Technical Name	not Regulated
Classification	not Regulated

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Custom Regulatory 1

Consumer Product Safety Improvement Act of 2008 General Conformity Certification
The Supplier identified in Section 1 of this MSDS has evaluated this product and certifies it to be labeled and packaged in compliance with the applicable provisions of the Federal Hazardous Substance Act as stated in 16 CFR 1500 and enforced by the Consumer Product Safety Commission, and where applicable the products that require Child Resistant Closures are packaged in accordance with the Poison Prevention Packaging Act as stated in 16 CFR 1700 and enforced by the Consumer Product Safety Commission. All closures have been tested in accordance with the latest protocols. No other testing is required to certify compliance with the above. The date of manufacture is stamped on the product container.

SECTION 16. OTHER INFORMATION

SDS Prepared By	Compliance and Regulatory Department
Phone No.	905-878-5544
References	CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS).
Additional Information	We are committed to uphold the Industry Consumer Ingredient Communication Voluntary Initiative. Please send us your request by visiting our website at www.recochem.com. Ingredients present (intentionally added ingredients) at a concentration of greater than one percent (1%) shall be listed in descending order of predominance. Ingredients present at a concentration of not more than one percent shall be listed but may be disclosed without

respect to order of predominance.

Disclaimer

Notice to reader: To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

CRC MATERIAL SAFETY DATA SHEET

Section 1: Product & Company Identification

Product Name: **Brakleen® Brake Parts Cleaner** (aerosol)

Product Number (s): **05089, 05089-6, 05089T, 85089, 85089AZ**

Product Use: Brake cleaner

Manufacturer / Supplier Contact Information:

In United States:
CRC Industries, Inc.
885 Louis Drive
Warminster, PA 18974
www.crcindustries.com
1-215-674-4300(General)
(800) 521-3168 (Technical)
(800) 272-4620 (Customer Service)

In Canada:
CRC Canada Co.
2-1246 Lorimar Drive
Mississauga, Ontario L5S 1R2
www.crc-canada.ca
1-905-670-2291

In Mexico:
CRC Industries Mexico
Av. Benito Juárez 4055 G
Colonia Orquídea
San Luís Potosí, SLP CP 78394
www.crc-mexico.com
52-444-824-1666

24-Hr Emergency – CHEMTREC: (800) 424-9300 or (703) 527-3887

Section 2: Hazards Identification

Emergency Overview

DANGER: Vapor Harmful. Harmful or Fatal if Swallowed. Contents Under Pressure
As defined by OSHA's Hazard Communication Standard, this product is hazardous.
Appearance & Odor: Colorless liquid, irritating odor at high concentrations

Potential Health Effects:

ACUTE EFFECTS:

EYE: May cause slight temporary eye irritation. Vapors may also cause irritation.

SKIN: Short single exposure may cause skin irritation. Prolonged exposure may cause severe skin irritation, even a burn. A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts.

INHALATION: Dizziness may occur at concentrations of 200 ppm. Progressively higher levels may also cause nasal irritation, nausea, incoordination, and drunkenness. Very high levels or prolonged exposure could lead to unconsciousness and death.

INGESTION: Single dose oral toxicity is considered to be extremely low. Swallowing large amounts may cause injury if aspirated into the lungs. This may be rapidly absorbed through the lungs and result in injury to other body systems.

CHRONIC EFFECTS: Repeated contact with skin may cause drying or flaking of skin. Excessive or long term exposure to vapors may increase sensitivity to epinephrine and increase myocardial irritability.

TARGET ORGANS: Central nervous system. Possibly liver and kidney.

Medical Conditions Aggravated by Exposure: None known.

See Section 11 for toxicology and carcinogenicity information on product ingredients.

Section 3: Composition/Information on Ingredients

COMPONENT	CAS NUMBER	% by Wt.
Tetrachloroethylene (PERC)	127-18-4	65 – 80
Petroleum Distillates	8052-41-3 / 64742-47-8	15 – 30
Trichloroethylene	79-01-6	< 0.1
Carbon Dioxide	124-38-9	< 5

Section 4: First Aid Measures

Eye Contact: Immediately flush with plenty of water for 15 minutes. Call a physician if irritation persists.

Skin Contact: Remove contaminated clothing and wash affected area with soap and water. Call a physician if irritation persists. Wash contaminated clothing prior to re-use.

Inhalation: Remove person to fresh air. Keep person calm. If not breathing, give artificial respiration. If breathing is difficult give oxygen. Call a physician.

Ingestion: Do NOT induce vomiting. If spontaneous vomiting is about to occur, place victim's head below knees. If victim is drowsy or unconscious, place on the left side with head down. Never give anything by mouth to a person who is not fully conscious. Do not leave victim unattended. Call a physician immediately

Note to Physicians: Because rapid absorption may occur through lungs if aspirated and cause systemic effects, the decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. If burn is present, treat as any thermal burn, after decontamination. Exposure may increase myocardial irritability. Do not administer sympathomimetic drugs unless absolutely necessary. No specific antidote.

Section 5: Fire-Fighting Measures

Flammable Properties: This product is nonflammable in accordance with aerosol flammability definitions. (See 16 CFR 1500.3(c)(6)) This product does not exhibit a flame extension or a flashback.

Flash Point: None (TCC) Upper Explosive Limit: ND
Autoignition Temperature: ND Lower Explosive Limit: ND

Fire and Explosion Data:

Suitable Extinguishing Media: Use dry chemicals, carbon dioxide, foam or inert gasses.

Products of Combustion: Oxides of carbon, hydrogen chloride, trace amounts of phosgene and chlorine

Explosion Hazards: Aerosol containers, when exposed to heat from fire, may build pressure and explode.

Protection of Fire-Fighters: Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against suffocation and possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool and to knock down vapors which may result from product decomposition.

Section 6: Accidental Release Measures

Personal Precautions: Use personal protection recommended in Section 8. Do not breathe vapors.

Environmental Precautions: Take precautions to prevent contamination of ground and surface waters. Do not flush into sewers or storm drains.

Methods for Containment & Clean-up: Dike area to contain spill. Ventilate the area with fresh air. If in confined space or limited air circulation area, clean-up workers should wear appropriate respiratory protection. Recover or absorb spilled material using an absorbent designed for chemical spills. Place used absorbents into proper waste containers.

Section 7: Handling and Storage

Handling Procedures: Vapors of this product are heavier than air and will collect in low areas. Make sure ventilation removes vapors from low areas. Do not eat, drink or smoke while using this product. Use caution around energized equipment. The metal container will conduct electricity if it contacts a live source. This may result in injury to the user from electrical shock and/or flash fire. For product use instructions, please see the product label.

Storage Procedures: Store in a cool dry area out of direct sunlight. Aerosol cans must be maintained below 120 F to prevent cans from rupturing.

Aerosol Storage Level: I

Section 8: Exposure Controls/Personal Protection

Exposure Guidelines:

	OSHA		ACGIH		OTHER		
COMPONENT	TWA	STEL	TWA	STEL	TWA	SOURCE	UNIT
Tetrachloroethylene	100	N.E.	25	100	NE		ppm
Petroleum Distillates	100 (v)	NE	100	NE	NE		ppm
Trichloroethylene	100	200 (v)	10	25	5	mfg*	ppm
Carbon dioxide	5000	30000 v	5000	30,000	N.E.		ppm
N.E. – Not Established (c) – ceiling (s) – skin (v) – vacated							

* TCE manufacturer's internal PEL

Controls and Protection:

Engineering Controls: Area should have ventilation to provide fresh air. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at the source, preventing dispersion into the general work area. Use mechanical means if necessary to maintain vapor levels below the exposure guidelines. If working in a confined space, follow applicable OSHA regulations.

Respiratory Protection: None required for normal work where adequate ventilation is provided. If engineering controls are not feasible or if exposure exceeds the applicable exposure limits, use a NIOSH-approved cartridge respirator with organic vapor cartridge. Air monitoring is needed to determine actual employee exposure levels. Use a self-contained breathing apparatus in confined spaces and for emergencies.

Eye/face Protection: For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear splash-proof goggles.

Skin Protection: Use protective gloves such as PVA, Teflon or Viton. Also, use full protective clothing if there is prolonged or repeated contact of liquid with skin.

Section 9: Physical and Chemical Properties

Physical State: liquid
Color: colorless
Odor: irritating odor
Odor Threshold: ND
Specific Gravity: 1.23 – 1.34
Initial Boiling Point: 189 F
Freezing Point: ND
Vapor Pressure: ND
Vapor Density: > 4 (air = 1)
Evaporation Rate: Fast
Solubility: negligible
Coefficient of water/oil distribution (log P_{ow}): ND
pH: NA
Volatile Organic Compounds: wt %: < 30 g/L: < 362 lbs./gal: ≤ 3

Section 10: Stability and Reactivity

Stability: Stable

Conditions to Avoid: Avoid direct sunlight or ultraviolet sources. Avoid open flames, welding arcs, and other high temperature sources which induce thermal decomposition.

Incompatible Materials: Avoid contact with metals such as: aluminum powders, magnesium powders, potassium, sodium, and zinc powder. Avoid unintended contact with amines. Avoid contact with strong acids, strong bases, alkalies and strong oxidizers.

Hazardous Decomposition Products: Hydrogen chloride, trace amounts of phosgene and chlorine

Possibility of Hazardous Reactions: No

Section 11: Toxicological Information

Long-term toxicological studies have not been conducted for this product. The following information is available for components of this product.

Acute Toxicity:

Component	Oral LD50 (rat)	Dermal LD50 (rabbit)	Inhalation LC50 (rat)
Tetrachloroethylene	2629 mg/kg	> 10 g/kg	5200 mg/kg/4H
Petroleum Distillates	No data	No data	>1400 ppm/8H
Trichloroethylene	4920 mg/kg	10,000 mg/kg	12,500 ppm/4H
Carbon dioxide	No data	No data	470,000 ppm/30M

Chronic Toxicity:

Component	OSHA Carcinogen	IARC Carcinogen	NTP Carcinogen	Irritant	Sensitizer
Tetrachloroethylene	No	Group 2A	Reasonably Anticipated to be a Carcinogen	E (mild) / S (severe)	No
Petroleum Distillates	No	No	No	E & S (mild)	Unknown
Trichloroethylene	No	Group 2A	Reasonably Anticipated to be a Carcinogen	E (moderate) / S (mild)	Unknown
Carbon dioxide	No	No	No	None	No

E – Eye S – Skin R - Respiratory

Reproductive Toxicity: No information available.
Teratogenicity: No information available.
Mutagenicity: Tetrachloroethylene: in vitro studies were negative
animal studies were negative
Trichloroethylene: in vitro mutagenicity studies were negative
animal mutagenicity studies were predominantly negative
Synergistic Effects: No information available.

Section 12: Ecological Information

Ecological studies have not been conducted for this product. The following information is available for components of this product.

Ecotoxicity: Tetrachloroethylene -- 96 Hr LC50 Rainbow Trout: 5.28 mg/L (static)
96 Hr LC50 Fathead minnow: 13.4 mg/L (flow-through)
Trichloroethylene -- 96 Hr LC50 fathead minnow: 44.1 mg/L (flow-through)
Persistence / Degradability: Biodegradation under aerobic conditions is below detectable limits. Biodegradation may occur under anaerobic conditions. Biodegradation rate may increase in soil and/or water with acclimation.
Bioaccumulation / Accumulation: Bioconcentration potential is low (BCF less than 100).
Mobility in Environment: Potential for mobility in soil is medium.

Section 13: Disposal Considerations

Waste Classification: The dispensed liquid product is a RCRA hazardous waste for toxicity with the following potential waste codes: F001, F002, D039, D040. (See 40 CFR Part 261.20 – 261.33)
Aerosol containers should be fully emptied and depressurized before disposal. Empty aerosol containers may be recycled.

All disposal activities must comply with federal, state, provincial and local regulations. Local regulations may be more stringent than state, provincial or national requirements.

Section 14: Transport Information

US DOT (ground): Consumer Commodity, ORM-D

ICAO/IATA (air): Aerosols, non-flammable, containing substances in Division 6.1, Packing Group III, UN1950, 2.2 (6.1), PGIII

IMO/IMDG (water): Aerosols, UN1950, 2.2, Limited Quantity

Special Provisions: Marine Pollutant

Section 15: Regulatory Information

U.S. Federal Regulations:

Toxic Substances Control Act (TSCA):
All ingredients are either listed on the TSCA inventory or are exempt.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA):
Reportable Quantities (RQ's) exist for the following ingredients: Tetrachloroethylene (100 lbs)
Trichloroethylene (100 lbs)

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center (800-424-8802) and to your Local Emergency Planning Committee.

Superfund Amendments Reauthorization Act (SARA) Title III:
Section 302 Extremely Hazardous Substances (EHS): None

Section 311/312 Hazard Categories:		
	Fire Hazard	No
	Reactive Hazard	No
	Release of Pressure	Yes
	Acute Health Hazard	Yes
	Chronic Health Hazard	Yes

Section 313 Toxic Chemicals: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:
Tetrachloroethylene (< 80%), Trichloroethylene (< 0.1%)

Clean Air Act:
Section 112 Hazardous Air Pollutants (HAPs): Tetrachloroethylene, Trichloroethylene

U.S. State Regulations:

California Safe Drinking Water and Toxic Enforcement Act (Prop 65):
This product may contain the following chemicals known to the state of California to cause cancer, birth defects or other reproductive harm:
Tetrachloroethylene (< 80%)
Cumene (< 0.2%)
Trichloroethylene (< 0.1)
Ethylbenzene (< 0.05%)

Consumer Products VOC Regulations: This product cannot be sold for use in California and New Jersey. In other states with Consumer Products VOC regulations, this product is compliant as a Brake Cleaner.

State Right to Know:

New Jersey:	127-18-4, 8052-41-3, 79-01-6
Pennsylvania:	127-18-4, 8052-41-3, 79-01-6
Massachusetts:	127-18-4, 8052-41-3, 79-01-6
Rhode Island :	127-18-4, 8052-41-3, 79-01-6

Canadian Regulations:

Canadian DSL Inventory: All ingredients are either listed on the DSL Inventory or are exempt.

WHMIS Hazard Class: A, D1B, D2A, D2B

European Union Regulations:

RoHS Compliance: This product is compliant with Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003. This product does not contain any of the restricted substances as listed in Article 4(1) of the RoHS Directive.

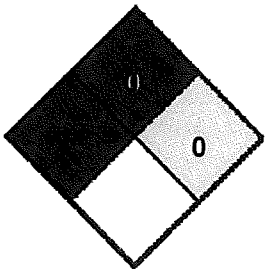
Additional Regulatory Information: None

Section 16: Other Information

HMIS® (II)	
Health:	**2**
Flammability:	**0**
Reactivity:	**0**
PPE:	**B**

Ratings range from 0 (no hazard) to 4 (severe hazard)

NFPA



Prepared By: Michelle Rudnick
CRC #: 934A-D
Revision Date: 11/18/2010

Changes since last revision: Formula change

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. This information is accurate to the best of CRC Industries' knowledge or obtained from sources believed by CRC to be accurate. Before using any product, read all warnings and directions on the label. For further clarification of any information contained on this MSDS consult your supervisor, a health & safety professional, or CRC Industries.

ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstract Service
CFR: Code of Federal Regulations
DOT: Department of Transportation
DSL: Domestic Substance List
g/L: grams per Liter
HMIS: Hazardous Materials Identification System
IARC: International Agency for Research on Cancer
IATA: International Air Transport Association
ICAO: International Civil Aviation Organization
IMDG: International Maritime Dangerous Goods
IMO: International Maritime Organization
lbs./gal: pounds per gallon
LC: Lethal Concentration
LD: Lethal Dose
NA: Not Applicable
ND: Not Determined
NIOSH: National Institute of Occupational Safety & Health
NFPA: National Fire Protection Association
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
PMCC: Pensky-Martens Closed Cup
PPE: Personal Protection Equipment
ppm: Parts per Million
RoHS: Restriction of Hazardous Substances
STEL: Short Term Exposure Limit
TCC: Tag Closed Cup
TWA: Time Weighted Average
WHMIS: Workplace Hazardous Materials Information System

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name	FORMULA 815 GD
Product number	301007
Company information	Brulin & Company, Inc. P.O. Box 270 Indianapolis, IN 46206 US www.Brulin.com
Emergency	CHEMTREC 1-800-424-9300
General information	Phone: 317-923-3211 Fax: 317-925-4596

2. Hazards Identification

Emergency overview Irritating to eyes.

Potential health effects

Eyes	Causes eye irritation.
Skin	Health injuries are not known or expected under normal use. Prolonged skin contact may cause skin irritation.
Inhalation	Health injuries are not known or expected under normal use.
Ingestion	Health injuries are not known or expected under normal use.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Sodium Tripolyphosphate	7758-29-4	< 5
Non-hazardous and other components below reportable levels		< > 90

Composition comments The manufacturer has claimed one or more ingredients as trade secret.

4. First Aid Measures

First aid procedures

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops or persists.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops or persists. Launder contaminated clothing before reuse.
Ingestion	Give several glasses of water to dilute contents of stomach and call a physician.

General advice If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties Not a fire hazard.

Extinguishing media

Suitable extinguishing media Use methods for the surrounding fire.

6. Accidental Release Measures

Personal precautions Local authorities should be advised if significant spillages cannot be contained. Keep unnecessary personnel away.

Environmental precautions Prevent further leakage or spillage if safe to do so.

Methods for cleaning up	Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

7. Handling and Storage

Handling	Handle and open container with care. Avoid contact with eyes. Wear personal protective equipment.
Storage	Keep container tightly closed. Keep at temperatures between 4 and 49 °C.

8. Exposure Controls / Personal Protection

Personal protective equipment

Eye / face protection	Avoid contact with eyes. Wear chemical goggles.
Skin protection	Wear impervious gloves for prolonged contact.
Respiratory protection	No personal respiratory protective equipment normally required.

9. Physical & Chemical Properties

Appearance	Not available.
Color	blue green
Odor	mild
Odor threshold	Not available.
Form	Liquid.
pH	12
Freezing point	Not available.
Boiling point	212 °F (100 °C)
Flash point	> 212 °F (> 100 °C)
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor density	0.6
Specific gravity	1.075
Solubility (water)	100 %
VOC	0 %

10. Chemical Stability & Reactivity Information

Chemical stability	Stable at normal conditions.
Conditions to avoid	Do not freeze.
Incompatible materials	None known.
Hazardous decomposition products	None known.
Possibility of hazardous reactions	Will not occur.

11. Toxicological Information

Acute effects	Acute LD50: 11577 mg/kg, Rat, Oral
Local effects	Irritating to eyes.

12. Ecological Information

Ecotoxicity	This material is not expected to be harmful to aquatic life.

13. Disposal Considerations

Disposal instructions Dispose in accordance with all applicable regulations. This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste.

14. Transport Information

DOT

Not regulated as hazardous goods.

IATA

Not regulated as hazardous goods.

IMDG

Not regulated as hazardous goods.

15. Regulatory Information

US federal regulations This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA (Superfund) reportable quantity

Sodium Tripolyphosphate: 5000.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical No

State regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US - Pennsylvania RTK - Hazardous Substances: Listed substance

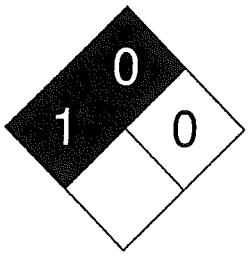
Sodium Tripolyphosphate (7758-29-4)	Listed.

16. Other Information

HMIS rating

Health	/	1
Flammability		0
Physical Hazard		0
Personal Protection		B

NFPA codes



Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release.

This data sheet contains changes from the previous version in section(s):

Disposal Considerations: Disposal instructions

Issue date

02-25-2013

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name	**BRULIN 1990 GD**
Product number	301008
Revision date	05-Jan-2006
Company information	Brulin & Company, Inc. P.O. Box 270 Indianapolis, IN 46206 US www.Brulin.com
Emergency	CHEMTREC 1-800-424-9300
General information	Phone: 317-923-3211 Fax: 317-925-4596

2. Hazards Identification

Emergency overview	CAUTION: EYE AND SKIN IRRITANT. This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
Potential short term health effects	
Eyes	Contact with eyes may cause irritation.
Skin	Health injuries are not known or expected under normal use. Prolonged and/or repeated skin contact may result in mild irritation or redness.
Inhalation	Health injuries are not known or expected under normal use.
Ingestion	Health injuries are not known or expected under normal use.

3. Composition / Information on Ingredients

Hazardous component(s)	CAS #	Percent
Sodium Tripolyphosphate	7758-29-4	< 10

4. First Aid Measures

First aid procedures	
Eye contact	Immediately flush eyes with plenty of water for at least 20 minutes. Get medical attention if irritation develops or persists.
Skin contact	Wash off with soap and water. Launder contaminated clothing before reuse. Get medical attention if irritation develops or persists.
Inhalation	Move to fresh air.
Ingestion	Give several glasses of water to dilute contents of stomach and call a physician.
General advice	If you feel unwell, seek medical advice (show the label where possible).

5. Fire Fighting Measures

Extinguishing media	
Suitable extinguishing media	Use any media suitable for the surrounding fires.

6. Accidental Release Measures

Methods for cleaning up	Soak up with inert absorbent material. Shovel into suitable container for disposal.

7. Handling and Storage

Handling	Handle and open container with care.
Storage	Keep at temperatures between 4 and 43°C.

8. Exposure Controls / Personal Protection

Personal protective equipment

Eye / face protection	Avoid contact with eyes. Wear safety glasses with side shields. Goggles. or Face-shield.
Skin protection	Protective gloves.
Respiratory protection	No personal respiratory protective equipment normally required. A NIOSH- approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.
General hygeine considerations	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with the skin and the eyes. Wash hands before breaks and immediately after handling the product.

9. Physical & Chemical Properties

Appearance	Not available
Clarity	Not available
Color	water white
Form	Liquid.
Odor	mild
Odor threshold	Not available
Physical state	Liquid
pH	11 - 11.6
Melting point	Not available
Freezing point	Not available
Boiling point	212 °F
Flash point	> 212 °F Pensky-Martens Closed Cup
Evaporation rate	Not available
Flammability limits in air, lower, % by volume	Not available
Flammability limits in air, upper, % by volume	Not available
Vapor pressure	17
Vapor density	0.6
Specific gravity	1.068
Relative density	Not available
Solubility (H2O)	100 %
Octanol/H2O coeff	Not available
Auto-ignition temperature	Not available
Decomposition temperature	Not available
VOC (Weight %)	0 %

10. Chemical Stability & Reactivity Information

Chemical stability	Stable at normal conditions.
Conditions to avoid	Do not freeze.
Incompatible materials	Strong acids. and oxidizing agents

11. Toxicological Information

Acute effects	Acute LD50: 39998 mg/kg, Rat, Oral
Further information	This product has no known adverse effect on human health.

12. Ecological Information

Ecotoxicity	This material is not expected to be harmful to aquatic life.

13. Disposal Considerations

Disposal instructions

Dispose in accordance with all applicable regulations. This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste.

14. Transport Information

Department of Transportation (DOT) Requirements

Not regulated as dangerous goods.

Department of Transportation (DOT) Requirements NON-BULK

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical	Yes

CERCLA (Superfund) reportable quantity

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - No Delayed Hazard - No Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
Section 302 extremely hazardous substance	No
Section 311 hazardous chemical	No

International regulations

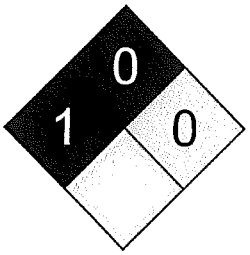
The product does not need to be labelled in accordance with EC directives or respective national laws.

16. Other Information

HMIS rating

Health	/	1
Flammability		0
Physical Hazard		0
Personal Protection		B

NFPA codes



Prepared date 05-Jan-2006 10:11:24

Superseded date 03-Nov-2005 10:16:04

Disclaimer The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release.

SECTION I: IDENTIFICATION OF PRODUCT

COMPANY:	**Diversity Technologies Corp.** **8750 – 53rd Ave.** **Edmonton, AB T6E 5G2**	DATE: PHONE: FAX:	**October 6, 2015** **780-440-4923** **780-469-1899**

PRODUCT NAME: **Calcium Chloride 94-97 %**
(HT FINES; POWDER; HT POWDER; MINIPELLETS; PELADOW)

PRODUCT USE: Oilwell drilling fluid & cement additive
CHEMICAL FAMILY: Inorganic calcium salt CAS #: 10043-52-4

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

WHMIS CLASSIFICATION: D2B
WORKPLACE HAZARD: Eye irritant

TRANSPORTATION OF DANGEROUS GOODS (TDG)

PROPER SHIPPING NAME: Not regulated under TDG
TDG CLASSIFICATION: Not applicable
UN NUMBER (PIN): Not applicable
PACKING GROUP: Not applicable

SECTION II: HAZARDOUS INGREDIENTS

INGREDIENT	% (w/w)	CAS NUMBER	LD_{50}Oral-Rat	LC_{50}Inhal-Rat	ACGIH-TLV
Calcium chloride	94-97	10043-52-4	1000 mg/kg	No information	Not established

SECTION III: HEALTH HAZARDS

ROUTE OF ENTRY: ☑ EYE CONTACT ☑ SKIN CONTACT ☐ INHALATION ☐ INGESTION

EYE CONTACT: Solid and concentrated liquid will cause moderate to severe eye irritation with corneal injury that may be slow to heal. When dissolving, the heat produced may cause more intense effects as well as thermal burns.

SKIN CONTACT: Prolonged or repeated contact with the dust may irritate the skin or cause burns especially if skin is moist or if material is confined to skin.

INGESTION: Oral toxicity considered low. Swallowing solids may cause gastrointestinal irritation or ulceration.

INHALATION: Breathing dust may irritate the nose and throat and cause coughing and chest discomfort.

CARCINOGENICITY: No information available
TERATOGENICITY: No information available
REPRODUCTIVE TOXICITY: No information available
MUTAGENICITY: No information available

SYNERGISTIC PRODUCTS: No information available

SECTION IV: FIRST AID MEASURES

EYE CONTACT:	Immediately flush with gently flowing warm water for 15 minutes. Obtain medical attention when flushing is complete.
SKIN CONTACT:	Wash affected area with soap and water. Remove contaminated clothing and shoes; wash before reuse. If irritation persists, or develops, obtain medical attention.
INGESTION:	Do not induce vomiting. Rinse mouth with water. Give 1-2 glasses of water to drink. If spontaneous vomiting occurs, keep head below hips to ensure vomitus is not aspirated, then rinse mouth and readminister water. Obtain medical attention. Never give anything by mouth to an unconscious or convulsing victim.
INHALATION:	Move to fresh air. Apply oxygen or artificial respiration if required. If breathing difficulties, or distress, continue obtain medical attention.

SECTION V: PHYSICAL DATA

APPEARANCE AND ODOUR:	White to off-white powder, odourless		
SPECIFIC GRAVITY:	2.2		
BOILING POINT (°C):	1670		
MELTING POINT (°C):	772 (approx)		
SOLUBILITY IN WATER:	Very soluble	pH:	8 – 9 (35% solution)
PERCENT VOLATILE BY VOLUME:	Not applicable		
EVAPORATION RATE:	Not applicable		
VAPOUR PRESSURE (mmHg):	Not applicable		
VAPOUR DENSITY (air = 1):	Not applicable		
BULK DENSITY:	Not available		

SECTION VI: FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:	Not applicable
FLAMMABLE LIMITS:	Not applicable
EXTINGUISHING MEDIA:	Use media suitable for surrounding fire and packaging.
SPECIAL FIRE FIGHTING PROCEDURES:	Self-contained breathing apparatus required for fire-fighting personnel.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Not available.
HAZARDOUS COMBUSTION PRODUCTS:	Hydrogen chloride is a hazardous combustion product at temperatures in excess of 1600°C.

SECTION VII: REACTIVITY DATA

STABILITY:	☑ STABLE	☐ UNSTABLE
INCOMPATIBILITY (CONDITIONS TO AVOID):	May react violently with processed lime to produce heat. Corrosive to some metals. Corrosive when wet. Flammable hydrogen may be generated from contact with metals such as zinc or sodium. Avoid contact with sulfuric acid. Heat is generated when mixed with water. Splattering or boiling may occur.	
CONDITIONS OF REACTIVITY:	Not available	
HAZARDOUS DECOMPOSITION PRODUCTS:	Hydrogen.	
HAZARDOUS POLYMERIZATION:	☑ WILL NOT OCCUR	☐ MAY OCCUR

SECTION VIII: PREVENTIVE MEASURES

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:	NIOSH/MESA approved dust mask or respirator if high dust levels expected.
VENTILATION:	Use local exhaust ventilation, process enclosure or other engineering controls to maintain dust level below TLV.
PROTECTIVE GLOVES:	Rubber gloves recommended.
EYE PROTECTION:	Chemical goggles recommended.
OTHER PROTECTIVE EQUIPMENT (SPECIFY):	Full body covering recommended. Ensure eyewash and safety shower available.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Wash thoroughly after handling. Avoid contact with eyes, skin, or clothing. Store in a cool, very dry place; material is hygroscopic. Keep container tightly closed when not in use. Heat developed during diluting or dissolving is very high. Use cool water when diluting or dissolving. Empty packaging contains residual hazardous material and should be stored and handled as if full.

STEPS TO BE TAKEN IN CASE THE MATERIAL IS SPILLED OR RELEASED

Wear suitable protective equipment. Collect uncontaminated material for repacking. Collect contaminated material in an approved container for disposal. Wash residual material with copious amounts of water.

WASTE DISPOSAL METHOD

Dispose/landfill in accordance with federal, provincial and local regulations. It is the responsibility of the end-user to determine if material meets the criteria of hazardous waste at the time of disposal. Empty containers contain residual chemical and must be disposed of or recycled in accordance with local regulations.

SECTION IX: PREPARATION

The information contains herein is given in good faith, but no warranty, expressed or implied, is made.

DATE ISSUED:	**October 6, 2015**
SUPERSEDES:	October 6, 2012
BY:	Regulatory Affairs
PHONE:	780-440-4923

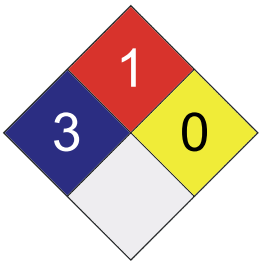
MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product Name	**EASY-OFF® Oven Cleaner - Heavy Duty Regular - Trigger**
UPC CODES	Refer to section 16
CAS #	Mixture
Product Use	Oven cleaner
Distributed by	Reckitt Benckiser (Canada) Inc. 1680 Tech Avenue Unit #2 Mississauga, ON L4W 5S9 In Case of Emergency: 1-800-888-0192 Transportation Emergencies: 24 Hour Number: North America: CHEMTREC: 1-800-424-9300 Outside North America: 1-703-527-3887

LEGEND HMIS/NFPA	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

Health	/	3
Flammability		1
Physical Hazard		0
Personal Protection		D



2. Hazards Identification

Emergency Overview

DANGER -- CORROSIVE
CORROSIVE TO EYES AND SKIN
Causes burns.
Do not get in eyes, on skin or on clothing.
DO NOT swallow.
DO NOT inhale.
Wear long rubber gloves.
To open, set bottle on hard level surface. Keep back label facing you. Use one hand to depress the button on the top of the nozzle while you turn the red portion of the nozzle in a counterclockwise direction with the other hand. Rotate nozzle counterclockwise to achieve desired spray pattern.

Keep out of reach of children.

Potential short term health effects

Routes of exposure	Eye, Skin contact, Skin absorption, Inhalation, Ingestion.
Eyes	Corrosive. Causes burns to eyes on contact.
Skin	Corrosive. Causes burns to skin and mucous membranes on contact.
Inhalation	Corrosive. Avoid breathing spray mist.
Ingestion	Corrosive. Harmful if swallowed.
Target organs	Eyes. Respiratory system. Skin. Gastrointestinal tract.
Chronic effects	The finished product is not expected to have chronic health effects.
Signs and symptoms	The product causes burns of eyes, skin and mucous membranes.
Potential environmental effects	Components of this product have been identified as having potential environmental concerns.

3. Composition/Information on Ingredients

Ingredient(s)	CAS #	Percent
Paraffin waxes (petroleum), clay-treated	64742-43-4	0.5 - 1.5
Monoethanolamine	141-43-5	1 - 5
Sodium hydroxide	1310-73-2	3 - 7
Diethylene glycol monobutyl ether	112-34-5	3 - 7

4. First Aid Measures

First aid procedures

Eye contact If in eyes, rinse with water for 15 minutes.

Skin contact If on skin, rinse well with water. If on clothes, remove clothes.

Inhalation If breathed in, move person into fresh air.

Ingestion If swallowed, call a Poison Control Centre or doctor immediately. Do not induce vomiting.

Notes to physician Treat patient symptomatically.

General advice Keep away from sources of ignition. No smoking. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

5. Fire-fighting Measures

Flammable properties Not flammable by WHMIS criteria.

Extinguishing media

Suitable extinguishing media Dry chemical. Alcohol foam. Water spray.

Unsuitable extinguishing media Not available

Protection of firefighters

Specific hazards arising from the chemical Not available

Protective equipment for firefighers Firefighters should wear full protective clothing including self contained breathing apparatus.

Hazardous combustion products May include and are not limited to: Oxides of carbon. Oxides of nitrogen.

Explosion data

Sensitivity to mechanical impact Not available

Sensitivity to static discharge Not available

6. Accidental Release Measures

Personal precautions Keep unnecessary personnel away. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak.

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not contaminate water.

Methods for containment Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas.

Methods for cleaning up Before attempting clean up, refer to hazard data given above. Small spills may be absorbed with non-reactive absorbent and placed in suitable, covered, labelled containers. Prevent large spills from entering sewers or waterways. Contact emergency services and supplier for advice.

7. Handling and Storage

Handling CORROSIVE TO EYES AND SKIN. Use good industrial hygiene practices in handling this material. Do not get this material in your eyes, on your skin, or on your clothing. Do not ingest. Do not breathe vapours or spray mist.

Storage Keep out of reach of children. Do not store at temperatures above 49°C (120.2°F). Keep away from heat, open flames or other sources of ignition.
Keep from freezing.

8. Exposure Controls / Personal Protection

Exposure limit values

Ingredient(s)	Exposure limit values
Diethylene glycol monobutyl ether	**ACGIH-TLV** Not established
Monoethanolamine	**ACGIH-TLV** TWA: 3 ppm STEL: 6 ppm
Paraffin waxes (petroleum), clay-treated	**ACGIH-TLV** TWA: 2 mg/m3
Sodium hydroxide	**ACGIH-TLV** Ceiling: 2 mg/m3

Engineering controls Provide adequate ventilation.

Personal protective equipment

Eye/Face protection Tightly fitting safety goggles.
Emergency responders should wear full eye and face protection.

Hand protection Wear long rubber gloves when handling.
Emergency responders should wear impermeable gloves.

Skin and body protection As required by employer code. long sleeved clothing
Follow label directions carefully.
Emergency responders should wear impermeable clothing and footwear when responding to a situation where contact with the liquid is possible.

Respiratory protection Not normally required under normal use conditions.
Emergency responders should wear self-contained breathing apparatus (SCBA) to avoid inhalation of vapours generated by this product during a spill or other clean-up operations.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink.
Washing with soap and water after use is recommended as good hygienic practice to prevent possible eye irritation from hand contact.

9. Physical and Chemical Properties

Appearance	Liquid
Colour	Off white
Form	Fluid
Odour	Lemon
Odour threshold	Not available
Physical state	Liquid
pH	14 (Basic)
Freezing point	Not available
Boiling point	Not available
Pour point	Not available
Evaporation Rate	Not available
Flash point	> 93.33 °C (> 200 °F) Tagliabue
Auto-ignition temperature	Not available
Flammability limits in air, lower, % by volume	Not available
Flammability Limits in Air, Upper, % by Volume	Not available
Vapour pressure	Not available
Vapour density	Not available
Specific gravity	1.07
Octanol/water coefficient	Not available
Solubility (H2O)	Complete

VOC (Weight %)	Not available
Viscosity	Thick

10. Stability and Reactivity

Reactivity	This product may react with strong oxidizing agents.
Possibility of hazardous reactions	Hazardous polymerisation does not occur.
Chemical stability	Stable under recommended storage conditions.
Conditions to avoid	Do not spray on pilot light, electrical connections, switch, heating elements, or thermostats. Do not spray onto aluminum or painted surfaces as damage to these surfaces may occur. Do not use on grill exterior, interior or components.
Incompatible materials	Acids. Oxidizing agents. Aluminum.
Hazardous decomposition products	May include and are not limited to: Oxides of carbon. Oxides of nitrogen.

11. Toxicological Information

Component analysis - LC50

Ingredient(s)	LC50
Diethylene glycol monobutyl ether	Not available
Monoethanolamine	1210 mg/m3 mouse
Paraffin waxes (petroleum), clay-treated	Not available
Sodium hydroxide	Not available

Component analysis - Oral LD50

Ingredient(s)	LD50
Diethylene glycol monobutyl ether	2000 mg/kg guinea pig; 3384 mg/kg rat; 2200 mg/kg rabbit
Monoethanolamine	1720 mg/kg rat; 700 mg/kg mouse
Paraffin waxes (petroleum), clay-treated	> 15000 mg/kg rat
Sodium hydroxide	Not available

Effects of acute exposure

Eye	Corrosive. Causes burns to eyes on contact.
Skin	Corrosive. Causes burns to skin and mucous membranes on contact.
Inhalation	Corrosive. Avoid breathing spray mist.
Ingestion	Corrosive. Harmful if swallowed.
Sensitisation	The finished product is not expected to have chronic health effects.
Chronic effects	The finished product is not expected to have chronic health effects.
Carcinogenicity	The finished product is not expected to have chronic health effects.
Mutagenicity	The finished product is not expected to have chronic health effects.
Reproductive effects	The finished product is not expected to have chronic health effects.
Teratogenicity	The finished product is not expected to have chronic health effects.
Name of Toxicologically Synergistic Products	Not available

12. Ecological Information

Ecotoxicity Components of this product have been identified as having potential environmental concerns.

Ecotoxicity - Freshwater Algae - Acute Toxicity Data

Diethylene glycol monobutyl ether	112-34-5	96 Hr EC50 Desmodesmus subspicatus: >100 mg/L
Monoethanolamine	141-43-5	72 Hr EC50 Desmodesmus subspicatus: 15 mg/L

Ecotoxicity - Freshwater Fish - Acute Toxicity Data

Diethylene glycol monobutyl ether	112-34-5	96 Hr LC50 Lepomis macrochirus: 1300 mg/L [static]
Monoethanolamine	141-43-5	96 Hr LC50 Pimephales promelas: 227 mg/L [flow-through]; 96 Hr LC50 Brachydanio rerio: 3684 mg/L [static]; 96 Hr LC50 Lepomis macrochirus: 300-1000 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: 114-196 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: >200 mg/L [flow-through]
Sodium hydroxide	1310-73-2	96 Hr LC50 Oncorhynchus mykiss: 45.4 mg/L [static]

Ecotoxicity - Water Flea - Acute Toxicity Data

Diethylene glycol monobutyl ether	112-34-5	24 Hr EC50 Daphnia magna: 2850 mg/L; 48 Hr EC50 Daphnia magna: >100 mg/L
Monoethanolamine	141-43-5	48 Hr EC50 Daphnia magna: 65 mg/L

Persistence and degradability Not available

Bioaccumulation/accumulation Not available

Mobility in environmental media Not available

Environmental effects Not available

Aquatic toxicity Not available

Partition coefficient Not available

Chemical fate information Not available

Other adverse effects Not available

13. Disposal Considerations

Disposal instructions Dispose in accordance with all applicable regulations.

Waste from residues / unused products Not available

Contaminated packaging Not available

14. Transport Information

U.S. Department of Transportation (DOT)

UN 3266, Corrosive liquid, basic, inorganic, N.O.S.
(Sodium Hydroxide, Monoethanolamine), Class 8, PG II,
Limited Quantity Re-classed as Consumer Commodity ORM-D

Transportation of Dangerous Goods (TDG - Canada)

UN 3266, Corrosive liquid, basic, inorganic, N.O.S. (Sodium Hydroxide, Monoethanolamine), Class 8, PG II, Limited Quantity Re-classed as Consumer Commodity/Limited Quantity

IMDG (Marine Transport)

UN 3266, Corrosive liquid, basic, inorganic, N.O.S. (Sodium Hydroxide, Monoethanolamine), Class 8, PG II, Limited Quantity

IATA/ICAO (Air)

UN 3266, Corrosive liquid, basic, inorganic, N.O.S. (Sodium Hydroxide, Monoethanolamine), Class 8, PG II

15. Regulatory Information

Canadian federal regulations

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Smectite group minerals is listed on the NDSL. However, it is exempt from notification to Environment Canada because the substance is naturally occurring.

Product Registration: Product is compliant with CCCR regulatory guidelines; a specific registration is not required for this product.

Canada - WHMIS - Ingredient Disclosure List

Diethylene glycol monobutyl ether	112-34-5	1 %
Monoethanolamine	141-43-5	1 %
Sodium hydroxide	1310-73-2	1 %

WHMIS classification

Exempt - Consumer product

Inventory Status

Country(s) or region	Inventory Name	On Inventory (Yes/No)*
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

Disclaimer	This product should only be used as directed on the label and for the purpose intended. To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.
Further information	62200-00404 - 475 mL - EASY-OFF® Oven Cleaner - Heavy Duty Regular - Trigger - 364199
Issue date	25-Feb-2011
Effective Date	15-Feb-2011
Expiry Date	15-Feb-2014
Prepared by	Reckitt Benckiser Regulatory Department 800-333-3899
Other Information	For an updated MSDS, please contact the supplier/manufacturer listed on the first page of the document.

SAFETY DATA SHEET

CAUSTIC SODA BEADS (TY)

Section 1. Identification

Product identifier : CAUSTIC SODA BEADS (TY)

Chemical name : sodium hydroxide

Product code : Q07219

Relevant identified uses of the substance or mixture

Identified uses
Industrial applications

Supplier's details : QUADRA CHEMICALS LTD.
3901 F.X Tessier
Vaudreuil-Dorion, QC
CANADA J7V 5V5
1-800-665-6553

Emergency telephone number (with hours of operation) : **TRANSPORTATION EMERGENCY - 24HRS/DAY - 7 DAYS/WEEK IN CANADA - CALL 1-888-922-3330**

Section 2. Hazard identification

Classification of the substance or mixture : CORROSIVE TO METALS - Category 1
SKIN CORROSION - Category 1
SERIOUS EYE DAMAGE - Category 1
Health Hazards Not Otherwise Classified - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : May be corrosive to metals.
Causes severe digestive tract burns.
Causes severe respiratory tract burns.
Causes severe skin burns and eye damage.

Precautionary statements

Prevention : Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep only in original packaging. Do not breathe dust or mist. Wash hands thoroughly after handling.

Response : Absorb spillage to prevent material damage. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or

Section 2. Hazard identification

physician.

Storage : Store locked up. Store in a corrosion resistant container with a resistant inner liner.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : Keep container tightly closed. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling. Do not breathe dust.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : sodium hydroxide

Ingredient name	% (w/w)	CAS number
sodium hydroxide	100	1310-73-2

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Get medical attention immediately. Call a poison center or physician. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Section 4. First-aid measures

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Severely corrosive to the respiratory system.

Skin contact : Causes severe burns.

Ingestion : Severely corrosive to the digestive tract. Causes severe burns. May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : Adverse symptoms may include the following:
stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : No specific fire or explosion hazard.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
metal oxide/oxides

Section 5. Fire-fighting measures

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Move containers from spill area. Absorb spillage to prevent material damage. Avoid dust generation. Using a vacuum with HEPA filter will reduce dust dispersal. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill : Move containers from spill area. Absorb spillage to prevent material damage. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe dust. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container. Absorb spillage to prevent material damage.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store in a corrosion resistant container with a resistant inner liner. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
sodium hydroxide	**ACGIH TLV (United States, 3/2016).** C: 2 mg/m³

Appropriate engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure controls/personal protection

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Physical state : Solid. [Granules.]

Color : White.

Odor : Odourless.

Molecular weight : 40 g/mole

Molecular formula : H-Na-O

Odor threshold : Not available.

pH : 13.5 [Conc. (% w/w): 1%]

Melting point : 323°C (613.4°F)

Boiling point : 1388°C (2530.4°F)

Flash point : Not available.

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : Not available.

Relative density : 1.15

Density : 2.1 g/cm³

Solubility : Easily soluble in the following materials: cold water.

Solubility in water : 1090 g/l

Dispersibility properties : Not available.

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

Volatility : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials :

Section 10. Stability and reactivity

metals
acids
alkalis
moisture

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
sodium hydroxide	Eyes - Severe irritant	Monkey	-	24 hours 1 Percent	-
	Eyes - Mild irritant	Rabbit	-	400 Micrograms	-
	Eyes - Severe irritant	Rabbit	-	24 hours 50 Micrograms	-
	Eyes - Severe irritant	Rabbit	-	1 Percent	-
	Eyes - Severe irritant	Rabbit	-	0.5 minutes 1 milligrams	-
	Skin - Mild irritant	Human	-	24 hours 2 Percent	-
	Skin - Severe irritant	Rabbit	-	24 hours 500 milligrams	-

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Section 11. Toxicological information

Information on the likely routes of exposure : Routes of entry anticipated: Oral, Inhalation.

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Severely corrosive to the respiratory system.

Skin contact : Causes severe burns.

Ingestion : Severely corrosive to the digestive tract. Causes severe burns. May cause burns to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : Adverse symptoms may include the following:
stomach pains

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
sodium hydroxide	Acute EC50 40.38 mg/l Fresh water	Crustaceans - Ceriodaphnia dubia - Neonate	48 hours
	Acute LC50 125 ppm Fresh water	Fish - Gambusia affinis - Adult	96 hours

Section 12. Ecological information

Persistence and degradability

Not available.

Bioaccumulative potential

Not available.

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	TDG Classification
UN number	1823
UN proper shipping name	SODIUM HYDROXIDE, SOLID
Transport hazard class(es)	8
Packing group	II
Additional information	Not available.

Section 15. Regulatory information

Canada inventory : This product is listed or exempted.

Section 16. Other information

History

Date of issue/Date of revision : 6 November 2019

Prepared by : Regulatory Affairs

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
LogPow = logarithm of the octanol/water partition coefficient
UN = United Nations
HPR = Hazardous Products Regulations

Procedure used to derive the classification

Classification	Justification
CORROSIVE TO METALS - Category 1	Expert judgment
SKIN CORROSION - Category 1	On basis of test data
SERIOUS EYE DAMAGE - Category 1	On basis of test data
Health Hazards Not Otherwise Classified - Category 1	On basis of test data

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET

SC0888000

Section 1. Identification

Product name : CD™888 Glass Cleaner Aerosol

Product code : SC0888000

Other means of identification : Not available.

Product type : Aerosol.

Relevant identified uses of the substance or mixture and uses advised against

Paint or paint related material.

Manufacturer : Sprayon Products Group
101 W. Prospect Avenue,
Cleveland, Ohio 44115

National contact : Sprayon Products
180 Brunel Road
Mississauga, Ontario L4Z 1T5 Canada

Emergency telephone number of the company : US / Canada: (800) 424-9300
Mexico: SETIQ 800-00-214-00 / 55-5559-1588 Available 24 hours and 365 days a year

Product Information Telephone Number : US / Canada: (800) 247-3266
Mexico: Not Available

Regulatory Information Telephone Number : US / Canada: (216) 566-2902
Mexico: Not Available

Transportation Emergency Telephone Number : US / Canada: (800) 424-9300
Mexico: SETIQ 800-00-214-00 / 55-5559-1588 Available 24 hours and 365 days a year

Section 2. Hazards identification

Classification of the substance or mixture : GASES UNDER PRESSURE - Compressed gas
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

Percentage of the mixture consisting of ingredient(s) of unknown acute toxicity: 1.3% (oral), 4.3% (dermal), 1.3% (inhalation)

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Contains gas under pressure; may explode if heated.
May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

Prevention : Do not breathe dust or mist.

Response : Get medical advice or attention if you feel unwell.

Section 2. Hazards identification

Storage : Protect from sunlight. Store in a well-ventilated place.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. FOR INDUSTRIAL USE ONLY.

Please refer to the SDS for additional information. Keep out of reach of children. Keep upright in a cool, dry place. Do not discard empty can in trash compactor.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Other means of identification : Not available.

CAS number/other identifiers

Ingredient name	% by weight	CAS number
Ethanol	3	64-17-5
Butane	2.74	106-97-8
Propane	1.26	74-98-6

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention following exposure or if feeling unwell.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention following exposure or if feeling unwell. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention following exposure or if feeling unwell. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention following exposure or if feeling unwell. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Section 4. First aid measures

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
irritation
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. Bursting aerosol containers may be propelled from a fire at high speed.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. In the case of aerosols being ruptured, care should be taken due to the rapid escape of the pressurized contents and propellant. If a large number of containers are ruptured, treat as a bulk material spillage according to the instructions in the clean-up section. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50°C. Do not pierce or burn, even after use. Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Empty containers retain product residue and can be hazardous.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Protect from sunlight. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits (OSHA United States)

Ingredient name	CAS #	Exposure limits
Ethanol	64-17-5	**ACGIH TLV (United States, 1/2022).** STEL: 1000 ppm 15 minutes. **NIOSH REL (United States, 10/2020).** TWA: 1000 ppm 10 hours. TWA: 1900 mg/m³ 10 hours. **OSHA PEL (United States, 5/2018).** TWA: 1000 ppm 8 hours. TWA: 1900 mg/m³ 8 hours.
Butane	106-97-8	**NIOSH REL (United States, 10/2020).** TWA: 800 ppm 10 hours. TWA: 1900 mg/m³ 10 hours. **ACGIH TLV (United States, 1/2022).** **[Butane isomers] Explosive potential.** STEL: 1000 ppm 15 minutes.
Propane	74-98-6	**NIOSH REL (United States, 10/2020).** TWA: 1000 ppm 10 hours. TWA: 1800 mg/m³ 10 hours. **OSHA PEL (United States, 5/2018).** TWA: 1000 ppm 8 hours. TWA: 1800 mg/m³ 8 hours. **ACGIH TLV (United States, 1/2022). Oxygen Depletion [Asphyxiant]. Explosive potential.**

Occupational exposure limits (Canada)

Ingredient name	CAS #	Exposure limits
Ethyl alcohol	64-17-5	**CA Alberta Provincial (Canada, 6/2018).** 8 hrs OEL: 1000 ppm 8 hours. 8 hrs OEL: 1880 mg/m³ 8 hours. **CA British Columbia Provincial (Canada, 6/2022).** STEL: 1000 ppm 15 minutes. **CA Ontario Provincial (Canada, 6/2019).** STEL: 1000 ppm 15 minutes. **CA Saskatchewan Provincial (Canada, 7/2013).** STEL: 1250 ppm 15 minutes. TWA: 1000 ppm 8 hours. **CA Quebec Provincial (Canada, 6/2022).** STEV: 1000 ppm 15 minutes.
Butane	106-97-8	**CA Alberta Provincial (Canada, 6/2018).** 8 hrs OEL: 1000 ppm 8 hours. **CA Quebec Provincial (Canada, 6/2022).** TWAEV: 800 ppm 8 hours. TWAEV: 1900 mg/m³ 8 hours. **CA Saskatchewan Provincial (Canada, 7/2013). [Butane all isomers]** STEL: 1250 ppm 15 minutes. TWA: 1000 ppm 8 hours. **CA British Columbia Provincial (Canada, 6/2022). [butane, all isomers] Explosive potential.** STEL: 1000 ppm 15 minutes.

Section 8. Exposure controls/personal protection

		CA Ontario Provincial (Canada, 6/2019). [Butane, All isomers] Explosive potential. STEL: 1000 ppm 15 minutes.
Normal propane	74-98-6	**CA Alberta Provincial (Canada, 6/2018).** 8 hrs OEL: 1000 ppm 8 hours. **CA Quebec Provincial (Canada, 6/2022).** TWAEV: 1000 ppm 8 hours. TWAEV: 1800 mg/m³ 8 hours. **CA Saskatchewan Provincial (Canada, 7/2013).** STEL: 1250 ppm 15 minutes. TWA: 1000 ppm 8 hours. **CA British Columbia Provincial (Canada, 6/2022). Oxygen Depletion [Asphyxiant]. Explosive potential.** **CA Ontario Provincial (Canada, 6/2019). Oxygen Depletion [Asphyxiant]. Explosive potential.**
2-Butoxyethanol	111-76-2	**CA Alberta Provincial (Canada, 6/2018).** 8 hrs OEL: 97 mg/m³ 8 hours. 8 hrs OEL: 20 ppm 8 hours. **CA British Columbia Provincial (Canada, 6/2022).** TWA: 20 ppm 8 hours. **CA Ontario Provincial (Canada, 6/2019).** TWA: 20 ppm 8 hours. **CA Quebec Provincial (Canada, 6/2022).** TWAEV: 20 ppm 8 hours. **CA Saskatchewan Provincial (Canada, 7/2013).** STEL: 30 ppm 15 minutes. TWA: 20 ppm 8 hours.

Occupational exposure limits (Mexico)

Ingredient name	CAS #	Exposure limits
ethanol	64-17-5	**NOM-010-STPS-2014 (Mexico, 4/2016).** STEL: 1000 ppm 15 minutes.
Butane	106-97-8	**NOM-010-STPS-2014 (Mexico, 4/2016).** TWA: 1000 ppm 8 hours.
Propane	74-98-6	**NOM-010-STPS-2014 (Mexico, 4/2016).** TWA: 1000 ppm 8 hours.

Appropriate engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Section 8. Exposure controls/personal protection

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state : Liquid.

Color : Not available.

Odor : Not available.

Odor threshold : Not available.

pH : 10

Melting point/freezing point : Not available.

Boiling point, initial boiling point, and boiling range : Not available.

Flash point : Closed cup: -29°C (-20.2°F) [Pensky-Martens Closed Cup]

Evaporation rate : 1.6 (butyl acetate = 1)

Flammability : Not available.

Lower and upper explosion limit/flammability limit : Lower: 1.9%
Upper: 19%

Vapor pressure : 101.3 kPa (760 mm Hg)

Relative vapor density : 1 [Air = 1]

Relative density : 0.96

Solubility(ies) :

Not available.

Section 9. Physical and chemical properties

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Kinematic (40°C (104°F)): >20.5 mm^2/s (>20.5 cSt)

Molecular weight : Not applicable.

Aerosol product

Type of aerosol : Spray

Heat of combustion : 3.025 kJ/g

Enclosed space ignition - Time equivalent : 385 s/m^3

Enclosed space ignition - Deflagration density : 511 g/m^3

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : No specific data.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ethanol	LC50 Inhalation Vapor	Rat	124700 mg/m^3	4 hours
	LD50 Oral	Rat	7 g/kg	-
Butane	LC50 Inhalation Vapor	Rat	658000 mg/m^3	4 hours

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Ethanol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Eyes - Moderate irritant	Rabbit	-	0.066666667 minutes 100 mg	-
	Eyes - Moderate irritant	Rabbit	-	100 uL	-
	Eyes - Severe irritant	Rabbit	-	500 mg	-
	Skin - Mild irritant	Rabbit	-	400 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 mg	-

Section 11. Toxicological information

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
Ethanol	-	1	-

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Ethanol	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects
Butane	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects
Propane	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Ethanol	Category 2	-	-
Butane	Category 2	-	-
Propane	Category 2	-	-

Aspiration hazard

Name	Result
Butane	ASPIRATION HAZARD - Category 1
Propane	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Section 11. Toxicological information

Eye contact : Adverse symptoms may include the following:
irritation
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Ethanol	Acute EC50 17.921 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 2000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 25500 µg/l Marine water	Crustaceans - Artemia franciscana - Larvae	48 hours
	Acute LC50 42000 µg/l Fresh water	Fish - Oncorhynchus mykiss	4 days
	Chronic NOEC 4.995 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Chronic NOEC 100 ul/L Fresh water	Daphnia - Daphnia magna - Neonate	21 days
	Chronic NOEC 0.375 ul/L Fresh water	Fish - Gambusia holbrooki - Larvae	12 weeks

Persistence and degradability

Section 12. Ecological information

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Ethanol	-	-	Readily

Bioaccumulative potential

Not available.

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT Classification	TDG Classification	Mexico Classification	IATA	IMDG
UN number	UN1950	UN1950	UN1950	UN1950	UN1950
UN proper shipping name	AEROSOLS	AEROSOLS	AEROSOLS	Aerosols, non-flammable	AEROSOLS
Transport hazard class(es)	2.2	2.2	2.2	2.2	2.2
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.
Additional information	- **ERG No.**	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2). **ERG No.**	- **ERG No.**	-	**Emergency schedules** F-D, S-U

Section 14. Transport information

	126 Dependent upon container size, this product may ship under the Limited Quantity shipping exception.	126 Dependent upon container size, this product may ship under the Limited Quantity shipping exception.	126 Dependent upon container size, this product may ship under the Limited Quantity shipping exception.	Dependent upon container size, this product may ship under the Limited Quantity shipping exception.	Dependent upon container size, this product may ship under the Limited Quantity shipping exception.

Special precautions for user : Multi-modal shipping descriptions are provided for informational purposes and do not consider container sizes. The presence of a shipping description for a particular mode of transport (sea, air, etc.), does not indicate that the product is packaged suitably for that mode of transport. All packaging must be reviewed for suitability prior to shipment, and compliance with the applicable regulations is the sole responsibility of the person offering the product for transport. People loading and unloading dangerous goods must be trained on all of the risks deriving from the substances and on all actions in case of emergency situations.

Transport in bulk according to IMO instruments : Not available.

Proper shipping name : Not available.

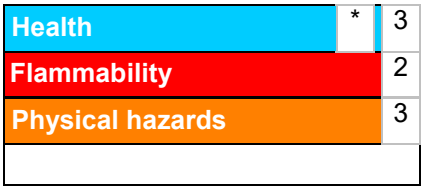
Section 15. Regulatory information

International regulations

International lists : **Australia inventory (AIIC)**: Not determined.
China inventory (IECSC): Not determined.
Japan inventory (CSCL): Not determined.
Japan inventory (ISHL): Not determined.
Korea inventory (KECI): Not determined.
New Zealand Inventory of Chemicals (NZIoC): Not determined.
Philippines inventory (PICCS): Not determined.
Taiwan Chemical Substances Inventory (TCSI): Not determined.
Thailand inventory: Not determined.
Turkey inventory: Not determined.
Vietnam inventory: Not determined.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

Procedure used to derive the classification

Classification	Justification
GASES UNDER PRESSURE - Compressed gas SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2	Calculation method Calculation method

Section 16. Other information

History

Date of printing	:	6/10/2023
Date of issue/Date of revision	:	6/10/2023
Date of previous issue	:	11/25/2022
Version	:	10.01
Key to abbreviations	:	ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) N/A = Not available SGG = Segregation Group UN = United Nations

Indicates information that has changed from previously issued version.

Notice to reader

It is recommended that each customer or recipient of this Safety Data Sheet (SDS) study it carefully and consult resources, as necessary or appropriate, to become aware of and understand the data contained in this SDS and any hazards associated with the product. This information is provided in good faith and believed to be accurate as of the effective date herein. However, no warranty, express or implied, is given. The information presented here applies only to the product as shipped. The addition of any material can change the composition, hazards and risks of the product. Products shall not be repackaged, modified, or tinted except as specifically instructed by the manufacturer, including but not limited to the incorporation of products not specified by the manufacturer, or the use or addition of products in proportions not specified by the manufacturer. Regulatory requirements are subject to change and may differ between various locations and jurisdictions. The customer/buyer/user is responsible to ensure that his activities comply with all country, federal, state, provincial or local laws. The conditions for use of the product are not under the control of the manufacturer; the customer/buyer/user is responsible to determine the conditions necessary for the safe use of this product. The customer/buyer/user should not use the product for any purpose other than the purpose shown in the applicable section of this SDS without first referring to the supplier and obtaining written handling instructions. Due to the proliferation of sources for information such as manufacturer-specific SDS, the manufacturer cannot be responsible for SDSs obtained from any other source.

FICHE DE DONNÉES DE SÉCURITÉ

SC0888000

Section 1. Identification

Nom du produit : CD™888 Glass Cleaner Aerosol

Code du produit : SC0888000

Autres moyens d'identification : Non disponible.

Type de produit : Aérosol.

Utilisations pertinentes identifiées de la substance ou du mélange et utilisations non recommandées

Peinture ou matériau lié à la peinture.

Manufacturier : Sprayon Products Group
101 W. Prospect Avenue,
Cleveland, Ohio 44115

Contact national : Sprayon Products
180 Brunel Road
Mississauga, Ontario L4Z 1T5 Canada

Numéro de téléphone d'urgence de la société : US / Canada: (800) 424-9300
Mexique: SETIQ 800-00-214-00 / 55-5559-1588 Disponible 24 heures/365 jours par année

Numéro de produit d'information téléphonique : US / Canada: (800) 247-3266
Mexique: Non disponible

Numéro de téléphone d'information réglementaire : US / Canada: (216) 566-2902
Mexique: Non disponible

Transport Numéro d'urgence : US / Canada: (800) 424-9300
Mexique: SETIQ 800-00-214-00 / 55-5559-1588 Disponible 24 heures/365 jours par année

Section 2. Identification des dangers

Classement de la substance ou du mélange : GAZ SOUS PRESSION - Gaz comprimé
TOXICITÉ POUR CERTAINS ORGANES CIBLES - EXPOSITIONS RÉPÉTÉES - Catégorie 2

Pourcentage du mélange constitué de composants de toxicité aiguë inconnue: 1.3 % (orale), 4.3 % (cutanée), 1.3 % (par inhalation)

Éléments d'étiquetage SGH

Pictogrammes de danger :

Mention d'avertissement : Attention

Section 2. Identification des dangers

Mentions de danger : Contient un gaz sous pression; peut exploser sous l'effet de la chaleur.
Risque présumé d'effets graves pour les organes à la suite d'expositions répétées ou d'une exposition prolongée.

Conseils de prudence

Prévention : Ne pas respirer les poussières ou brouillards.

Intervention : Consulter un médecin en cas de malaise.

Stockage : Protéger du rayonnement solaire. Stocker dans un endroit bien ventilé.

Élimination : Éliminer le contenu et le récipient conformément à toutes les réglementations locales, régionales, nationales et internationales.

Éléments d'une étiquette complémentaire : AVERTISSEMENT: Ce produit contient des matières chimiques connue d'Etat de la Californie qui peut causer le cancer, dommages à la naissance ou autre malformation congénitale. POUR USAGE INDUSTRIEL SEULEMENT.

S'il vous plaît se référer à la SDD pour plus d'informations. Tenir hors de portée des enfants. Garder á la verticale dans un endroit frais et sec. Ne pas jeter le bidon vide dans un compacteur de déchets ménagers.

Dangers non classés ailleurs : Aucun connu.

Section 3. Composition/information sur les ingrédients

Substance/préparation : Mélange

Autres moyens d'identification : Non disponible.

Numéro CAS / autres identificateurs uniques

Nom des ingrédients	% en poids	Numéro CAS
Éthanol	3	64-17-5
Butane	2.74	106-97-8
Propane	1.26	74-98-6

Toute concentration présentée comme une plage vise à protéger la confidentialité ou est expliquée par une variation entre les lots.

Le produit ne contient aucun autre ingrédient exigeant une déclaration dans cette section, selon les connaissances actuelles du fournisseur et les concentrations de classification en vigueur.

Les limites d'exposition professionnelle, quand elles sont disponibles, sont énumérées à la section 8.

Section 4. Premiers soins

Description des premiers soins nécessaires

Contact avec les yeux : Rincer immédiatement les yeux à grande eau, en soulevant de temps en temps les paupières supérieures et inférieures. Vérifier si la victime porte des verres de contact et dans ce cas, les lui enlever. Continuer à rincer pendant au moins 10 minutes. Obtenir des soins médicaux à la suite d'une exposition ou si une personne se sent mal.

Inhalation : Transporter la victime à l'extérieur et la maintenir au repos dans une position où elle peut confortablement respirer. En l'absence de respiration, en cas de respiration irrégulière ou d'arrêt respiratoire, il faut que du personnel qualifié administre la respiration artificielle ou de l'oxygène. Le bouche-à-bouche peut se révéler dangereux pour la personne portant secours. Obtenir des soins médicaux à la suite d'une exposition ou si une personne se sent mal. Si la personne est inconsciente, la placer en position de rétablissement et consulter un médecin immédiatement. Assurez-vous d'une bonne circulation d'air. Détacher tout ce qui pourrait être serré, comme un col, une cravate, une ceinture ou un ceinturon.

Section 4. Premiers soins

Contact avec la peau : Rincer la peau contaminée avec beaucoup d'eau. Retirer les vêtements et les chaussures contaminés. Continuer à rincer pendant au moins 10 minutes. Obtenir des soins médicaux à la suite d'une exposition ou si une personne se sent mal. Laver les vêtements avant de les réutiliser. Laver soigneusement les chaussures avant de les remettre.

Ingestion : Laver la bouche avec de l'eau. Enlever les prothèses dentaires s'il y a lieu. En cas d'ingestion de la matière et si la personne exposée est consciente, lui donner de petites quantités d'eau à boire. Arrêter si la personne se sent malade car des vomissements peuvent être dangereux. Ne pas faire vomir sauf indication contraire émanant du personnel médical. En cas de vomissements, garder la tête basse afin d'éviter la pénétration du vomi dans les poumons. Obtenir des soins médicaux à la suite d'une exposition ou si une personne se sent mal. Ne rien faire ingérer à une personne inconsciente. Si la personne est inconsciente, la placer en position de rétablissement et consulter un médecin immédiatement. Assurez-vous d'une bonne circulation d'air. Détacher tout ce qui pourrait être serré, comme un col, une cravate, une ceinture ou un ceinturon.

Symptômes et effets les plus importants, qu'ils soient aigus ou retardés

Effets aigus potentiels sur la santé

Contact avec les yeux : Aucun effet important ou danger critique connu.

Inhalation : Aucun effet important ou danger critique connu.

Contact avec la peau : Aucun effet important ou danger critique connu.

Ingestion : Aucun effet important ou danger critique connu.

Signes/symptômes de surexposition

Contact avec les yeux : Les symptômes néfastes peuvent éventuellement comprendre ce qui suit:
irritation
rougeur

Inhalation : Les symptômes néfastes peuvent éventuellement comprendre ce qui suit:
irritation des voies respiratoires
toux

Contact avec la peau : Aucune donnée spécifique.

Ingestion : Aucune donnée spécifique.

Mention de la nécessité d'une prise en charge médicale immédiate ou d'un traitement spécial, si nécessaire

Note au médecin traitant : Traitement symptomatique requis. Contactez le spécialiste en traitement de poison immédiatement si de grandes quantités ont été ingérées ou inhalées.

Traitements particuliers : Pas de traitement particulier.

Protection des sauveteurs : Ne prendre aucune mesure impliquant un risque personnel ou en l'absence de formation adéquate. Le bouche-à-bouche peut se révéler dangereux pour la personne portant secours.

Voir Information toxicologique (section 11)

Section 5. Mesures à prendre en cas d'incendie

Moyens d'extinction

Agents extincteurs appropriés : Employer un agent extincteur qui convient aux feux environnants.

Agents extincteurs inappropriés : Aucun connu.

Section 5. Mesures à prendre en cas d'incendie

Dangers spécifiques du produit : Si ce produit est chauffé ou se trouve au contact du feu, une augmentation de pression se produit et le conteneur peut éclater. Une bombe aérosol qui éclate peut être propulsée d'un feu à grande vitesse.

Produit de décomposition thermique dangereux : Les produits de décomposition peuvent éventuellement comprendre les substances suivantes:
dioxyde de carbone
monoxyde de carbone

Mesures spéciales de protection pour les pompiers : En présence d'incendie, circonscrire rapidement le site en évacuant toute personne se trouvant près des lieux de l'accident. Ne prendre aucune mesure impliquant un risque personnel ou en l'absence de formation adéquate. Déplacer les contenants hors de la zone embrasée si cela ne présente aucun risque. Refroidir les conteneurs exposés aux flammes avec un jet d'eau pulvérisée.

Équipement de protection spécial pour le personnel préposé à la lutte contre le feu : Il est impératif que les pompiers portent un équipement de protection adéquat, ainsi qu'un appareil respiratoire autonome (ARA) équipé d'un masque couvre-visage à pression positive.

Section 6. Mesures à prendre en cas de déversement accidentel

Précautions individuelles, équipements de protection et mesures d'urgence

Pour le personnel non affecté aux urgences : Ne prendre aucune mesure impliquant un risque personnel ou en l'absence de formation adéquate. Évacuer les environs. Empêcher l'accès aux personnes gênantes ou non protégées. En cas de rupture d'une bombe aérosol, la vigilance s'impose en raison de l'échappée rapide du contenu sous pression et du propulseur. En cas de rupture d'un grand nombre de conteneurs, traiter comme si un produit en vrac s'était déversé conformément aux instructions dans la section Nettoyage. Ne pas toucher ni marcher dans le produit répandu. Éviter de respirer les vapeurs ou le brouillard. Assurer une ventilation adéquate. Porter un appareil respiratoire approprié lorsque le système de ventilation est inadéquat. Porter un équipement de protection individuelle approprié.

Intervenants en cas d'urgence : Si des vêtements spécialisés sont requis pour traiter un déversement, prendre note de tout renseignement donné à la Section 8 sur les matériaux appropriés ou non. Consultez également les renseignements sous « Pour le personnel non affecté aux urgences ».

Précautions environnementales : Évitez la dispersion des matériaux déversés, ainsi que leur écoulement et tout contact avec le sol, les voies navigables, les drains et les égouts. Avertir les autorités compétentes si le produit a engendré une pollution environnementale (égouts, voies navigables, sol ou air).

Méthodes et matériaux pour le confinement et le nettoyage

Petit déversement : Arrêter la fuite si cela ne présente aucun risque. Écarter les contenants (ou récipients) de la zone de déversement Diluer avec de l'eau et éponger si la matière est soluble dans l'eau. Sinon, ou si la matière est insoluble dans l'eau, absorber avec un matériau sec inerte et placer dans un conteneur à déchets approprié. Éliminer par l'intermédiaire d'une entreprise spécialisée autorisée.

Grand déversement : Arrêter la fuite si cela ne présente aucun risque. Écarter les contenants (ou récipients) de la zone de déversement S'approcher des émanations dans la même direction que le vent. Empêcher la pénétration dans les égoûts, les cours d'eau, les sous-sol ou les zones confinées. Éliminer les déversements dans une station de traitement des effluents ou procéder de la façon suivante. Contenir les fuites et les ramasser à l'aide de matières absorbantes non combustibles telles que le sable, la terre, la vermiculite, la terre à diatomées. Les placer ensuite dans un récipient pour élimination conformément à la réglementation locale (voir Section 13). Éliminer par l'intermédiaire d'une entreprise

Section 6. Mesures à prendre en cas de déversement accidentel

spécialisée autorisée. Le matériel absorbant contaminé peut poser le même danger que le produit déversé. Nota : Voir Section 1 pour de l'information relative aux urgences et voir Section 13 pour l'élimination des déchets.

Section 7. Manutention et stockage

Précautions relatives à la sûreté en matière de manutention

Mesures de protection : Revêtir un équipement de protection individuelle approprié (voir Section 8). Récipient sous pression. A protéger contre les rayons solaires et à ne pas exposer à une température supérieure à 50 °C. Ne pas percer ou brûler même après usage. Éviter de respirer les vapeurs ou le brouillard. Ne pas ingérer. Éviter le contact avec les yeux, la peau et les vêtements. Éviter de respirer du gaz. Utiliser uniquement dans un environnement bien aéré. Porter un appareil respiratoire approprié lorsque le système de ventilation est inadéquat. Les contenants (ou récipients) vides retiennent des résidus de produit et peuvent présenter un danger.

Conseils sur l'hygiène générale au travail : Il est interdit de manger, boire ou fumer dans les endroits où ce produit est manipulé, entreposé ou traité. Les personnes travaillant avec ce produit devraient se laver les mains et la figure avant de manger, boire ou fumer. Retirer les vêtements et l'équipement de protection contaminés avant de pénétrer dans des aires de repas. Consulter également la Section 8 pour d'autres renseignements sur les mesures d'hygiène.

Conditions de sûreté en matière de stockage, y compris les incompatibilités : Entreposer conformément à la réglementation locale. Entreposer à l'abri de la lumière directe du soleil, dans un endroit sec, frais et bien ventilé, à l'écart des substances incompatibles (voir la section 10), de la nourriture et de la boisson. Protéger du rayonnement solaire. Utiliser un récipient approprié pour éviter toute contamination du milieu ambiant. Voir la section 10 relative aux matières incompatibles avant la manutention ou l'utilisation.

Section 8. Contrôle de l'exposition/protection individuelle

Paramètres de contrôle

Limites d'exposition professionnelle (OSHA États-Unis)

Nom des ingrédients	No CAS	Limites d'exposition
Éthanol	64-17-5	**ACGIH TLV (États-Unis, 1/2022).** STEL: 1000 ppm 15 minutes. **NIOSH REL (États-Unis, 10/2020).** TWA: 1000 ppm 10 heures. TWA: 1900 mg/m³ 10 heures. **OSHA PEL (États-Unis, 5/2018).** TWA: 1000 ppm 8 heures. TWA: 1900 mg/m³ 8 heures.
Butane	106-97-8	**NIOSH REL (États-Unis, 10/2020).** TWA: 800 ppm 10 heures. TWA: 1900 mg/m³ 10 heures. **ACGIH TLV (États-Unis, 1/2022). [Butane isomers] Potentiel explosif.** STEL: 1000 ppm 15 minutes.
Propane	74-98-6	**NIOSH REL (États-Unis, 10/2020).** TWA: 1000 ppm 10 heures. TWA: 1800 mg/m³ 10 heures. **OSHA PEL (États-Unis, 5/2018).** TWA: 1000 ppm 8 heures. TWA: 1800 mg/m³ 8 heures. **ACGIH TLV (États-Unis, 1/2022).**

Section 8. Contrôle de l’exposition/protection individuelle

		Appauvrissement en oxygène [asphyxiant]. Potentiel explosif.

Limites d'exposition professionnelle (Canada)

Nom des ingrédients	No CAS	Limites d'exposition
Alcool éthylique	64-17-5	**CA Alberta Provincial (Canada, 6/2018).** 8 hrs OEL: 1000 ppm 8 heures. 8 hrs OEL: 1880 mg/m³ 8 heures. **CA British Columbia Provincial (Canada, 6/2022).** STEL: 1000 ppm 15 minutes. **CA Ontario Provincial (Canada, 6/2019).** STEL: 1000 ppm 15 minutes. **CA Saskatchewan Provincial (Canada, 7/2013).** STEL: 1250 ppm 15 minutes. TWA: 1000 ppm 8 heures. **CA Québec Provincial (Canada, 6/2022).** VECD: 1000 ppm 15 minutes.
Butane	106-97-8	**CA Alberta Provincial (Canada, 6/2018).** 8 hrs OEL: 1000 ppm 8 heures. **CA Québec Provincial (Canada, 6/2022).** VEMP: 800 ppm 8 heures. VEMP: 1900 mg/m³ 8 heures. **CA Saskatchewan Provincial (Canada, 7/2013). [Butane all isomers]** STEL: 1250 ppm 15 minutes. TWA: 1000 ppm 8 heures. **CA British Columbia Provincial (Canada, 6/2022). [butane, all isomers] Potentiel explosif.** STEL: 1000 ppm 15 minutes. **CA Ontario Provincial (Canada, 6/2019). [Hydrocarbures aliphatiques gazeux (Butane, tous les isomères)] Potentiel explosif.** STEL: 1000 ppm 15 minutes.
Propane	74-98-6	**CA Alberta Provincial (Canada, 6/2018).** 8 hrs OEL: 1000 ppm 8 heures. **CA Québec Provincial (Canada, 6/2022).** VEMP: 1000 ppm 8 heures. VEMP: 1800 mg/m³ 8 heures. **CA Saskatchewan Provincial (Canada, 7/2013).** STEL: 1250 ppm 15 minutes. TWA: 1000 ppm 8 heures. **CA British Columbia Provincial (Canada, 6/2022). Appauvrissement en oxygène [asphyxiant]. Potentiel explosif.** **CA Ontario Provincial (Canada, 6/2019). Appauvrissement en oxygène [asphyxiant]. Potentiel explosif.**
2-Butoxyéthanol	111-76-2	**CA Alberta Provincial (Canada, 6/2018).** 8 hrs OEL: 97 mg/m³ 8 heures.

		8 hrs OEL: 20 ppm 8 heures. **CA British Columbia Provincial (Canada, 6/2022).** TWA: 20 ppm 8 heures. **CA Ontario Provincial (Canada, 6/2019).** TWA: 20 ppm 8 heures. **CA Québec Provincial (Canada, 6/2022).** VEMP: 20 ppm 8 heures. **CA Saskatchewan Provincial (Canada, 7/2013).** STEL: 30 ppm 15 minutes. TWA: 20 ppm 8 heures.

Limites d'exposition professionnelle (Mexique)

Nom des ingrédients	No CAS	Limites d'exposition
ethanol	64-17-5	**NOM-010-STPS-2014 (Mexique, 4/2016).** STEL: 1000 ppm 15 minutes.
Butane	106-97-8	**NOM-010-STPS-2014 (Mexique, 4/2016).** TWA: 1000 ppm 8 heures.
Propane	74-98-6	**NOM-010-STPS-2014 (Mexique, 4/2016).** TWA: 1000 ppm 8 heures.

Contrôles d'ingénierie appropriés : Utiliser uniquement dans un environnement bien aéré. Si les opérations des utilisateurs génèrent de la poussière, des fumées, des gaz, des vapeurs ou du brouillard, utilisez des enceintes fermées, une ventilation à la source par aspiration ou d'autres d'autres systèmes de contrôle automatique intégrés pour maintenir l'exposition des travailleurs aux contaminants atmosphériques en dessous des limites recommandées ou légales.

Contrôle de l'action des agents d'environnement : Il importe de tester les émissions provenant des systèmes d'aération et du matériel de fabrication pour vous assurer qu'elles sont conformes aux exigences de la législation sur la protection de l'environnement. Dans certains cas, il sera nécessaire d'équiper le matériel de fabrication d'un épurateur de gaz ou d'un filtre ou de le modifier techniquement afin de réduire les émissions à des niveaux acceptables.

Mesures de protection individuelle

Mesures d'hygiène : Après manipulation de produits chimiques, lavez-vous les mains, les avant-bras et le visage avec soin avant de manger, de fumer, d'aller aux toilettes et une fois votre travail terminé. Utiliser les techniques appropriées pour retirer les vêtements contaminés. Laver les vêtements contaminés avant de les réutiliser. Assurez-vous que des bassins oculaires et des douches de décontamination sont installés près des postes de travail.

Protection oculaire/faciale : Le port de lunettes de sécurité conformes à une norme approuvée est obligatoire quand une évaluation des risques le préconise pour éviter toute exposition aux éclaboussures de liquides, à la buée, aux gaz ou aux poussières. Si un contact est possible, les protections suivantes doivent être portées, à moins qu'une évaluation indique un besoin pour une protection supérieure : lunettes de sécurité avec écrans de protection latéraux.

Protection de la peau

Protection des mains : Lors de la manipulation de produits chimiques, porter en permanence des gants étanches et résistants aux produits chimiques conformes à une norme approuvée, si une évaluation du risque indique que cela est nécessaire. En tenant compte des paramètres indiqués par le fabricant de gants, vérifier que les gants gardent toujours leurs propriétés de protection pendant leur utilisation. Il faut noter que le temps de percement pour tout matériau utilisé dans des gants peut varier pour différents fabricants de gants. Dans le cas de mélanges, constitués de plusieurs substances, la durée de protection des gants ne peut pas être évaluée avec précision.

Section 8. Contrôle de l'exposition/protection individuelle

Protection du corps : L'équipement de protection individuelle pour le corps doit être adapté à la tâche exécutée et aux risques encourus, et approuvé par un expert avant toute manipulation de ce produit.

Autre protection pour la peau : Il faut sélectionner des chaussures appropriées et toute autre mesure appropriée de protection de la peau en fonction de la tâche en cours et des risques en cause et cette sélection doit être approuvée par un spécialiste avant de manipuler ce produit.

Protection respiratoire : En fonction du risque et de la possibilité d'une exposition, choisir un respirateur qui est conforme à la norme ou certification appropriée. Les respirateurs doivent être utilisés suivant un programme de protection pour assurer un ajustement, une formation appropriée et d'aspects d'utilisation importants.

Section 9. Propriétés physiques et chimiques

Toutes les propriétés sont mesurées à température et pression standard, sauf indication contraire.

Apparence

État physique : Liquide.

Couleur : Non disponible.

Odeur : Non disponible.

Seuil olfactif : Non disponible.

pH : 10

Point de fusion et point de congélation : Non disponible.

Point d'ébullition, point d'ébullition initial et plage d'ébullition : Non disponible.

Point d'éclair : Vase clos: -29°C (-20.2°F) [Pensky-Martens Closed Cup]

Taux d'évaporation : 1.6 (acétate de butyle = 1)

Inflammabilité : Non disponible.

Limite supérieure/inférieure d'inflammabilité ou d'explosivité : Seuil minimal: 1.9%
Seuil maximal: 19%

Tension de vapeur : 101.3 kPa (760 mm Hg)

Densité de vapeur relative : 1 [Air = 1]

Densité relative : 0.96

Solubilité :

Non disponible.

Coefficient de partage n-octanol/eau : Non applicable.

Température d'auto-inflammation : Non disponible.

Température de décomposition : Non disponible.

Viscosité : Cinématique (40°C (104°F)): >20.5 mm^2/s (>20.5 cSt)

Poids moléculaire : Non applicable.

Produit en aérosol

Type d'aérosol : Pulvérisation

Chaleur de combustion : 3.025 kJ/g

Section 9. Propriétés physiques et chimiques

Inflammation dans un espace clos - Temps équivalent : 385 s/m³

Inflammation dans un espace clos - Densité de déflagration : 511 g/m³

Section 10. Stabilité et réactivité

Réactivité : Aucune donnée d'essai spécifique à la réactivité disponible pour ce produit ou ses ingrédients.

Stabilité chimique : Le produit est stable.

Risque de réactions dangereuses : Dans des conditions normales de stockage et d'utilisation, aucune réaction dangereuse ne se produit.

Conditions à éviter : Aucune donnée spécifique.

Matériaux incompatibles : Aucune donnée spécifique.

Produits de décomposition dangereux : Dans des conditions normales de stockage et d'utilisation, aucun produit de décomposition dangereux ne devrait apparaître.

Section 11. Données toxicologiques

Renseignements sur les effets toxicologiques

Toxicité aiguë

Nom du produit ou de l'ingrédient	Résultat	Espèces	Dosage	Exposition
Éthanol	CL50 Inhalation Vapeur	Rat	124700 mg/m³	4 heures
	DL50 Orale	Rat	7 g/kg	-
Butane	CL50 Inhalation Vapeur	Rat	658000 mg/m³	4 heures

Irritation/Corrosion

Nom du produit ou de l'ingrédient	Résultat	Espèces	Potentiel	Exposition	Observation
Éthanol	Yeux - Léger irritant	Lapin	-	24 heures 500 mg	-
	Yeux - Modérément irritant	Lapin	-	0.066666667 minutes 100 mg	-
	Yeux - Modérément irritant	Lapin	-	100 uL	-
	Yeux - Hautement irritant	Lapin	-	500 mg	-
	Peau - Léger irritant	Lapin	-	400 mg	-
	Peau - Modérément irritant	Lapin	-	24 heures 20 mg	-

Sensibilisation

Non disponible.

Mutagénicité

Non disponible.

Section 11. Données toxicologiques

Cancérogénicité

Non disponible.

Classification

Nom du produit ou de l'ingrédient	OSHA	CIRC	NTP
Éthanol	-	1	-

Toxicité pour la reproduction

Non disponible.

Tératogénicité

Non disponible.

Toxicité systémique pour certains organes cibles - exposition unique -

Nom	Catégorie	Voie d'exposition	Organes cibles
Éthanol	Catégorie 3	-	Irritation des voies respiratoires
	Catégorie 3		Effets narcotiques
Butane	Catégorie 3	-	Irritation des voies respiratoires
	Catégorie 3		Effets narcotiques
Propane	Catégorie 3	-	Irritation des voies respiratoires
	Catégorie 3		Effets narcotiques

Toxicité pour certains organes cibles - expositions répétées -

Nom	Catégorie	Voie d'exposition	Organes cibles
Éthanol	Catégorie 2	-	-
Butane	Catégorie 2	-	-
Propane	Catégorie 2	-	-

Risque d'absorption par aspiration

Nom	Résultat
Butane	DANGER PAR ASPIRATION - Catégorie 1
Propane	DANGER PAR ASPIRATION - Catégorie 1

Renseignements sur les voies d'exposition probables : Non disponible.

Effets aigus potentiels sur la santé

Contact avec les yeux : Aucun effet important ou danger critique connu.

Inhalation : Aucun effet important ou danger critique connu.

Contact avec la peau : Aucun effet important ou danger critique connu.

Ingestion : Aucun effet important ou danger critique connu.

Symptômes correspondant aux caractéristiques physiques, chimiques et toxicologiques

Contact avec les yeux : Les symptômes néfastes peuvent éventuellement comprendre ce qui suit:
irritation
rougeur

Section 11. Données toxicologiques

Inhalation : Les symptômes néfastes peuvent éventuellement comprendre ce qui suit:
irritation des voies respiratoires
toux

Contact avec la peau : Aucune donnée spécifique.

Ingestion : Aucune donnée spécifique.

Effets différés et immédiats ainsi que les effets chroniques causés par une exposition à court et à long terme

Exposition de courte durée

Effets immédiats possibles : Non disponible.

Effets différés possibles : Non disponible.

Exposition de longue durée

Effets immédiats possibles : Non disponible.

Effets différés possibles : Non disponible.

Effets chroniques potentiels sur la santé

Non disponible.

Généralités : Risque présumé d'effets graves pour les organes à la suite d'expositions répétées ou d'une exposition prolongée.

Cancérogénicité : Aucun effet important ou danger critique connu.

Mutagénicité : Aucun effet important ou danger critique connu.

Tératogénicité : Aucun effet important ou danger critique connu.

Effets sur le développement : Aucun effet important ou danger critique connu.

Effets sur la fertilité : Aucun effet important ou danger critique connu.

Valeurs numériques de toxicité

Estimations de la toxicité aiguë

Non disponible.

Section 12. Données écologiques

Toxicité

Nom du produit ou de l'ingrédient	Résultat	Espèces	Exposition
Éthanol	Aiguë CE50 17.921 mg/l Eau de mer	Algues - Ulva pertusa	96 heures
	Aiguë CE50 2000 µg/l Eau douce	Daphnie - Daphnia magna	48 heures
	Aiguë CL50 25500 µg/l Eau de mer	Crustacés - Artemia franciscana - Larve	48 heures
	Aiguë CL50 42000 µg/l Eau douce	Poisson - Oncorhynchus mykiss	4 jours
	Chronique NOEC 4.995 mg/l Eau de mer	Algues - Ulva pertusa	96 heures
	Chronique NOEC 100 ul/L Eau douce	Daphnie - Daphnia magna - Néonate	21 jours
	Chronique NOEC 0.375 ul/L Eau douce	Poisson - Gambusia holbrooki - Larve	12 semaines

Persistance et dégradation

Section 12. Données écologiques

Nom du produit ou de l'ingrédient	Demi-vie aquatique	Photolyse	Biodégradabilité
Éthanol	-	-	Facilement

Potentiel de bioaccumulation

Non disponible.

Mobilité dans le sol

Coefficient de répartition sol/eau (K_{OC}) : Non disponible.

Autres effets nocifs : Aucun effet important ou danger critique connu.

Section 13. Données sur l'élimination

Méthodes d'élimination : Il est important de réduire au minimum, voire d'éviter la génération de déchets chaque fois que c'est possible. La mise au rebut de ce produit, des solutions et de tous les co-produits doit obéir en permanence aux dispositions de la législation sur la protection de l'environnement et l'élimination des déchets et demeurer conforme aux exigences des pouvoirs publics locaux. Éliminer le surplus et les produits non recyclables par l'intermédiaire d'une entreprise spécialisée autorisée. Ne pas rejeter les déchets non traités dans les égouts, à moins que ce soit en conformité avec les exigences de toutes les autorités compétentes. L'emballage des déchets doit être recyclé. L'incinération ou l'enfouissement sanitaire ne doivent être considérés que lorsque le recyclage n'est pas possible. Ne se débarrasser de ce produit et de son récipient qu'en prenant toutes les précautions d'usage. Les contenants vides ou les doublures peuvent retenir des résidus de produit. Ne pas percer le contenant ni le jeter au feu.

Section 14. Informations relatives au transport

	Classification pour le DOT	Classification pour le TMD	Classement mexicain	IATA	IMDG
Numéro ONU	UN1950	UN1950	UN1950	UN1950	UN1950
Désignation officielle de transport de l'ONU	AÉROSOLS	AÉROSOLS	AÉROSOLS	Aerosols, non-flammable	AEROSOLS
Classe de danger relative au transport	2.2	2.2	2.2	2.2	2.2
Groupe d'emballage	-	-	-	-	-
Dangers environnementaux	Non.	Non.	Non.	No.	No.

Section 14. Informations relatives au transport

Autres informations	-	Produit classé conformément aux sections suivantes de Transport des marchandises dangereuses Règlements. 2.13-2.17 (Classe 2).	-	-	**Emergency schedules** F-D, S-U
	ERG No.	**ERG No.**	**ERG No.**		
	126	126	126		
	Selon la taille du contenant, ce produit peut être expédié en vertu de l'exception liée aux restrictions sur les quantités limitées.	Selon la taille du contenant, ce produit peut être expédié en vertu de l'exception liée aux restrictions sur les quantités limitées.	Selon la taille du contenant, ce produit peut être expédié en vertu de l'exception liée aux restrictions sur les quantités limitées.	Selon la taille du contenant, ce produit peut être expédié en vertu de l'exception liée aux restrictions sur les quantités limitées.	Selon la taille du contenant, ce produit peut être expédié en vertu de l'exception liée aux restrictions sur les quantités limitées.

Protections spéciales pour l'utilisateur : Les descriptions d'expédition plurimodale sont fournies à titre informatif et ne tiennent pas compte de la taille des contenants. La présence d'une description d'expédition pour un mode de transport particulier (mer, air, etc.) n'indique aucunement que le produit est emballé convenablement pour ce mode de transport. Il faut vérifier l'adéquation de l'emballage avant l'expédition du produit, et la conformité à la réglementation applicable revient uniquement à la personne offrant le produit à transporter. Les personnes qui chargent et déchargent les marchandises dangereuses doivent être formées sur les risques liés aux substances et sur les mesures à prendre en cas de situations d'urgence.

Transport en vrac aux termes des instruments IMO : Non disponible.

Nom d'expédition correct : Non disponible.

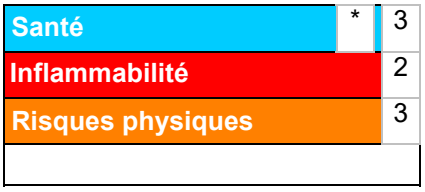
Section 15. Informations sur la réglementation

Réglementations Internationales

Listes internationales :
Inventaire des substances chimiques d'Australie (AIIC): Indéterminé.
Inventaire des substances chimiques existantes en Chine (IECSC): Indéterminé.
Inventaire du Japon (CSCL): Indéterminé.
Inventaire japonais (ISHL): Indéterminé.
Inventaire de Corée (KECI): Indéterminé.
Inventaire néo-zélandais des substances chimiques (NZIoC): Indéterminé.
Inventaire des substances chimiques des Philippines (PICCS): Indéterminé.
Inventaire des substances chimiques de Taiwan: Indéterminé.
Stocks de la Thaïlande: Indéterminé.
Inventaire de Turquie: Indéterminé.
Stocks du Vietnam: Indéterminé.

Section 16. Autres informations

Hazardous Material Information System (États-Unis)



Section 16. Autres informations

C'est au client qu'il revient de déterminer le code EPI de cette matière. Pour en savoir plus sur les codes d'équipement de protection individuelle (EPI) HMIS®, voir le manuel de mise en œuvre HMIS®.

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

Procédure utilisée pour préparer la classification

Classification	Justification
GAZ SOUS PRESSION - Gaz comprimé TOXICITÉ POUR CERTAINS ORGANES CIBLES - EXPOSITIONS RÉPÉTÉES - Catégorie 2	Méthode de calcul Méthode de calcul

Historique

Date d'impression : 6/10/2023

Date d'édition/Date de révision : 6/10/2023

Date de publication précédente : 11/25/2022

Version : 10.01

Légende des abréviations : ETA = Estimation de la toxicité aiguë
FBC = Facteur de bioconcentration
SGH = Système Général Harmonisé de classification et d'étiquetage des produits chimiques
IATA = Association international du transport aérien
CVI = conteneurs en vrac intermédiaires
code IMDG = code maritime international des marchandises dangereuses
LogKoe = coefficient de partage octanol/eau
MARPOL = Convention internationale pour la prévention de la pollution par les navires de 1973, telle que modifiée par le Protocole de 1978. ("MARPOL" = pollution maritime)
N/A = Non disponible
SGG = Groupe de séparation
NU = Nations Unies

Indique quels renseignements ont été modifiés depuis la version précédente.

Avis au lecteur

Nous recommandons que chaque client ou destinataire de cette fiche signalétique (FS) examine cette dernière soigneusement et consulte les ressources au besoin afin de bien comprendre les données comprises dans cette FS ainsi que tous les risques associés au produit. Nous fournissons cette information de bonne foi et nous croyons à son exactitude à la date indiquée dans la présente. Cependant, nous n'offrons aucune garantie, expresse ou implicite. L'information présentée ici ne s'applique qu'au produit tel qu'il est expédié. L'ajout de toute matière peut modifier la composition, les dangers et les risques de ce produit. Les produits ne doivent pas être remballés, modifiés ou teintés à moins d'instructions spécifiques de la part du fabricant, y compris, entre autres, en intégrant des produits non spécifiés par le fabricant ou en utilisant ou ajoutant des produits dans des proportions non spécifiées par le fabricant. Les exigences réglementaires sont sous réserve de changement et peuvent différer d'un emplacement ou d'un territoire à l'autre. Le client/acheteur/utilisateur est responsable de voir à ce que ses activités soient conformes aux lois fédérales, étatiques, provinciales ou locales. Les conditions d'utilisation du produit ne relèvent pas du fabricant, le client/acheteur/utilisateur est responsable de déterminer les conditions nécessaires à une utilisation sécuritaire de ce produit. Le client/acheteur/utilisateur ne doit pas utiliser le produit à d'autres fins que celles indiquées à la section applicable de cette FS sans d'abord consulter le fournisseur et obtenir des instructions de manutention écrites. En raison du foisonnement des sources d'information, notamment les FS propres aux fabricants, le fabricant ne peut être tenu responsable des FS provenant d'une autre source.

Celeste Industries Corp.
8221 Teal Drive, Suite 405
Easton, Maryland 21601

CELESTE CONTACT: 410-822-5775
24 HOUR EMERGENCY -
CHEMTREC: 800-424-9300

Document control number: MSF28 - Rev 4 PART NUMBER: LB-86000
This MSDS is for part numbers: SP-86000C series, SP-86000G series & all SP-86000 Series

MATERIAL SAFETY DATA SHEET

PRODUCT IDENTIFICATION

Material Name : Celeste Exterior Cleaner Concentrate
MSDS Date : 6 January 6, 2011
Supersedes : 8 October 2010
Prepared By : J.A. Long

Hazard Rating

Health	0
Fire	0
Reactivity	0
Personal Protective Equipment.	B

Scale: 4- Extreme 1- Slight
3- High 0- Insignificant
2- Moderate

COMPONENT INFORMATION

COMPONENT	CAS NO.	AMT. (%)	Exposure Limit Information OSHA TWA	OSHA STEL	ACGIH TLV	ACGIH STEL
PROPRIETARY SURFACTANT BLEND						

Note: The surfactant is a non-hazardous non-regulated proprietary additive.
Formulation is considered to be a Trade Secret.

EMERGENCY RESPONSE INFORMATION

FIRST AID PROCEDURES

Inhalation: Mist my cause irritation in nose and throat. Remove to fresh air if irritated by odor

Eye Contact : Flush immediately with clean water for as least 15 minutes.

Skin Contact: Flush skin with plenty of water if splashed/spilled on oneself.

Ingestion: Low acute toxicity. May be irritating to mucous membranes.

Chronic Effects: May cause eye damage. May cause skin irritation if not washed off in due time.

Subchronic Effects (Target Organ Effects): No effects known.

SPILL OR LEAK HANDLING INFORMATION

Personal Protection: Chemical splash goggles or full face shield.

Procedures: Small spills should be absorbed by dirt, sand or other suitable absorbent for disposal. Large spills can be diked with dirt, then removed by vacuum truck for disposal. Biodegradable.

FIRE FIGHTING INFORMATION

Department of Transportation (DOT) Emergency Response Guide Number: N/A

Unusual Hazards: None.

Extinguishing Agents: Not Applicable

Personal Protective Equipment: Self contained breathing apparatus and protective clothing should be worn in fighting fires involving chemicals.

PHYSICAL/CHEMICAL CHARACTERISTICS

FIRE AND EXPLOSIVE PROPERTIES

Flash Point.....	>200 Degrees F - TCC
Auto-ignition temperature....	Not Known
Lower Explosive Limit.....	Not Known
Upper Explosive Limit.....	Not Known

REACTIVITY INFORMATION

Instability:	Stable
Hazardous Decomposition Products:	None known.
Hazardous Polymerization:	No.
Incompatibility:	None known.

PERSONAL PROTECTION MEASURES

Respiratory Protection:	None generally required (use NIOSH-approved respirator if desired).
Eye Protection:	Use goggles or face shield if splash to eyes may occur.
Hand Protection:	Use rubber gloves.

FACILITY CONTROL MEASURES

Ventilation:	Local - ventilation meeting ACGIH criteria.
Other Protective Equipment:	Use plastic or rubber apron to protect clothing, if needed.

STORAGE AND HANDLING INFORMATION

Storage Conditions:	Usual precautions for combustible liquids.
Handling Procedures:	All handling equipment should be electrically grounded.

SUPPLEMENTAL INFORMATION

Typical Physical Properties

Appearance	Transparent Liquid
Color	Lt Yellow to Colorless
State	Liquid
Odor Characteristic	Mild Surfactant
pH	11.0 to 12.0
Viscosity	Not available
Specific Gravity (Water = 1)	1.0 – 1.1
Vapor Density (Air = 1)	Same as water
Melting Point	N/A
Boiling Point	190 degree F
Solubility in water	Soluble
Percent Volatility	0%
Evaporation rate (Butyl Acetate = 1)	Slow (<1.0) Same as water

TOXICITY INFORMATION

Acute Data

Oral LD50	> 2,000 mg / kg (Rat)
Dermal LD50	Not Applicable / Non-toxic / not absorbable through the skin.
Skin Irritation	Mild Irritation in single 4 hour application
Eye Irritation	Strongly irritating in concentrate form. Less irritating at end-use dilutions.

WASTE DISPOSAL: Disposal in landfill approved for same, away from water supplies. Incineration is an alternate method. Dispose of in accordance with applicable federal, state, and local regulations.

REGULATORY INFORMATION

WORKPLACE CLASSIFICATIONS:

OSHA (USA): Not OSHA regulated. No ingredients identified by OSHA as hazardous are known to be present or the ingredients present are below the levels specified as hazardous by OSHA (Per 29 CFR 1910.1200)

WHMIS (Canada): None

TRANSPORTATION:

HAZMAT MARKING:
Domestic(US): None.
International(ICAO/IATA): None.
HAZMAT LABEL:
Domestic(US): None.
International(ICAO/IATA): None.

Packing Group:

EMERGENCY PLANNING & COMMUNITY RIGHT-TO-KNOW (SARA TITLE 3)

Section 311/312 Categorizations (40CFR 370):	**This material contains no health or environmental hazardous substance at a level which requires notification under the Act.**
Section 313 Information (40CFR 372):	**This material contains no toxic chemical at a level which is reportable under SARA Toxic Chemical Release Reporting Regulations.**
RCRA INFORMATION:	**This material is not included in the lists of hazardous substances (40 CFR 261.33), nor does it exhibit the characteristics of hazardous waste (40 CFR 261.20-24)**
Toxic Substances Control Act (TSCA):	**All components in this material are in the TSCA Inventory**

This information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. **Celeste Industries Corporation** assumes no responsibility for personal injury or property damage to vendors, users or third parties caused by the material. Such vendors or users assume all risks associated with the use of the material.

ABBREVIATIONS:
ACGIH = American Conference of Government Industrial Hygienists
IATA = International Air Transport Association
ICAO = International Civil Aviation Organization
OSHA = Occupational Safety and Health Administration
PEL = Permissible Exposure
STEL = Short-Term Exposure Limit
TLV = Threshold Limit Value
TWA = Time Weighted Average
WHMIS= Workplace Hazardous Materials Information System

Safety Data Sheet

Section 01 - Identification

Product Identifier	ClearFoam 0187
Other Means of Identification	None
Product Use and Restrictions on Use	Kosher-approved defoamer for use in food-processing area where additives are required to conform to direct food contact regulations.
Initial Supplier Identifier	ClearTech Industries Inc. 1500 Quebec Avenue Saskatoon, SK. Canada S7K 1V7
Prepared By	ClearTech Industries Inc. Technical Writer Phone: 1 (800) 387-7503
24-Hour Emergency Phone	Phone: 1 (306) 664 – 2522

Section 02 - Hazard Identification

GHS-Classification

This product has been assessed in accordance with the Hazardous Products Regulations and is not classified as a hazardous substance or mixture.

Section 03 - Composition / Information on Ingredients

Chemical Name	CAS Number	Weight %	Unique Identifiers
Water and/or ingredients not classified as hazardous under the Hazardous Products Regulations	Not Available		

Section 04 - First Aid Measures

Inhalation	If symptoms are experienced, remove victim to fresh air. If difficulties breathing persist, seek medical attention.
Skin Contact / Absorption	Remove contaminated clothing. Rinse skin with lukewarm, gently flowing water and non-abrasive soap. If irritation occurs or persists, seek medical attention.
Eye Contact	Immediately rinse eye(s) with lukewarm, gently flowing water for 30 minutes, while forcibly holding the eyelid(s) open to ensure complete irrigation of the eye tissue. If irritation persists, seek medical attention.
Ingestion	Never give anything by mouth if victim is rapidly losing consciousness, is unconscious or convulsing. Have victim rinse mouth with water. Do NOT induce vomiting. If vomiting occurs naturally, have vicitm lean forward to reduce the risk of aspiration. Seek medical attention.
Additional Information	Not Available

Section 05 - Fire Fighting Measures

Suitable Extinguishing Media	Water spray, dry chemical, carbon dioxide or alcohol foam.
Unsuitable Extinguishing Media	Non-alcohol resistant foam.
Specific Hazards Arising From the Chemical	Carbon dioxide, carbon monoxide, formaldehyde, silicon dioxide, and other irritating gases may form in a fire.
Special Protective Equipment and Precautions for Fire-Fighters	Wear NIOSH-approved self-contained breathing apparatus and protective gear.
Further Information	Not Available

Section 06 - Accidental Release Measures

Personal Precautions / Protective Equipment / Emergency Procedures	Wear appropriate personal protective equipment. Ventilate area. Only enter area with PPE. Stop or reduce leak if safe to do so. Flush with water to remove any residue.
Environmental Precautions	Prevent product from entering sewers or waterways.
Methods and Materials for Containment and Cleaning Up	Clean up spill with non-reactive absorbent and place in suitable, labelled containers for proper disposal.

Section 07 - Handling and Storage

Precautions for Safe Handling	Use proper equipment for lifting and transporting all containers. Use sensible industrial hygiene and housekeeping practices. Wash thoroughly after handling. Avoid all situations that could lead to harmful exposure.
Conditions for Safe Storage	Store in a cool, dry, well-ventilated area, away from direct sunlight and heat. Keep away from incompatible materials. Keep containers tightly closed.
Incompatibilities	Strong oxidizing agents, strong acids, strong bases.

Section 08 - Exposure Controls and Personal Protection

Exposure Limit(s)

Component	Regulation	Type of Listing	Value
ClearFoam 0187	Not Established		

Engineering Control(s)

Ventilation Requirements	Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions must be provided in accordance with all fire codes and regulatory requirements. Supply sufficient replacement air to make up for air removed by exhaust systems.
Other	Emergency shower and eyewash must be available and tested in accordance with regulations and be in close proximity.

Protective Equipment

Eyes/Face	No specific requirements, but it is good practice to wear chemical safety glasses while handling product.
Hand Protection	No specific requirement, but it is good practice to prevent skin contact by wearing impervious gloves of chemical resistance.

Skin and Body Protection	No specific requirement, but it is good practice to prevent skin contact by wearing body suits, aprons and/or coveralls. No special footwear is required other than what is mandated at place of work.
Respiratory Protection	If exposure limits are exceeded, a NIOSH-approved respirator for dusts and mists should be worn.
Thermal Hazards	Not Available

Section 09 - Physical and Chemical Properties

Appearance

Physical State	Liquid
Colour	Milky white
Odour	Mild, non-irritating odour
Odour Threshold	Not Available

Property

pH	7.5
Melting Point/Freezing Point	Not Available
Initial Boiling Point and Boiling Range	Not Available
Flash Point	Not Availalble
Evaporation Rate	Not Available
Flammability	Not Available
Upper Flammable Limit	Not Available
Lower Flammable Limit	Not Available
Vapour Pressure (mm Hg, 20^{o}C)	Not Available
Vapour Density (Air=1)	Not Available
Relative Density	Not Available
Solubility(ies)	Dispersable in water.
Partition Coefficient: n-octanol/water	Not Available
Auto-ignition Temperature	Not Available
Decomposition Temperature	Not Available
Viscosity	Not Available
Explosive Properties	Not Available

Specific Gravity (Water=1)	1.001
% Volatiles by Volume	Not Available
Formula	Mixture
Molecular Weight	Not Available

Section 10 - Stability and Reactivity

Reactivity	Not Available
Stability	Stable.
Possibility of Hazardous Reactions	Hazardous polymerization will not occur.
Conditions to Avoid	Not Available
Incompatible Materials	Strong oxidizing agents, strong acids, strong bases.
Hazardous Decomposition Products	Carbon dioxide, carbon monoxide, silicone dioxide, formaldehyde, dimethylcyclosiloxanes.

Section 11 - Toxicological Information

Acute Toxicity

Component	Oral LD_{50}	Dermal LD_{50}	Inhalation LC_{50}
ClearFoam 0187	Not Available	Not Available	Not Available

Chronic Toxicity – Carcinogenicity

Component	IARC
ClearFoam 0187	Not Available

Skin Corrosion/Irritation	May cause mild irritation.
Ingestion	No adverse effects expected.
Inhalation	Generation of vapours or mists may cause irritation to the mucous membranes. High vapour/aerosol concentrations may cause depression of the central nervous system.
Serious Eye Damage/Irritation	May cause mild irritaiton.
Respiratory or Skin Sensitization	Not Available
Germ Cell Mutagenicity	Not Available
Reproductive Toxicity	Not Available
STOT-Single Exposure	Not Available
STOT-Repeated Exposure	Not Available
Aspiration Hazard	Not Available
Synergistic Materials	Not Available

Section 12 – Ecological Information

Ecotoxicity

Component	Toxicity to Algae	Toxicity to Fish	Toxicity to Daphnia and Other Aquatic Invertebrates
ClearFoam 0187	Not Available	Not Available	Not Available

Biodegradability	Not Available
Bioaccumulation	Not Available
Mobility	Not Available
Other Adverse Effects	Not Available

Section 13 – Disposal Considerations

Waste From Residues/Unused Products	Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.
Contaminated Packaging	Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

Section 14 – Transport Information

UN Number	Not Regulated
UN Proper Shipping Name	Not Regulated
Transport Hazard Class(es)	Not Regulated
Packaging Group	Not Regulated
Environmental Hazards	Not listed as a marine pollutant under Canadian TDG Regulations, schedule III.
Special Precautions	Not Available
Transport in Bulk	Not Available

TDG

Other	Secure containers (full and/or empty) with suitable hold down devises during shipment and ensure all caps, valves, or closures are secured in the closed position.

TDG PRODUCT CLASSIFICATION: This product has been classified on the preparation date specified at section 14 of this MSDS / SDS, for transportation in accordance with the requirements of part 2 of the Transportation of Dangerous Goods Regulations. If applicable, testing and/or published test data regarding the classification of this product are listed in the references at section 16 of this MSDS / SDS.

Section 15 – Regulatory Information

NOTE: THE PRODUCT LISTED ON THIS SDS HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CANADIAN CONTROLLED PRODUCTS REGULATIONS. THIS SDS CONTAINS ALL INFORMATION REQUIRED BY THOSE REGULATIONS.

Section 16 – Other Information

Preparation Date	January 14, 2016

Note: The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations.

Attention: Receiver of the chemical goods / SDS coordinator

As part of our commitment to the Canadian Association of Chemical Distributors (CACD) Responsible Distribution® initiative, ClearTech Industries Inc. and its associated companies require, as a condition of sale, that you forward the attached Safety Data Sheet(s) to all affected employees, customers, and end-users. ClearTech will send any available supplementary handling, health, and safety information to you at your request.

If you have any questions or concerns please call our customer service center.

References:

1) CHEMINFO
2) eChemPortal
3) TOXNET
4) Transportation of Dangerous Goods Canada
5) HSDB
6) ECHA

ClearTech Industries Inc. - Locations

Corporate Head Office: 1500 Quebec Avenue, Saskatoon, SK, S7K 1V7
Phone: 1(306) 664 – 2522
Fax: 1(888) 281-8109

www.cleartech.ca

24 Hour Emergency Number - All Locations – 1(306) 664-2522

Product data

ClearFoam 0187

Product Code **CLF0187****

Product Information:
ClearFloam 0187 is a silicone emulsion designed for use in municipal, industrial system and food-processing area. The product offers the customer effective foam control at relatively low cost. Quick knockdown of foam and persistent foam control marks the characteristics of ClearFloam 0187 in most systems. The product works equally well in hot and cold systems.

Typical Applications:

- Vegetable washing
- Potato processing
- Food-grade polymers
- Seafood processing
- Beverage processing

The product can be used as received by metering into the foaming system or by batch addition. If dilution is required, the product should be charged to a vessel with agitation and slowly charge the required amount of water. Resulting solution should be agitated regularly to ensure uniformity and maximum effectiveness.

Physical & Chemical Data:

Appearance	White opaque liquid
Specifc Gravity	~0.993 g/mL @ 20 °C
Flash Point	Does not flash
Solubility	Dispersible in water

Safety Note:
Read the Safety Data Sheet (SDS) for special handling information

Safety Data Sheet

Material Name: AIR, COMPRESSED **SDS ID: MAT00480**

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name
AIR, COMPRESSED

Synonyms
MTG MSDS 2; AIR; UN 1002

Chemical Family
Gas

Product Use
industrial.

Restrictions on Use
None known.

Details of the supplier of the safety data sheet
MATHESON TRI-GAS, INC.
150 Allen Road, Suite 302
Basking Ridge, NJ 07920
General Information: 1-800-416-2505
Emergency #: 1-800-424-9300 (CHEMTREC)
Outside the US: 703-527-3887 (Call collect)

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.
Gases Under Pressure - Compressed gas

GHS Label Elements

Symbol(s)

Signal Word
Warning

Hazard Statement(s)
Contains gas under pressure; may explode if heated.

Precautionary Statement(s)

Prevention
None needed according to classification criteria.

Response
None needed according to classification criteria.

Storage
Protect from sunlight.
Store in a well-ventilated place.

Disposal
Dispose of contents/container in accordance with local/regional/national/international regulations.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component Name	Percent
132259-10-0	COMPRESSED AIR, BREATHING AIR	100

Section 4 - FIRST AID MEASURES

Inhalation
If adverse effects occur, remove to uncontaminated area. Get medical attention.

Skin
Wash exposed skin with soap and water.

Eyes
Flush eyes with plenty of water for at least 15 minutes. Get medical attention, if needed.

Ingestion
If swallowed, get medical attention.

Indication of any immediate medical attention and special treatment needed
Treat symptomatically and supportively.

Most Important Symptoms/Effects

Acute
no information on significant adverse effects.

Delayed
no information on significant adverse effects.

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media
Use extinguishing agents appropriate for surrounding fire.

Unsuitable Extinguishing Media
None known.

Special Hazards Arising from the Chemical
Negligible fire hazard. Containers may rupture or explode if exposed to heat.

Hazardous Combustion Products
None known.

Fire Fighting Measures
Move container from fire area if it can be done without risk. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

Special Protective Equipment and Precautions for Firefighters
Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures
Wear personal protective clothing and equipment, see Section 8.

Methods and Materials for Containment and Cleaning Up
Stop leak if possible without personal risk. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas. Damaged cylinders should be handled only by specialists.

Environmental Precautions
Not considered to be an environmental hazard.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling
Wash hands thoroughly after handling.

Conditions for Safe Storage, Including any Incompatibilities
Protect from sunlight.
Store in a well-ventilated place.
Store and handle in accordance with all current regulations and standards. Store in a well-ventilated area. Store below 52 C. Protect from physical damage. Store in a cool, dry place. Cylinders should be stored upright (with valve protection cap in place). Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Keep separated from incompatible substances.

Incompatible Materials

None known.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

EU - Occupational Exposure (98/24/EC) - Binding Biological Limit Values and Health Surveillance Measures
There are no biological limit values for any of this product's components.

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)
There are no biological limit values for any of this product's components.

Engineering Controls
Based on available information, additional ventilation is not required.

Individual Protection Measures, such as Personal Protective Equipment

Eye/face protection
Eye protection not required, but recommended.

Skin Protection
Protective clothing is not required under normal conditions.

Respiratory Protection
Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use. Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode. Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Glove Recommendations
Protective gloves are not required, but recommended.

Protective Materials
cloth

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance	colorless gas	Physical State	gas
Odor	odorless	Color	colorless
Odor Threshold	Not available	pH	Not available
Melting Point	-216.2 °C (-357 °F)	Boiling Point	-194.3 °C (-318 °F)

Freezing point	Not available	Evaporation Rate	Not available
Boiling Point Range	Not available	Flammability (solid, gas)	Not available
Autoignition	Not available	Flash Point	(Not flammable)
Lower Explosive Limit	Not available	Decomposition	Not available
Upper Explosive Limit	Not available	Vapor Pressure	760 mmHg at -194 °C
Vapor Density (air=1)	1	Specific Gravity (water=1)	1
Water Solubility	(Slightly soluble)	Partition coefficient: n-octanol/water	Not available
Viscosity	0.01853 cp	Solubility (Other)	Not available
Density	1.29 g/L at 0 °C	Physical Form	gas
Taste	tasteless	Volatility	100 %
Molecular Weight	28.975		

Section 10 - STABILITY AND REACTIVITY

Reactivity
No reactivity hazard is expected.

Chemical Stability
Stable at normal temperatures and pressure.

Possibility of Hazardous Reactions
Will not polymerize.

Conditions to Avoid
Protect from physical damage and heat. Containers may rupture or explode if exposed to heat.

Incompatible Materials
None known.

Hazardous decomposition products
None known.

Section 11 - TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation
No information available.

Skin Contact
No information available.

Eye Contact
No information available.

Ingestion
ingestion of a gas is unlikely

Acute and Chronic Toxicity

Component Analysis - LD50/LC50
The components of this material have been reviewed in various sources and no selected endpoints have been identified

Immediate Effects
no information on significant adverse effects.

Delayed Effects
no information on significant adverse effects.

Irritation/Corrosivity Data
No data available.

Respiratory Sensitization
No data available.

Dermal Sensitization
No data available.

Component Carcinogenicity
None of this product's components are listed by ACGIH, IARC, NTP, DFG or OSHA

Germ Cell Mutagenicity
No data available.

Tumorigenic Data
No data available

Reproductive Toxicity
No data available.

Specific Target Organ Toxicity - Single Exposure
No data available.

Specific Target Organ Toxicity - Repeated Exposure
No data available.

Aspiration hazard
Not applicable.

Medical Conditions Aggravated by Exposure
No data available.

Section 12 - ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity
No LOLI ecotoxicity data are available for this product's components

Persistence and Degradability
No data available.

Bioaccumulative Potential
No data available.

Mobility
No data available.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods
Dispose in accordance with all applicable regulations.

Component Waste Numbers
The U.S. EPA has not published waste numbers for this product's components

Section 14 - TRANSPORT INFORMATION

US DOT Information:
Shipping Name:Air, compressed
Hazard Class: 2.2
UN/NA #: UN1002
Required Label(s): 2.2

IMDG Information:
Shipping Name:Air, compressed
Hazard Class: 2.2
UN#: UN1002
Required Label(s): 2.2

Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations

None of this products components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

SARA Section 311/312 (40 CFR 370 Subparts B and C)
Acute Health: No Chronic Health: No Fire: No Pressure: Yes Reactivity: No

U.S. State Regulations
None of this product's components are listed on the state lists from CA, MA, MN, NJ or PA

Not listed under California Proposition 65

Canadian WHMIS Ingredient Disclosure List (IDL)
The components of this product are either not listed on the IDL or are present below the threshold limit listed on the IDL.

WHMIS Classification
A.

Component Analysis - Inventory
COMPRESSED AIR, BREATHING AIR (132259-10-0)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX	TW
No	No	No	No	No	No	No	No	No	Yes	Yes	No	Yes

Section 16 - OTHER INFORMATION

NFPA Ratings
Health: 0 Fire: 0 Reactivity: 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Summary of Changes
Updated: 05/01/2015

Key / Legend
ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition

coefficient; KR - Korea; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of LIsts™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States.

Other Information

Disclaimer:
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Quadra

SAFETY DATA SHEET

COPPER SULPHATE PENTAHYDRATE (J)

Section 1. Identification

Product identifier : COPPER SULPHATE PENTAHYDRATE (J)

Product code : Q14766

Relevant identified uses of the substance or mixture

Identified uses
Industrial applications.

Supplier's details : QUADRA CHEMICALS LTD.
3901 F.X Tessier
Vaudreuil-Dorion, QC
CANADA J7V 5V5
1-800-665-6553

Emergency telephone number (with hours of operation) : **TRANSPORTATION EMERGENCY - 24HRS/DAY - 7 DAYS/WEEK IN CANADA - CALL 1-888-922-3330**

Section 2. Hazard identification

Classification of the substance or mixture : ACUTE TOXICITY (oral) - Category 4
EYE IRRITATION - Category 2A

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Harmful if swallowed.
Causes serious eye irritation.

Precautionary statements

Prevention : Wear eye or face protection. Do not eat, drink or smoke when using this product. Wash thoroughly after handling.

Response : IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell. Rinse mouth. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention.

Storage : Not applicable.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Ingredient name	% (w/w)	CAS number
Sulfuric acid copper(2+) salt (1:1), hydrate (1:5)	98 - 100	7758-99-8

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.

Skin contact : No known significant effects or critical hazards.

Ingestion : Harmful if swallowed.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact : No specific data.

Section 4. First-aid measures

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : No specific fire or explosion hazard.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
sulfur oxides
metal oxide/oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Section 6. Accidental release measures

Small spill : Move containers from spill area. Avoid dust generation. Using a vacuum with HEPA filter will reduce dust dispersal. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing dust. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Do not store above the following temperature: 50°C (122°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Sulfuric acid copper(2+) salt (1:1), hydrate (1:5)	**ACGIH TLV (United States, 1/2022).** TWA: 1 mg/m³, (as Cu) 8 hours. Form: Dust and mist **ACGIH TLV (United States).** TWA: 1 mg/m³, (Cu) Form: Dusts and mists TWA: 0.2 mg/m³, (Cu) Form: Fume of copper

Appropriate engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Section 8. Exposure controls/personal protection

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles. If operating conditions cause high dust concentrations to be produced, use dust goggles.

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state : Solid. [Crystals.]

Color : Blue.

Odor : Not available.

Odor threshold : Not available.

pH : 3.7 to 4.5

Melting point/freezing point : 110°C (230°F)

Boiling point, initial boiling point, and boiling range : Not available.

Flash point : Not applicable.

Evaporation rate : Not available.

Flammability : Not available.

Lower and upper explosion limit/flammability limit : Not applicable.

Vapor pressure : 0.97 kPa (7.3 mm Hg)

Section 9. Physical and chemical properties and safety characteristics

Relative vapor density : Not applicable.

Relative density : Not available.

Density : 2.284 g/cm³

Solubility : Not available.

Solubility in water : Not available.

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature : Not applicable.

Decomposition temperature : Not available.

Viscosity : Not applicable.

Flow time (ISO 2431) : Not available.

Particle characteristics

Median particle size : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : oxidizing materials
acids
alkalis

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Sulfuric acid copper(2+) salt (1:1), hydrate (1:5)	LD50 Oral	Rat	960 mg/kg	-

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Section 11. Toxicological information

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.

Skin contact : No known significant effects or critical hazards.

Ingestion : Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation

Section 11. Toxicological information

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	960.19 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Sulfuric acid copper(2+) salt (1:1), hydrate (1:5)	Acute EC50 182 ppb Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 0.032 ppm Fresh water	Fish - Oncorhynchus mykiss	96 hours

Persistence and degradability

Not available.

Bioaccumulative potential

Not available.

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

Section 14. Transport information

	TDG Classification
UN number	UN3077
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Sulfuric acid copper(2+) salt (1:1), hydrate (1:5))
Transport hazard class(es)	9
Packing group	III
Additional information	Regulated for large means of containment (>450 litres).

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

Canada inventory : All components are listed or exempted.

Canadian NPRI : The following components are listed: copper (and its compounds)

CEPA Toxic substances : None of the components are listed.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Section 16. Other information

History

Date of issue/Date of revision : 20 January 2023

Prepared by : Regulatory Affairs

Section 16. Other information

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
LogPow = logarithm of the octanol/water partition coefficient
UN = United Nations
HPR = Hazardous Products Regulations
N/A = Not available

Procedure used to derive the classification

Classification	Justification
ACUTE TOXICITY (oral) - Category 4	Calculation method
EYE IRRITATION - Category 2A	Calculation method

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

IMO DANGEROUS GOODS DECLARATION

This form meets the requirements of SOLAS 74 chapter VII , regulation 5 ; MARPOL 73/78 Annex III , regulation 4 and the IMDG Code , General introduction , section 9

JINYUAN INDUSTRY SDN BHD PTD 108998,Jalan Persiaran Teknologi,Taman Teknologi,81400 Senai,Johor,Malaysia.	Reference number(s) 2023KY062 May 17,2023
Consignee QUADRA CHEMICALS LTD 3901 F.X.Tessier Vaudreuil QC J7V 5V5 Canada TAX ID:894353283RC0002 EIN:894353283 Contact Person: Lorraine Jobin Telephone:604-940-6187	Carrier: Hapag Transport document no.: HLCUKUL230501778
Container packing certificate/vehicle declaration **DECLARATION** It is declared that the packing of the container / vehicle has been carried out in accordance with the General Introduction , IMDG Code , paragraph 12.3.7 or 17.7.7 . **TO BE COMPLETED FOR SHIPMENTS IN CONTAINERS OR VEHICLES**	
Ship's name and voyage No Port of loading : Pasir Gudang,Malaysia	(Reserved for text , instructions or other matter)
Port of dischare: Montreal,Canada	

TO BE COMPLETED FOR SHIPMENTS IN CONTAINERS OR VEHICLES

Marks & Nos If applicable,identification or registration number(s) of the unit	Number and kind of packages , proper shipping name* IMO hazard class/division , UN Number , packaging group (where assigned)**,flashpoint(in C c.c)** ,control and emergency temperatures** , identification of the goods as MARINE POLLUTANT**, Ems No , and MFAG table No.***	Gross mass(kg) net quantity/ mass**	Good delivered as Breakbulk cargo Unitized cargo Bulk packages
N/M	Proper shipping name: Environmentally Hazardous Substances N.O.S. (Cuprice Sulphate) Class:9 UN NO.3077 Packing Group III Marine Pollutant For any Chemical Emergency,Spill,Leak or Fire Incident contact Canutec 24 hours number 1-888-2268832 or outside of Canada 24hours number 001-613996-6666 Container No. OOLU1248555/OOLU1205023/OOLU1123687/AKCU7411367/ AKCU2605104/IPXU3760603/AKCU2289963/AKCU2241580 Order No. 389393,389394,389395,389396, 389397,389398,389399,389400,	**GROSS : 164,480kgs** **NET : 160,000kgs** **QUANTITY: 320bags**	Type of unit (container , trailer, tank vehicle , etc) Open Closed (Insert "X" in appropriate box)

*Synonyms should not be used .Proprietary/trade names alone are not sufficient .If applicable : (1) the word "WASTE" should precede the name ;(2) "EMPTY UNCLEANED" OR "RESIQUE - LAST CONTAINED" should be added ; (3) "LIMITED QUANTITY" should be added .
** When required in 9.3 of the General Introduction to the IMDG Code .
*** When required .

ADDITIONAL INFORMATION
In certain circumstances special information/certificates are required , see IMDG Code , General Introduction , paragraphs 9.7.1, 9.7.2, 9.9.1 & 9.10.1.

DECLARATION	Name/status, company/organization of **signatory** JINYUAN INDUSTRY SDN BHD
I hereby declare that the contents of this consigment are fully and accurately described above by proper shipping name(s) , and are classified , packaged , marked and labelled / placarded , and are in all respects in proper condition for transport according to applicable international and national goverement regulations	Place and date Malaysia,May 17,2023 Signature on behalf of shipper

JINYUAN INDUSTRY SDN BHD
1360709-K

Corrosion Technologies Corporation
P. O. Box 551625
Dallas, Texas 75355-1625
(972) 271-7361 Fax: (972) 278-9721

AEROSOL

***Corrosion X*® HEAVY-DUTY**

M.S.D.S.

MATERIAL SAFETY DATA SHEET

SECTION 1: PRODUCT INFORMATION

Name:	Corrosion X Heavy-Duty (aerosol)
Description:	Corrosion Inhibitor / Moisture Displacer / Lubricant
Use:	Long -Term Corrosion Inhibitor / Penetrant / Lubricant for Ferrous, Non-ferrous and dissimilar metal surfaces / wherever there is excessive moisture
MSDS Number:	1006
Appearance:	Light Brown thin grease
Emergency Telephone:	(800) 638-7361 (Or consult local poison control center)
Product Information:	(972) 271-7361
Effective Date:	01/31/13
Supercedes Date:	01/03/11

SECTION 2: COMPOSITION

The precise composition of this mixture is proprietary information. A complete disclosure will be provided to a physician or nurse in the event of a medical emergency.

SECTION 3: HAZARDOUS INGREDIENTS

	OSHA PEL	% Wt.	CAS#
Base Stock:	5 mg/m^3 (oil mist)	76	72623-85-9
Hydrocarbon Solvent:	100 ppm (vapor)	5	64742-47-8
Propellant:	Not determined	20	

SECTION 4: CHEMICAL CHARACTERISTICS

% Non-Volatiles (by weight):	>76%
Volatile Organic Compound:	274g/L
Boiling Point:	>425 degrees F. (without propellant)
Vapor Pressure (mm Hg @ 25° C):	N/A (without propellant)
Vapor Density: (Air = 1):	>5
Melting Point:	Not Applicable
Solubility in Water:	Insoluble
Evaporation Rate (Butyl Acetate = 1):	<.01 (without propellant)
Specific Gravity typ. (Water = 1):	0.911

SECTION 5: EMERGENCY & FIRST AID PROCEDURES

Skin:	Remove excess by wiping and follow by washing with soap and water until there is no odor.
Eyes:	Flush with copious quantities of water (15 minutes). Lift Eyelids and flush inside. Seek Physician if eyes become inflamed.
Inhalation:	Evacuate to fresh air. Apply CPR if required. If resuscitation is required, assessment by a Physician is mandatory.
Ingestion:	DO NOT INDUCE VOMITING. If vomiting occurs, take care to prevent aspiration. Give ½ pint of milk to drink. Seek aid of a physician. Note to Physician: Consult standard literature re: Hydrocarbon Poisoning.

SECTION 6: HEALTH EFFECTS SUMMARY

Primary Route(s) of Exposure:	Eyes-YES Skin-NO Inhalation-YES Ingestion-YES
Eye Contact:	Essentially non-irritating, however vapors and/or mists may cause mild irritation. Severity of reaction depends upon duration of exposure and first aid procedures administered. Over exposure may cause eyes to water.
Skin Contact:	Non-irritating. **LD50 absorption for skin is >5000 mg/kg (rat, dermal). Prolonged or repeated contact with has not been a cause of defatting or dermatitis in normal day to day handling of material. Effects of over exposure may be dry, chapped skin. **Based on toxicity of Petroleum Distillate.
Inhalation*:	Non-toxic, *LC50 = 5000 ppm (rat, inhalation). Prolonged exposure may cause mild irritation to nose, throat or upper respiratory tract. If over-exposure occurs – may cause dizziness or headaches or nausea. *Based on toxicity of components
Ingestion**:	Practically non- toxic **LD50 >5000 mg/kg. (rat, oral) May be harmful or fatal if large amounts are swallowed. May cause mild irritation of mouth, throat or esophagus. Can cause nausea, vomiting or gastrointestinal upset. May cause diarrhea **Based on toxicity of Petroleum Distillate.
Carcinogenicity	Non-carcinogenic as listed by: ACGIH, IARC MONOGRAPHS, or OSHA. (Based on toxicity reports of component parts).

SECTION 7: REACTIVITY DATA

Product Stability:	Stable
Incompatibility	Oxidizing Materials such as Liquid or Compressed Oxygen, Peroxides or Chlorine.
Hazardous Decomposition:	Burning produces normal by-products of petroleum combustion including Carbon Monoxide
Hazardous Polymerization:	Will not occur.

SECTION 8: FIRE & EXPLOSION HAZARDOUS INFORMATION

Flash Point:	>270 degrees F. (COC) (without propellant)
Flammable Limits:	Solvent Component LEL: 0.7 UEL: 4.8
Extinguishing Media:	C02, Dry Chemical, Foam, Water Spray.
Fire Fighting Procedures:	Use full protective and self-contained breathing apparatus. Cover with an extinguishing agent. Do NOT spray with water using a direct stream into the burning liquid as this may spread the fire. Use a water spray or mist to cool the fire.
Explosion Hazards:	Aerosol containers may explode when heated above 120 F.
Fire Hazard Identification:	NFPA STD. 704 Health – 1 Flammability – 4 (propellant) Reactivity – 0

SECTION 9: SAFETY PRECAUTIONS FOR SAFE HANDLING

Steps to be taken in case of a spill:	Eliminate sources of ignition. Stop or reduce flow by means of a dyke or barricade. Absorb small spills using dry clay or a commercial absorbent. Collect residue into suitable container for proper disposal. Material may be washed into floor drains equipped with an oil interceptor.
Waste disposal method:	Dispose of in an approved landfill site or incinerate at a licensed waste reclaiming facility. Liquid waste may be removed by means of a licensed reclaimer under used oil classification. Be sure to follow all Local, State, & Federal Requirements.

SECTION 10: CONTROL MEASURES

Ventilation:	Provide sufficient ventilation by general or mechanical means to ensure that exposure levels are kept below combustible limits.
Respiratory Protection:	None normally needed unless atomizing in enclosed or confined spaces. Use approved organic mist vapor respirator.
Eye Protection:	None normally required unless operator is using high pressure spraying equipment and splashing may be likely to occur. Use approved face mask or goggles.
Protective Gloves:	None needed
Protective Clothing:	None needed
Personal Hygiene:	Wash face and hands with soap and water after use. Especially before eating or smoking or using the restroom facilities. Launder soiled clothing and shoes / boots with detergent. Apply mild hand cream if hands become dry or chapped.

SECTION 11: LABEL & TRANSPORTATION INFORMATION

Dot Shipping Name:	Class ORM-D, Consumer Commodity
DOT identification Number:	N/A

SECTION 12: REGULATORY INFORMATION

SARA TITLE III INFORMATION:

Section 313 – Toxic Chemicals:	This product does not contain any chemicals which are listed as a carcinogen and in concentrations greater than 0.1% of the mixture pursuant to Section 313 of *Sara Title III*.
Section 302-Extremely Hazardous Substances:	Pursuant to Section 302 of *SARA TITLE III*, this product does not contain an extremely hazardous substance in concentrations greater than 1%.
Material Information System (WHMIS)	This product is not known to contain greater than 1.0% of any chemical substance, which is considered Extremely Hazardous.

SECTION 13: USERS RESPONSIBILITY

A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions – in addition to those described herein – are required. Any health hazard and safety information contained herein should be passed on to your customers or employees, as the case may be.

SECTION 14: DISCLAIMER OF LIABILITY

The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results and assume no liability for damage incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical and application of such products is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the sole responsibility of the user to comply with all applicable Federal, State and Local Laws and Regulations. Any questions with regards to information contained herein should be referred to: Corrosion Technologies Corp. (972) 271-7361.

MATERIAL SAFETY DATA SHEET

Section 1: Product & Company Identification

Product Name: **Duster Aerosol Dust Remover System**

Product Number (s): **74085**

Product Use: pressurized gas duster

Manufacturer / Supplier Contact Information:

In United States:
CRC Industries, Inc.
885 Louis Drive
Warminster, PA 18974
www.crcindustries.com
1-215-674-4300(General)
(800) 521-3168 (Technical)
(800) 272-4620 (Customer Service)

In Canada:
CRC Canada Co.
2-1246 Lorimar Drive
Mississauga, Ontario L5S 1R2
www.crc-canada.ca
1-905-670-2291

In Mexico:
CRC Industries Mexico
Av. Benito Juárez 4055 G
Colonia Orquídea
San Luís Potosí, SLP CP 78394
www.crc-mexico.com
52-444-824-1666

24-Hr Emergency – CHEMTREC: (800) 424-9300 or (703) 527-3887

Section 2: Hazards Identification

Emergency Overview

CAUTION: Contents Under Pressure.

As defined by OSHA's Hazard Communication Standard, this product is hazardous.

Appearance & Odor: Expelled product is a clear gas with a faint ethereal odor. Pressurized product is a liquefied gas.

Potential Health Effects:

ACUTE EFFECTS:

EYE: Contact with dispersed gas is not expected to cause negative effects. Contact with liquid product can cause severe irritation, redness, tearing, blurred vision, and possible freeze burns.

SKIN: Contact with dispersed gas is not expected to cause negative effects. Contact with liquid product or concentrated expelled gas can cause frostbite, irritation and dermatitis.

INHALATION: Inhalation of dispersed gas is not expected to cause negative effects. Inhalation of concentrated vapor may produce anesthetic effects and feeling of euphoria. Prolonged exposure can cause rapid breathing, headache, dizziness, narcosis, and unconsciousness. Deliberately inhaling this product can lead to death from asphyxiation depending on concentration and time of exposure.

INGESTION: Ingestion of liquid product may cause frostbite to mouth and throat. Liquid product may pose aspiration hazard. This product contains a bittering agent. Direct ingestion of expelled gas or liquid will create an extreme bitter taste in the mouth.

CHRONIC EFFECTS: Unknown

TARGET ORGANS: None known

Medical Conditions Aggravated by Exposure: None known

See Section 11 for toxicology and carcinogenicity information on product ingredients.

Section 3: Composition/Information on Ingredients

COMPONENT	CAS NUMBER	% by Wt.
1,1,1,2-Tetrafluoroethane (HFC-134a)	811-97-2	> 99

Section 4: First Aid Measures

Eye Contact: For liquid contact, immediately flush with plenty of water for 15 minutes. Call a physician if frostbite occurs.

Skin Contact: For liquid contact, warm area gradually and get medical attention if there is evidence of tissue damage. Flush area with plenty of water. Treat as frostbite.

Inhalation: Remove person to fresh air. Keep person calm. If not breathing, give artificial respiration. If breathing is difficult give oxygen. Call a physician immediately.

Ingestion: Do not induce vomiting. Contact a physician immediately.

Note to Physicians: Treat symptomatically.

Section 5: Fire-Fighting Measures

Flammable Properties: This product is nonflammable in accordance with aerosol flammability definitions. (See 16 CFR 1500.3(c)(6)).

Flash Point:	None (COC)	Upper Explosive Limit:	NA
Autoignition Temperature:	ND	Lower Explosive Limit:	NA

Fire and Explosion Data:

Suitable Extinguishing Media: As appropriate for combustibles in area

Products of Combustion: Oxides of carbon, halogen acids (thermal decomposition)

Explosion Hazards: Aerosol containers, when exposed to heat from fire, may build pressure and explode.

Protection of Fire-Fighters: Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against suffocation and possible toxic decomposition products. Proper eye and skin protection should be provided. Stop the release of material if possible. Use water spray to keep fire-exposed containers cool and to knock down vapors which may result from product decomposition.

Section 6: Accidental Release Measures

Personal Precautions: Use personal protection recommended in Section 8.

Environmental Precautions: Ventilate area to disperse the vapor plume.

Methods for Containment & Clean-up: Eliminate sources of ignition. Ventilate the area with plenty of fresh air, especially low areas where vapors may accumulate. If in confined space or limited air circulation area, workers should wear appropriate respiratory protection.

Section 7: Handling and Storage

Handling Procedures: Avoid breathing vapors. Vapors are heavier than air and may travel along the ground. Deliberately concentrating and inhaling the vapors of this product may result in death. Use caution around energized equipment. The metal container will conduct electricity if it contacts a live source. This may result in injury to the user from electrical shock and/or flash fire. For product use instructions, please see the product label.

Storage Procedures: Store in a cool dry area out of direct sunlight. Aerosol cans must be maintained below 120 F to prevent cans from rupturing. Keep out of reach of children.

Aerosol Storage Level: I

Section 8: Exposure Controls/Personal Protection

Exposure Guidelines:

	OSHA		ACGIH		OTHER		
COMPONENT	TWA	STEL	TWA	STEL	TWA	SOURCE	UNIT
1,1,1,2-Tetrafluoroethane (HFC-134a)	NE	NE	NE	NE	1000	AIHA	ppm
N.E. – Not Established (c) – ceiling (s) – skin (v) – vacated							

Controls and Protection:

Engineering Controls: Area should have ventilation to provide fresh air. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at the source, preventing dispersion into the general work area. Use mechanical means if necessary to maintain vapor levels below the exposure guidelines. If working in a confined space, follow applicable OSHA regulations.

Respiratory Protection: None required for normal work where adequate ventilation is provided. Use a self-contained breathing apparatus in confined spaces and for emergencies.

Eye/face Protection: For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear splash-proof goggles.

Skin Protection: Use protective gloves such as insulated rubber. Also, use full protective clothing if there is prolonged or repeated contact of liquid with skin.

Section 9: Physical and Chemical Properties

Physical State: dispensed product is a gas; pressurized product is a liquefied gas
Color: colorless
Odor: ethereal
Odor Threshold: ND
Specific Gravity: 1.24
Initial Boiling Point: -15.5℉
Freezing Point: ND
Vapor Pressure: 70 psig @ 70℉
Vapor Density: 3.5 (air = 1)
Evaporation Rate: fast
Solubility: 0.95% (in water) at 70℉
Coefficient of water/oil distribution: ND
pH: NA

Volatile Organic Compounds: wt %: 0 (exempt) g/L: 0 lbs./gal: 0

Section 10: Stability and Reactivity

Stability: Stable

Conditions to Avoid: High heat, open flame

Incompatible Materials: Alkali or alkaline earth metals (such as Na, K, or Ba); finely divided metals; magnesium and alloys containing more than 2% magnesium

Hazardous Decomposition Products: Halogen acids

Possibility of Hazardous Reactions: No

Section 11: Toxicological Information

Long-term toxicological studies have not been conducted for this product. The following information is available for components of this product.

Acute Toxicity:

Component	Oral LD50 (rat)	Dermal LD50 (rabbit)	Inhalation LC50 (rat)
1,1,1,2-Tetrafluoroethane (HFC-134a)	No data	No data	1500 g/m^3/4H

Chronic Toxicity:

Component	OSHA Carcinogen	IARC Carcinogen	NTP Carcinogen	Irritant	Sensitizer
1,1,1,2-Tetrafluoroethane (HFC-134a)	No	No	No	No	No

E – Eye S – Skin R - Respiratory

Reproductive Toxicity: No information available
Teratogenicity: No information available
Mutagenicity: No information available
Synergistic Effects: No information available

Section 12: Ecological Information

Ecological studies have not been conducted for this product. The following information is available for components of this product.

Ecotoxicity: No information available
Persistence / Degradability: No information available
Bioaccumulation / Accumulation: No information available
Mobility in Environment: No information available

Section 13: Disposal Considerations

Waste Classification: The dispensed product is not a RCRA hazardous waste. Pressurized containers may be a D003 reactive waste. (See 40 CFR Part 261.20 – 261.33)
Empty aerosol containers may be recycled.

All disposal activities must comply with federal, state, provincial and local regulations. Local regulations may be more

stringent than state, provincial or national requirements.

Section 14: Transport Information

US DOT (ground): Consumer Commodity, ORM-D

ICAO/IATA (air): Consumer Commodity, ID8000, 9

IMO/IMDG (water): Aerosols, UN1950, 2.2, Limited Quantity

Special Provisions: DOT-SP 11644: In accordance with this special permit, the product container is marked with DOT-SP11644 instead of 2Q. This packaging is approved for shipping as a Consumer Commodity.

Section 15: Regulatory Information

U.S. Federal Regulations:

Toxic Substances Control Act (TSCA):
All ingredients are either listed on the TSCA inventory or are exempt.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA):
Reportable Quantities (RQ's) exist for the following ingredients: None

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center (800-424-8802) and to your Local Emergency Planning Committee.

Superfund Amendments Reauthorization Act (SARA) Title III:
Section 302 Extremely Hazardous Substances (EHS): None

Section 311/312 Hazard Categories:

Fire Hazard	No
Reactive Hazard	No
Release of Pressure	Yes
Acute Health Hazard	Yes
Chronic Health Hazard	No

Section 313 Toxic Chemicals: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:
None

Clean Air Act:
Section 112 Hazardous Air Pollutants (HAPs): None

U.S. State Regulations:

California Safe Drinking Water and Toxic Enforcement Act (Prop 65):
This product may contain the following chemicals known to the state of California to cause cancer, birth defects or other reproductive harm: None

Consumer Products VOC Regulations: This product is not regulated.

State Right to Know:

New Jersey:	811-97-2
Pennsylvania:	811-97-2
Massachusetts:	811-97-2
Rhode Island :	811-97-2

Canadian Regulations:

Controlled Products Regulations:

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

WHMIS Hazard Class: A

Canadian DSL Inventory: All ingredients are either listed on the DSL Inventory or are exempt.

European Union Regulations:

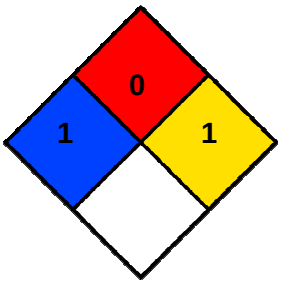
RoHS Compliance: This product is compliant with Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003. This product does not contain any of the restricted substances as listed in Article 4(1) of the RoHS Directive.

Additional Regulatory Information: This product contains a bittering agent to help to prevent inhalant abuse.

Section 16: Other Information

HMIS® (II)	
Health:	**1**
Flammability:	**0**
Reactivity:	**1**
PPE:	**B**

NFPA



Ratings range from 0 (no hazard) to 4 (severe hazard)

Prepared By: Michelle Rudnick
CRC #: 917A
Revision Date: 08/19/2009

Changes since last revision: MSDS reformatted to meet the requirements of the Canadian Controlled Products Regulations.

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. This information is accurate to the best of CRC Industries' knowledge or obtained from sources believed by CRC to be accurate. Before using any product, read all warnings and directions on the label. For further clarification of any information contained on this MSDS consult your supervisor, a health & safety professional, or CRC Industries.

ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstract Service
CFR: Code of Federal Regulations
DOT: Department of Transportation
DSL: Domestic Substance List
g/L: grams per Liter
HMIS: Hazardous Materials Identification System
IARC: International Agency for Research on Cancer
IATA: International Air Transport Association
ICAO: International Civil Aviation Organization
IMDG: International Maritime Dangerous Goods
IMO: International Maritime Organization
lbs./gal: pounds per gallon
LC: Lethal Concentration
LD: Lethal Dose
NA: Not Applicable
ND: Not Determined
NIOSH: National Institute of Occupational Safety & Health
NFPA: National Fire Protection Association
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
PMCC: Pensky-Martens Closed Cup
PPE: Personal Protection Equipment
ppm: Parts per Million
RoHS: Restriction of Hazardous Substances
STEL: Short Term Exposure Limit
TCC: Tag Closed Cup
TWA: Time Weighted Average
WHMIS: Workplace Hazardous Materials Information System

Safety Data Sheet
Defoam 3000

Revision Date 7/24/2015

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product Identifiers

Product Name	:	Defoam 3000
Synonyms	:	None
Product Form	:	Liquid

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses	:	Reduction of foam in wastewater process

1.3 Details of the supplier of the safety data sheet

Company	:	Aquafix Inc. 2310 Daniels St. Madison WI 53718 USA
Telephone:	:	+1 888-757-9577 Monday-Friday 7:30am-4:00pm CST

1.4 Emergency telephone number

Emergency Phone#	:	Chemtrec +1 800-424-9300

2. HAZARD IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Eye damage/irritation (Category 2B)

Skin corrosion/irritation (Category 3)

2.2 GHS Label elements, including precautionary statements

Pictogram	:	None
Signal Word	:	Warning
Hazard Statement(s)	:	May cause eye and skin irritation.
Precautionary Statement(s)	:	Avoid breathing dust/mist/vapor/spray. Wear protective gloves/protective clothing/eye protection/face protection. Wash thoroughly after handling. Do not eat, drink, or smoke while handling.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

None

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Hazardous Components

Component	Cas-No.	Concentration %	OSHA PEL	ACGIH TLV
Proprietary Mixture	N/A	100%	N/A	N/A

Ingredients not precisely identified are proprietary or non-hazardous. Product formulation consists of listed materials and non-hazardous ingredients.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice

If concerned consult a physician.

In case of skin contact

Wash exposed area with soap and water. Get medical attention if irritation develops and persists.

In case of eye contact

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists seek medical attention.

If Inhaled

Remove to fresh air.

If Ingested

May cause nausea or diarrhea, drink plenty of water.

4.2 Most important symptoms and effects both acute and delayed

Possibility of persistent irritation and/or allergic reaction.

4.3 Indication of any immediate medical attention and special treatment needed

Seek medical attention if irritation persists.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Use water, water spray, foam, carbon dioxide (CO2), or dry powder.

Unsuitable extinguishing media

None

5.2 Special hazards arising from the substance or mixture

None

5.3 Special protective equipment for firefighters

No special protective equipment required.

5.4 Further Information

Flash Point (°C) : 475 °F

Autoignition temperature (°C) : No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions

No special precautions required. Wear adequate personal protective equipment.

6.3 Method and materials for clean up

Maintain good housekeeping practices. Can be washed away with water. No special disposal method required, except that it be in accordance with current local, state/provincial and federal regulations.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Wear personal protection equipment.

7.2 Conditions for safe storage

Risks

Not at risk for corrosion, fire, explosion, or chemical reaction.

Place of storage

Store in a cool, dry space between 50-80°F.

Fire/explosion protection

None needed

7.3 Specific end use

None

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Components with work place parameters

None

8.2 Exposure controls

Engineering controls

Handle in accordance with good industrial hygiene and safety practice.

Personal Protective Equipment

Eye/face protection	:	Protective glasses are recommended
Skin		**Hand:** Gloves are recommended
		Other: Wear appropriate clothing for work
Respiratory protection	:	Respirator is recommend if prolonged exposure expected
Thermal protection	:	None
Environmental exposure	:	None

9. PHYSICAL & CHEMICAL PROPERTIES

9.1	**Information on basic physical and chemical properties**		
	Appearance	:	Transparent, light amber liquid
	Odor	:	Slightly sweet odor
	Solubility	:	Dispersible
	Boiling point	:	No data available
	pH	:	No data available
	Vapor density	:	No data available
	Melting point	:	No data available
	Vapor pressure	:	No data available
	Specific Gravity	:	.985 @ 25°C
9.2	**Other information**	:	None

10. STABILITY AND REACTIVITY

10.1	**Reactivity**	:	None
10.2	**Chemical Stability**	:	Stable
10.3	**Possibility of hazardous reactions**	:	None
10.4	**Conditions to avoid**	:	Product can decompose at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.
10.5	**Incompatible materials**	:	Strong acids or bases, oxidizing agents.
10.6	**Hazardous decomposition products**	:	Hazardous polymerization will not occur under normal conditions.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	:	No known effects
Skin corrosion/irritation	:	Can cause mild skin irritation
Eye damage/irritation	:	Can cause eye irritation
Respiratory/skin sensitization	:	No known effects
CMR(Carcinogenity, Mutagenicity, Reproductive toxicity)		No known effects

12.ECOLOGICAL INFORMATION

12.1	**Toxicity**	:	No known information available
12.2	**Persistence and degradability**	:	No known information available
12.3	**Biaacumulative potential**	:	No known information available
12.4	**Mobility in soil**	:	No known information available
12.5	**Results of PBT and vPvB assessment**	:	No known ecological information available

13.DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product and packaging can be disposed of in regular trash. No special disposal method required. Follow all applicable local laws for recycling, bagging, and disposal of trash.

14. TRANSPORTATION INFORMATION

14.1	**UN NUMBER**	:	Not relevant
14.2	**UN proper shipping name**	:	Not relevant
14.3	**Transportation hazard class**	:	Not classified as dangerous
14.4	**Packing group**	:	Not relevant
14.5	**Environmental hazards**	:	None
14.6	**Special precautions**	:	None
14.7	**Further Information**	:	None

15.REGULATORY INFORMATION

Sara/Title III – CERCLA LIST of Hazardous Substances and Reportable Quantities (40CFR304.4): This product **does not** contain an ingredient(s) listed as a hazardous ingredient for Emergency Release Notification under section 304

Sara/Title III – List of Extremely Hazardous Substances for Emergency Planning and Notification (40 CFR 300 & 305): This product **does not** contain an ingredient(s) listed as an extremely hazardous substances (EHS) for Emergency Planning under sections 301-303 and for Emergency Release Notification under section 304.

Sara/Title III – List of Toxic Chemicals subject to Release Reporting (Community Right to Know) (40 CFR 372): This product **does not** contain an ingredient(s) listed as a toxic chemical for Annual Release Reporting Requirements under section 313.

16.OTHER INFORMATION

The information in this SDS was obtained from sources which we believe to be reliable. However, the information is provided without any warranty expressed or implied regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself.

This SDS was prepared and is to be used only for this product. No representation, warranty, or guarantee of any kind, express or implied, is made as to its accuracy, reliability or completeness. We assume no responsibility for any loss, damage or expense direct or consequential arising out of use. It is the user's responsibility to satisfy himself as to the suitableness and completeness of such information for his own particular use.

Material Safety Data Sheet

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: DURACELL ALKALINE BATTERIES
Product Identification: Alkaline Manganese Dioxide Cells –
Duracell Designations: 7K67; MN1203; MN1300; MN1400; MN1500; MN2400; MN1604; MN908; MN918; MN9100; MX1604; MX2500; MX1300; MX1400; MX1500; MX2400

Product Use: Energy Source
MSDS Date of Preparation: August 24, 2009

Company Identification

US Office
Duracell, a division of P&G
Berkshire Corporate Park
14 Research Drive
Bethel, CT USA 06401
(203) 796-4000

Canadian Office
Duracell, a division of P&G
4711 Yonge Street
Toronto, Ontario
Canada M2N 6K8
(416) 730-4711

Emergency Phone Number: INFOTRAC Emergency Response Hotline 1-800-535-5053 (US & Canada)

SECTION 2: HAZARDS IDENTIFICATION

Physical Appearance: Copper top battery.

EMERGENCY OVERVIEW

CAUTION: May explode or leak, and cause burn injury, if recharged, disposed of in fire, mixed with a different battery type, inserted backwards or disassembled. Replace all used batteries at the same time. Do not carry batteries loose in your pocket or purse. Do not remove the battery label.

Potential Health Effects:

The chemicals and metals in this product are contained in a sealed can. Exposure to the contents will not occur unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused. Damaged battery will release concentrated potassium hydroxide, which is caustic. Anticipated potential leakage of potassium hydroxide is 2 to 20 mL, depending on battery size.

Eye Contact: Contact with battery contents may cause severe irritation and burns. Eye damage is possible.

Skin Contact: Contact with battery contents may cause severe irritation and burns.

Inhalation: Inhalation of vapors or fumes released due to heat or a large number of leaking batteries may cause respiratory and eye irritation.

Ingestion: Swallowing is not anticipated due to battery size. Choking may occur if smaller AAA batteries are swallowed. Ingestion of battery contents (from a leaking battery) may cause mouth, throat and intestinal burns and damage.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Amount
Manganese Dioxide	1313-13-9	35-40%
Zinc	7440-66-6	10-25%
Potassium Hydroxide (35%)	1310-58-3	5-10%
Graphite (natural or synthetic)	7782-42-5, 7440-44-0	1-5%

SECTION 4: FIRST AID MEASURES

Eye Contact: If battery is leaking and material contacts the eye, flush thoroughly with copious amounts of running water for 30 minutes. Seek immediate medical attention.

Skin Contact: If battery is leaking and material contacts the skin, remove any contaminated clothing and flush exposed skin with copious amounts of running water for at least 15 minutes. If irritation, injury or pain persists, seek medical attention.

Inhaled: If battery is leaking, contents may be irritating to respiratory passages. Move to fresh air. If irritation persists, seek medical attention.

Swallowed: If battery contents are swallowed, do not induce vomiting. If the victim is alert, have them rinse their mouth are the surrounding skin with water for at least 15 minutes. Seek immediate medical attention.

Note: This MSDS does not include or address the small button cell batteries which can be ingested.

SECTION 5: FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Batteries may burst and release hazardous decomposition products when exposed to a fire situation.

Extinguishing Media: Use any extinguishing media that is appropriate for the surrounding fire.

Special Fire Fighting Procedures: Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing. Fight fire from a distance or protected area. Cool fire exposed batteries to prevent rupture. Use caution when handling fire-exposed containers (containers may rocket or explode in heat of fire).

Hazardous Combustion Products: Thermal degradation may produce hazardous fumes of zinc and manganese; hydrogen gas, caustic vapors of potassium hydroxide and other toxic by-products.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Notify safety personnel of large spills. Caustic potassium hydroxide may be released from leaking or ruptured batteries. Clean-up personnel should wear appropriate protective clothing to avoid eye and skin contact and inhalation of vapors or fumes. Increase ventilation. Carefully collect batteries and place in an appropriate container for disposal.

SECTION 7: HANDLING AND STORAGE

Avoid mechanical or electrical abuse. DO NOT short circuit or install incorrectly. Batteries may explode, pyrolize or vent if disassembled, crushed, recharged or exposed to high temperatures. Install batteries in accordance with equipment instructions. Do not mix battery systems, such as alkaline and zinc carbon, in the same equipment. Replace all batteries in equipment at the same time. Do not carry batteries loose in a pocket or bag. Do not remove battery tester or battery label.

Storage: Store batteries in a dry place at normal room temperature. Do not refrigerate – this will not make them last longer.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

The following occupational exposure limits are provided for informational purposes. No exposure to the battery components should occur during normal consumer use.

Chemical Name	Exposure Limits
Manganese Dioxide	5 mg/m3 Ceiling OSHA PEL 0.2 mg/m3 TWA ACGIH TLV
Zinc	None established for zinc metal
Potassium Hydroxide	2 mg/m3 Ceiling ACGIH TLV
Graphite (natural-non-fibrous)	15 mppcf TWA OSHA PEL 2 mg/m3 TWA (respirable dust) ACGIH TLV
Graphite (synthetic non-fibrous)	5 mg/m3 TWA (respirable dust), 15 mg/m3 TWA (total dust) OSHA PEL 2 mg/m3 TWA (respirable dust) ACGIH TLV

Ventilation: No special ventilation is needed for normal use.

Respiratory Protection: None required for normal use.

Skin Protection: None required for normal use. Use neoprene, rubber or latex gloves when handling leaking batteries.

Eye Protection: None required for normal use. Wear safety goggles when handling leaking batteries.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Copper top battery.
Specific Gravity: Not applicable
Water Solubility: Insoluble
Vapor Pressure: Not applicable
Vapor Density: Not applicable
Boiling Point: Not applicable
Melting Point: Not applicable
Flash Point: Not applicable
Autoignition Point: Not applicable

SECTION 10: STABILITY AND REACTIVITY

Stability: This product is stable.

Incompatibility/Conditions to Avoid: Contents are incompatible with strong oxidizing agents. Do not heat, crush, disassemble, short circuit or recharge.

Hazardous Decomposition Products: Thermal decomposition may produce hazardous fumes of zinc and manganese; caustic vapors of potassium hydroxide and other toxic by-products.

Hazardous Polymerization: Will not occur

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Toxicity Data:
Manganese Dioxide: LD50 oral rat >3478 mg/kg
Potassium Hydroxide: LD50 oral rat 273 mg/kg

Chronic Effects: The chemicals in this product are contained in a sealed can and exposure does not occur during normal handling and use. No chronic effects would be expected from handling a leaking battery.

Target Organs: Skin, eyes and respiratory system.

Carcinogenicity: None of the components of this product are listed as carcinogens by ACGIH, IARC, NTP or OSHA.

SECTION 12: ECOLOGICAL INFORMATION

No ecotoxicity data is available. This product is not expected to present an environmental hazard.

SECTION 13: DISPOSAL INFORMATION

Disposal should be in accordance with Federal, state/provincial and local regulations. Products covered by this MSDS, in their original form, when disposed as waste, are considered non hazardous waste according to Federal RCRA regulations (40 CFR 261).

Alkaline batteries can be safely disposed of with normal household waste. Due to concerns about mercury in the municipal solid waste stream, Duracell has voluntarily eliminated all of the added mercury from its alkaline batteries since 1993. Individual consumers may dispose of spent (used) batteries with household trash. Duracell does not recommend that spent batteries be accumulated and disposed of in large quantities. Do not incinerate except for disposal in a controlled incinerator.

Some communities offer recycling or collection of alkaline batteries – contact your local government for disposal practices in your area.

SECTION 14: TRANSPORT INFORMATION

Products covered by this MSDS, in their original form, are considered "dry cell" batteries and are not regulated for transportation as "DANGEROUS GOODS." The batteries must be packaged in a manner that prevents the generation of a dangerous quantity of heat and short circuits.

For finished packaged product transported by ground (US DOT): – not regulated
For finished packaged product transported by sea (IMDG) – not regulated
For finished packaged product transported by air (IATA): – not regulated

Special provisions apply and shippers should consult the most current versions of the transportation regulations.

Special Provision A123 in the IATA Dangerous Goods Regulations and ICAO Technical Instructions and Special Provision 130 in 49 CFR 172.102 of the U.S. DOT regulations require alkaline batteries be packed in such a way to prevent short circuits or generating a dangerous quantity of heat. In addition, the IATA Dangerous Goods Regulations and ICAO Technical Instructions require the words "not restricted" and the Special Provision number "A123" be provided on the air waybill, when an air waybill is issued. Special Provision 304 of the IMDG Code (Amdt. 33-06) provides batteries, dry, containing corrosive electrolyte which will not flow out of the battery if the battery case is cracked are not subject to the provisions of this Code provided the batteries are securely packed and protected against short-circuits. Examples of such batteries are alkali-manganese, zinc-carbon, nickel-metal hydride and nickel-cadmium batteries.

SECTION 15: REGULATORY INFORMATION

United States

OSHA Status: While the finished product(s) is considered an article and not covered by the OSHA Hazard Communication Standard, 29 CFR 1910.1200, this MSDS contains valuable information critical to the safe handling and proper use of the product".

EPA TSCA Status: All intentionally-added components of this product are listed on the US TSCA Inventory.

SARA 313/302/304/311/312 chemicals: Manganese compounds 35-40%, Zinc 10-25%

California: This product has been evaluated and does not require warning labeling under California Proposition 65.

State Right-to-Know and CERCLA:
The following ingredients present in the finished product are listed on state right-to-know lists or state worker exposure lists

Ingredient	CAS #	Level	CERCLA RQ	State				
				IL	MA	NJ	PA	RI
Manganese Dioxide	1313-13-9	35-40%	None	Y	Y	N	Y	Y
Zinc	7440-66-6	10-25%	1000 lb	Y	Y	Y	Y	N
Potassium Hydroxide	1310-58-3	5-10%	1000 lb	Y	Y	Y	Y	Y
Graphite	7782-42-5 7440-44-0	1-5%	None	Y	Y	N	Y	Y

Canada All intentionally-added components of this product are listed on the Canadian DSL. This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and this MSDS contains all information required by the Controlled Products Regulations.

SECTION 16: OTHER INFORMATION

P&G Hazard Rating: Health: 0 Fire: 0 Reactivity: 0

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Data supplied is for use only in connection with occupational safety and health.

DISCLAIMER: This MSDS is intended to provide a brief summary of our knowledge and guidance regarding the use of this material. The information contained here has been compiled from sources considered by Procter & Gamble to be dependable and is accurate to the best of the Company's knowledge. It is not meant to be an all-inclusive document on worldwide hazard communication regulations.

This information is offered in good faith. Each user of this material needs to evaluate the conditions of use and design the appropriate protective mechanisms to prevent employee exposures, property damage or release to the environment. Procter & Gamble assumed no responsibility for injury to the recipient or third persons, or for any damage to any property resulting from misuse of the product.

MATERIAL SAFETY DATA SHEET (MSDS)

Dustbane

Sweeping Compound 100% Biodegradable

Specialty Cleaners

SECTION I ▶ PRODUCT IDENTIFICATION

Product Name	Product Type	WHMIS Classification
Dustbane	Sweeping Compound 100% Biodegradable	D2A

SECTION II ▶ HAZARDOUS INGREDIENTS

Chemical Name	Cas Registry No.	%	Toxicity
Crystalline Silica	14808-60-7	30-60	TWAE 0.1 mg/m^3

SECTION III ▶ PHYSICAL DATA

Appearance	Odour	pH	Boiling Point	Specific Gravity	Solubility in Water
Green coloured powder	Unscented	N/A	N/A	N/A	Insoluble

SECTION IV ▶ FIRE AND EXPLOSION HAZARD DATA

Flash Point (°C): Insoluble **Extinguishing media:** CO_2, Foam, Dry Chemical

Special fire fighting procedures: None

Unusual fire and explosion hazards: None

SECTION V ▶ TOXICOLOGICAL PROPERTIES

HAZARD RATING: Health = 1 Flammability = 0 Reactivity = 0

Swallowing: Slightly Toxic

Inhalation: Crystalline silica is listed in group 1 of the IARC monographs as “carcinogenic to humans”. Inhalation of crystalline silica in its respirable form can lead to silicosis.

Skin Absorption: Not Applicable

Skin Contact: No effect expected

Eye Contact: Slight Irritant

Special Warning: None

Rating System
0 = Insignificant
1 = Slight
2 = Moderate
3 = High
4 = Extreme

SECTION VI ▶ FIRST AID MEASURES

Ingestion: Drink 3-4 glasses of milk or water.

Inhalation: Not Applicable

Skin: Flush with water.

Eyes: Flush with water. If irritation persists, call a physician.

SECTION VII ▶ REACTIVITY DATA

Stable: Yes

Conditions to avoid: None

Incompatibility with other materials: None

Hazardous decomposition products: CO, CO_2

Hazardous polymerization: Will not occur.

SECTION VIII ▶ PREVENTIVE MEASURES

Hand protection: None

Eye protection: None

Ventilation: General

Respiratory protection: None

Other protective equipment: None

Steps to be taken in case material is released or spilled: Sweep up spillage.

Waste disposal method: Dispose of in sanitary landfill sites (garbage) in accordance with municipal, provincial and federal regulations.

Precautions to be taken in handling and storage: Normal handling processes. Inside storage at 4-40 °C recommended.

Other precautions: Follow label use instructions.

UN: Not Applicable **TDG Class:** None **Packing Group:** Not Applicable

TDG Emergency Telephone Number: 613-996-6666 (COLLECT)

SECTION IX ▶ PREPARATION DATA

Prepared by: M. Mikoluk **Last updated:** June 1, 2015

Location: Dustbane Products Limited, 25 Pickering Place, Ottawa, Ontario, K1G 5P4 – 613-745-6861

Dustbane

Sweeping Compound 100% Biodegradable

"Use to clean and reduce airborne dirt and dust during sweeping of sealed and unsealed wood, concrete and metal floors."

FEATURES AND BENEFITS
An Excellent Dust "Trap": Prevents spread of airborne dust while sweeping, prevents dust from collecting on furniture, in filters, in equipment, etc.
Environmentally Sustainable: 100% biodegradable.
High Absorbency Rate: A small quantity of sweeping compound goes a long way.
Simple to Use: No special training or equipment is needed.

WHERE TO USE
For use on wood, concrete and metal floors in food plants and other industrial areas. Avoid contamination of food in the application and storage of this product.

HOW TO USE
Sprinkle a thin line across the starting point of the surface to clean then sweep.
SPECIAL APPLICATIONS: Use to absorb water spills, vomit and other spills.

SPECIFICATIONS
Appearance: Green coloured powder
Fragrance: Unscented
Actives %: 100.0
WHMIS: Yes
TDG: No
CFIA Approval: Yes
VOC Content: None

Please note

Dustbane Sweeping Compound contains sand, which acts as both an abrasive and filler. Sand, by its very nature, contains free silica. In its respirable form, silica is recognized as a carcinogen to humans. WHMIS regulations stipulate that if a product contains free silica, then that product must be labeled accordingly (i.e. as a carcinogen), no matter what the actual risks are.

The risk associated with free silica revolves around its inhalation toxicity. Due to the nature of the formulation of our sweeping compound, inhalation of silica is unlikely. Dustbane Sweeping Compound contains a dust suppressing ingredient that traps dust and helps prevent the hazards associated with the inhalation of airborne particles. It is this feature that also binds the silica that is inherent in the sand that we use to manufacture the sweeping compound.

Dustbane

1 Chemical product and company identification / Identification du produit chimique et de l'entreprise

1.1. Product identifier

Product name: Dustbane Sweeping Compound
Product form: Powder
Product code: 52509, 52100, 52135

1.1. Identificateur du produit

Nom du produit : Poudre à balayer Dustbane
État du produit : Poudre
Code du produit : 52509, 52100, 52135

1.2. Relevant identified uses of chemical product and uses advised against

Recommended use: Sweeping Compound
Restriction on use: For intended use only.

1.2. Utilisations pertinentes identifiées du produit chimique et utilisations non recommandées

Usage du produit : Poudre à balayer
Utilisation déconseillée : Pour usage destiné seulement.

1.3. Details of the supplier of the safety data sheet

Dustbane Products Ltd.
25 Pickering Pl.
Ottawa, Ontario K1G 5P4
T: 1-800-387-8226 F: 1-800-363-5309
info@dustbane.ca www.dustbane.ca

1.3. Détails du fournisseur de la fiche signalétique

Les Produits Dustbane Ltée
25 pl. Pickering
Ottawa, Ontario K1G 5P4
T : 1-800-387-8226 F : 1-800-363-5309
info@dustbane.ca www.dustbane.ca

1.4. Emergency telephone number

CANUTEC: 1-613-996-6666 (Collect)

1.4. Numéro de téléphone d'urgence

CANUTEC : 1-613-996-6666 (À frais virés)

2 Hazard(s) identification / Reconnaissance des dangers

2.1. Classification of the chemical product

General: None.

2.1. Classification du produit chimique

Générale : Aucun.

2.2. Label elements

Classification:	Eye Irritation: 2B
Signal word:	Warning!
Hazard statements:	H320: Causes eye irritation.
Precautionary statements:	P233 Keep container tightly closed. P264: Wash exposed areas thoroughly after handling. P501: Dispose of contents and container in accordance with local, regional and national regulations.

2.2. Éléments de l'étiquette

Classification :	Irritation oculaire : 2B
Mention d'avertissement :	Avertissement!
Mentions de danger :	H320 : Provoque une irritation des yeux.
Conseils de prudence :	P233 : Maintenir le récipient fermé de manière étanche. P264 : Se laver les zones exposées soigneusement après manipulation. P501 : Éliminer le contenu/récipient conformément à la réglementation locale/régionale/nationale.

If swallowed: Rinse mouth. Do NOT induce vomiting. Immediately call a poison center or doctor/physician.

If on skin (or hair): Rinse skin with water/shower. If skin irritation occurs get medical advice/attention. Wash contaminated clothing before reuse.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists call a doctor/physician.

Other hazards not otherwise classified: None.

En cas d'ingestion : rincer la bouche. NE PAS faire vomir. Appeler immédiatement un centre antipoison ou un médecin.

En cas de contact avec la peau (ou les cheveux) : Rincer la peau à l'eau/se doucher. En cas d'irritation ou cutanée : consulter un médecin. Laver les vêtements contaminés avant de les réutiliser.

En cas de contact avec les yeux : rincer avec précaution à l'eau pendant plusieurs minutes. Enlever les lentilles de contact si la victime en porte et si elles peuvent être facilement enlevées. Continuer à rincer. Si l'irritation oculaire persiste, appeler un médecin.

Danger(s) non classé(s) ailleurs : Aucun.

3 Composition/information on ingredients // Composition/information sur les ingrédients

3.2. Mixture

Dangerous components:

Chemical name / Nom du produit chimique	CAS number / Numéro CAS	Quantity / Quantité (%)
Sand, crystalline / Sable, cristallin	14808-60-7	30 - 60

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health and hence require reporting in this section.

3.2. Mélange

Composants dangereux :

Il n'existe pas d'autres ingrédients présents qui, dans la connaissance actuelle du fournisseur et dans les concentrations applicables, soient classés comme dangereux pour la santé et doivent donc être signalés dans cette section.

4 First aid / Premiers soins

4.1. Description of first aid measures

General: Wash contaminated clothing before reuse.

Ingestion: Drink copious amounts of water and provide fresh air. Immediately call a doctor. Do not induce vomiting.

Skin: Wash with soap and water and rinse thoroughly. Consult a doctor if skin redness and irritation persist.

Eyes: Rinse opened eye for several minutes under running water. Remove contact lenses, if present and easy to do so – continue rinsing.

4.1. Description des mesures de premiers soins

Générale : Laver les vêtements contaminés avant de les réutiliser.

Ingestion : Buvez beaucoup d'eau et de l'air frais. Appeler immédiatement un médecin. Ne pas faire vomir.

Contact avec la peau : Laver avec du savon et rincer soigneusement. Consulter un médecin si la rougeur et Irritation persistent.

Contact avec les yeux : Rincer les yeux pendant plusieurs minutes sous l'eau courante. Retirer les lentilles de contact si elle est présente et facile à faire - continuer à rincer.

4.2. Most important symptoms and effect, both acute and delayed

Causes eye irritation.

4.2. Principaux symptômes et effets, tant aigus que différés

Provoque une irritation des yeux.

4.3. Indication of any immediate medical attention and special treatment needed.

Treat symptomatically.

4.3. Indications sur les éventuels soins médicaux et traitements particuliers nécessaires

Traiter les symptômes.

5 Firefighting measures / Mesures de lutte contre l'incendie

5.1. Extinguishing media

Use extinguishing media appropriate for the surrounding fire. Non-flammable and non-combustible.

5.1. Moyens d'extinctions

Utiliser des moyens d'extinction adaptés au feu environnant. Ininflammable et incombustible.

5.2. Special hazards arising from the substance or mixture

Fire hazard: Unknown.

Exposure hazards: In case of accidental fire and extreme heat conditions, the following gaseous products can be released: carbon monoxides and dioxides (COx).

5.2. Dangers particuliers résultant de la substance ou du mélange

Risque d'incendie : Non connu.

Dangers dus à l'exposition : En cas d'incendie accidentel et de conditions de chaleur extrême, les produits gazeux suivants peuvent être libérés : monoxydes et dioxydes de carbone (COx).

5.3. Advice for firefighters

Protection during firefighting: Full protective clothing should be worn before a confined fire space is entered. Self-contained breathing apparatus should be worn.

Other information: This product is not flammable.

5.3. Conseils aux pompiers

Protection lors de lutte contre l'incendie : Port de vêtements protecteurs appropriés si incendie dans espace confiné. Utiliser un équipement de respiration autonome.

Autre information : Ce produit est ininflammable .

6 Accidental release measures / Mesures à prendre en cas de dispersion accidentelle

6.1. Personal precautions, protective equipment and emergency procedures

All persons dealing with the clean-up should wear the appropriate chemically protective equipment. Keep people away from and upwind of split/leak. Restrict access to area until completion of clean-up. Refer to protective measures listed in sections 7 and 8.

6.1. Précautions individuelles, équipement de protection et procédures d'urgence.

Toutes les personnes qui s'occupe du le nettoyage doivent porter de l'équipement de protection approprié. Garder les personnes à l'écart de l'endroit de déversement / fuite. Restreindre l'accès à la zone jusqu'à la fin du nettoyage. Se référer aux mesures de protection énumérées dans les sections 7 et 8.

6.2. Environmental precautions

No special measures required.

6.2. Précautions pour la protection de l'environnement

Aucune mesure spéciale nécessaire.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up: Do not allow material to contaminate ground water system. Dispose contaminated material as waste according to Section 13.

Other information: None.

6.3. Méthodes et matériel de confinement et de nettoyage

Méthodes de nettoyage : Ne pas laisser le matériel contaminer le système d'eau souterraine. Éliminer les déchets contaminés en tant que déchets conformément à l'article 13.

Autres informations : Aucune.

6.4. Reference to other sections

Not applicable.

6.4. Référence aux autres sections

Non applicable.

7 Handling and storage / Manipulation et entreposage

7.1. Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. Use protective equipment recommended in section 8. Avoid contact with skin, eyes or clothing. Wash face, hands, and any exposed skin thoroughly after handling.

7.1. Précautions à prendre pour une manipulation sans danger

Manipuler conformément aux normes d'hygiène industrielle et aux consignes de sécurité. Utiliser de l'équipement de protection recommandée dans la section 8. Éviter le contact avec la peau, les yeux ou les vêtements. Se laver le visage, les mains et toute peau exposée, après manipulation.

7.2. Conditions for safe storage, including incompatibilities

Keep container tightly closed and store in a in cool, dry conditions at no more than 30°C. Keep out of reach of children.

7.2. Conditions d'entreposage sécuritaire; y compris toutes incompatibilités

Conserver le récipient bien fermé et entreposer dans des conditions fraîches et sèches à pas plus de 30 °C. Tenir hors portée des enfants.

8 Exposure control and personal protection / Contrôle de l'exposition et protection personnelle

Chemical name / Nom du produit chimique	CAS number / Numéro CAS	ACGIH	OSHA PEL
Particulates not otherwise classified / Particules non classées par ailleurs		OEL TWA (mg/m^3) Alberta: 10 mg/m^3 (dust) British Columbia: 10 mg/m^3 (total dust) Manitoba: 10 mg/m^3 (inhalable particles) New Brunswick: 3 mg/m^3 (particulate matter containing no asbestos and <1% crystalline silica, respirable fraction) Newfoundland & Labrador: 10 mg/m^3 (inhalable particles) Nova Scotia: 10 mg/m^3 (inhalable particles) Nunavut: 5 mg/m^3 (respirable mass) Northwest Territories: 5 mg/m^3 (respirable mass) Ontario: 10 mg/m^3 (inhalable) Prince Edward Island: 10 mg/m^3 (inhalable particles) Quebec: 10 mg/m^3 (including dust, inert or nuisance particulates; containing no asbestos and <1% crystalline silica – total dust) Saskatchewan: 10 mg/m^3 (insoluble or poorly soluble-inhalable fraction)	TWA (mg/m^3) 3 mg/m^3 Respirable fraction, 10 mg/m^3 Total dust

8.1. Control parameters

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

8.1. Paramètres de contrôle

Le produit ne contient pas de substance présentant des valeurs en quantité significative qui nécessite une surveillance en lieu de travail.

8.2. Exposure control

Appropriate engineering controls: Ensure appropriate ventilation.

Hand protection: Wear protective gloves when extensive exposure to product is possible.

Eye protection: Wear eye/face protection when extensive exposure to product is possible. Wear as appropriate tightly fitting safety goggles; Safety glasses with side-shields.

Skin and body protection: No special measures required.

Respiratory protection: None required under normal usage.

Environmental exposure control: Avoid release to the environment.

8.2. Contrôle d'exposition

Contrôles d'ingénierie appropriés : Assurer une ventilation approprié.

Protection des mains : Porter des gants de protection lorsque l'exposition prolongée au produit est possible.

Protection oculaire : Portez une protection pour les yeux/visage lorsque l'exposition extensive au produit est possible. Porter des lunettes de protection étanches selon le cas; Lunettes de sécurité avec protections latérales.

Protection de la peau et du corps : Aucune mesure particulière n'est requise.

Protection respiratoire : Non nécessaire dans les conditions normales.

Contrôle de l'exposition environnementale : Éviter le rejet dans l'environnement.

9 Physical and chemical properties / Propriétés physiques et chimiques

9.1. Information on basic physical and chemical properties

Physical state:	Powder.
Odour:	Mild.
Odour threshold:	Not determined.
Colour:	Green.
pH (at 25°C):	Not determined.
Melting point:	Not applicable.
Boiling point:	Not determined.
Flash point:	Not determined.
Evaporation rate:	Not determined.
Flammability (solid, gas):	Not applicable.
Explosive limit:	Not determined.
Explosive properties:	
• Lower limit:	Not determined.
• Upper limit:	Not determined.
Oxydising properties:	Not determined.
Vapour pressure:	Not determined.
Vapour density:	Not determined.
Density (at 25°C):	Not determined.
Relative density:	Not determined.
Solubility in water:	Not miscible.
Partition Coefficient:	Not determined.
Auto-ignition temperature:	Product is not self-igniting
Decomposition temperature:	Not determined.
Viscosity:	Not determined.

9.1. Informations sur les propriétés physiques et chimiques essentielles

Aspect :	Poudre.
Odeur :	Doux.
Seuil olfactif :	Non déterminé.
Couleur :	Vert.
pH (à 25°C) :	Non déterminé.
Point de fusion :	Non applicable.
Point d'ébullition :	Non déterminé.
Point d'éclair :	Non déterminé.
Taux d'évaporation :	Non déterminé.
Inflammabilité (solide, gaz) :	Non applicable.
Limite d'explosion :	Non déterminé.
Propriétés explosives :	
• Limite inférieure :	Non déterminé.
• Limite supérieure :	Non déterminé.
Propriétés oxydantes :	Non déterminé.
Pression de la vapeur :	Non déterminé.
Densité de la vapeur :	Non déterminé.
Densité (à 25°C) :	Non déterminé.
Densité relative :	Non déterminé.
Solubilité dans l'eau :	Pas miscible.
Coefficient de partition :	Non déterminé.
Température d'auto-ignition :	Ce produit n'est pas auto-inflammable.
Température de décomposition :	Non déterminé.
Viscosité :	Non déterminé.

9.2. Other information

No additional information available.

9.2. Autres informations

Aucune information additionnelle n'est disponible

10 Stability and reactivity / Stabilité et réactivité

10.1. Reactivity

Not determined.

10.1. Réactivité

Non déterminé.

10.2. Chemical stability

No decomposition if used according to specifications.

10.2. Stabilité chimique

Pas de décomposition si utilisée selon les spécifications.

10.3. Possibility of hazardous reactions

None known.

10.3. Possibilité de réactions dangereuses

Aucune connue.

10.4. Conditions to avoid

Avoid extreme heat and naked flames.

10.4. Conditions à éviter

Éviter les températures extrêmes et les flammes nues.

10.5. Incompatible materials

Strong reducing and oxidizing agents.

10.5. Matières incompatibles

Agents réducteurs et oxydants forts.

10.6. Hazardous decomposition products

In case of accidental fire and extreme heat conditions, the following gaseous products can be released: carbon monoxides and dioxides (COx).

10.6. Produits de décomposition dangereux

En cas d'incendie accidentel et de conditions de chaleur extrêmes, les produits gazeux suivants peuvent être libérés: monoxyde de carbone et dioxyde (COx).

11 Toxicological information / Information toxicologique

11.1. Information on toxicological effects

Information on the likely routs of exposure: Skin and eye contact.

Acute toxicity:

Chemical name / Nom du produit chimique	Means of exposure / Moyens d'expositions	Value / Valeur
Dustbane Sweeping Compound (ATE)	LD50 (Oral) LD50 (Dermal)	No information available / Pas d'information disponible No information available / Pas d'information disponible
Sand, crystalline / Sable, cristallin	LD50 (Oral) LD50 (Dermal)	No information available / Pas d'information disponible No information available / Pas d'information disponible

Symptoms related to the physical, chemical and toxicological characteristics:

- If inhaled: No data available.
- If on skin: May cause mild skin irritation.
- If in eyes: Causes eye irritation.
- After ingestion: May cause irritation of the gastrointestinal tract, nausea, vomiting and diarrhea.
- Sensitization: No sensitizing effects known.

Delayed and immediate effects, and chronic effects from short term and long term exposure:

- Prolonged or frequent contact can cause eczema and inflammation of the skins as a result of degreasing.
- Germ cell mutagenicity: No data available.
- Carcinogenicity: No components are listed as carcinogens by IARC, ACGIH, OSHA or NTP.
- Reproductive toxicity: No data available.
- Specific target organ toxicity:
  - Single exposure: No data available.
  - Repeated exposure: No data available.
- Aspiration hazard: No data available.

11.1. Informations sur les effets toxicologiques

Informations sur les voies d'exposition probables: Contact avec la peau et les yeux.

Toxicité aiguë :

Symptômes liés aux caractéristiques physiques, chimiques et toxicologiques :

- En cas d'inhalation : Pas de données disponibles.
- Si sur la peau : Peut causer une légère irritation de la peau.
- Si dans les yeux : Provoquer une irritation.
- Après l'ingestion : Peut provoquer une irritation du tractus gastro-intestinal, des nausées, des vomissements et des diarrhées.
- Sensibilisation : Aucun effet sensibilisant connu.

Effets effets différés et immédiats et chroniques de court terme et de l'exposition à long terme :

- Un contact prolongé ou fréquent peut provoquer de l'eczéma et de l'inflammation la peau en raison de dégraissage.
- Mutagénécité des cellules germinales : Pas de données disponibles.
- Cancérogénicité : Aucun composant n'est répertorié comme carcinogène par le CIRC, l'ACGIH, l'OSHA ou le NTP.
- Toxicité pour la reproduction : Pas de données disponibles.
- Toxicité pour certains organes cibles :
  - Exposition unique : Pas de données disponibles.
  - Exposition répétée : Pas de données disponibles.
- Danger par aspiration : Pas de données disponibles.

12 Ecological information / Informations écologiques

12.1. Toxicity

Ecology:

Chemical name / Nom du produit chimique	Means of exposure / Moyens d'expositions	Value / Valeur

12.1. Toxicité

Écologie :

12.2. Persistence and degradability

Organic components are readily biodegradable.

12.2. Persistance et dégradabilité

Les composants organiques sont facilement biodégradables.

12.3. Bioaccumulative potential

Not available.

12.3. Potentiel de bioaccumulation

Non disponible.

12.4. Mobility in soil

Not available.

12.4. Mobilité dans le sol

Non disponible.

12.5. Other adverse effects

Not available.

12.5. Autres effets adverses

Non disponible.

13 Disposal considerations / Considérations relatives à l'élimination

13.1. Waste treatment methods

Recommendation: Material may be landfilled.

13.1. Méthodes relatives au traitement des déchets

Recommandation : Le matériel peut être mis en décharge.

13.2. Waste from residues / unused products

Recommendation: Dispose in accordance with all applicable federal, state, provincial and local regulations. Contact your local, state, provincial or federal environmental agency for specific rules.

Recommended cleansing agent: Not applicable.

13.2. Élimination des emballages contaminés

Recommandation : L'élimination doit être faite en conformité avec toutes les réglementations fédérales, d'états, provinciales et locales. Contactez votre agence environementale locale, régionale, provinciale ou fédéral pour les règlements spécifiques.

Agent de nettoyage recommandé : Pas applicable.

14 Transport information / Information sur le transport

Product is not regulated as hazardous.

Ce produit n'est pas classifié comme dangereux.

	14.1. UN number / Numéro ONU	14.2. UN proper shipping name / Nom propre pour l'expédition de l'ONU	14.3. Transport hazard class(es) / Classe(s) de danger	14.4. Packing group / Groupe d'emballage	14.5. Environmental hazards / Dangers pour l'environnement
TDG	None / Aucun	Not regulated / Pas règlementé	None / Aucun	None / Aucun	None / Aucun
DOT					

14.6. Special precautions for user

None specified.

14.6. Précautions spéciales pour l'utilisateur

Aucune identifiée.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not available.

14.7. Transport en vrac conformément à l'Annexe II du MARPOL 73/78 et du code IBC

Non disponible.

15 Regulatory information / Renseignements sur la réglementation

15.1. Réglementation

None specified.

15.1. Précautions spéciales pour l'utilisateur

Aucune identifiée.

16 Regulatory information / Renseignements sur la réglementation

Last revision date: 02/02/2017
Preparation date: 02/02/2017

Abbreviations and acronyms:

ACGIH:	American Conference of Governmental Industrial Hygienists
CAS No.:	Chemical Abstract Service (division of the American Chemical Society)
cPs:	Centipoise
D:	Days
DOT:	US Department of Transport
Hr:	Hours
EC50:	Effective Concentration, 50 percent
IC50:	Inhibitory Concentration, 50 percent
LD50:	Lethal Dose, 50 percent
LC50:	Lethal Concentration, 50 percent
IARC:	International Agency for Research on Cancer
IDLH:	Immediately Dangerous to Life or Health
INCI:	International Nomenclature of Cosmetic Ingredients
MSHA:	Mine Safety and Health Administration
NTP:	National Toxicology Program
NOEC:	No Observed Effect Concentration
NOEL:	No Observed Effect Level
NOISH:	US National Institute for Occupational Safety and Health
OSHA:	Occupational Safety and Health Administration
PEL:	Permissible Exposure Limit
PVC:	Polyvinyl chloride
STEL:	Short-Term Exposure Limit
TDG:	Transport Canada Transportation of Dangerous Goods
TWA:	Time Weighted Average
N/A:	Not Applicable

Disclaimer / Statement of liability:

While the descriptions, data and information contained herein are presented in good faith and believed to be accurate, it is provided for your guidance only. Because many factors may affect processing or application / use, we recommend that you perform an assessment to determine the suitability of the product for your particular purpose prior to use. Nothing herein should be interpreted as a recommendation to infringe existing patents or violate any laws or regulations. No warranties of any kind, either expressed or implied, including fitness for a particular purpose are made regarding the product described. We assume NO responsibility for any injuries resulting from misuse or misapplication of this product or that might be sustained because of inhalation, ingestion, absorption or other contact with this product. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.

Dernière révision : 02/02/2017
Date de préparation : 02/02/2017

Abréviations et acronymes :

ACGIH :	*American Conference of Governmental Industrial Hygienists*
Nº CAS. :	*Chemical Abstract Service (division de l'American Chemical Society)*
CIRC :	Centre international de Recherche sur le Cancer
cPo:	Centipoise
D :	Jours
DIVS :	Danger immédiat pour la vie ou la santé
DOT :	Département des transports É.-U.
H :	Heures
EC50 :	Concentration efficace, 50 pourcent
IC50:	Concentration inhibitrice, 50 pourcent
INCI :	Nomenclature internationale des ingrédients cosmétiques
LD50 :	Dose mortel, 50 pourcent
LC50 :	Concentration mortel, 50 pourcent
MSHA :	*Mine Safety and Health Administration*
NTP :	*National Toxicology Program*
NOEC :	Aucun effet observé concentration
NOEL :	Aucun effet observé niveau
NOISH :	*US National Institute for Occupational Safety and Health*
OSHA :	*Occupational Safety and Health Administration*
PEL :	Limite d'exposition admissible
PVC :	Chlorure de polyvinyle
STEL :	Limite d'exposition à court terme
TDG :	Transport Canada Transport des marchandises dangereuses
TWA :	Durée moyenne pondérée
N/A :	Non applicable

Avis de non-responsabilité / déclaration de responsabilité :

Bien que les descriptions, les données et les informations contenues dans ce document sont présentées de bonne foi et considérées comme exactes, il est fourni à titre indicatif seulement. Parce que de nombreux facteurs peuvent influer sur le traitement ou l'application / utilisation, nous vous recommandons d'effectuer une évaluation afin de déterminer l'adéquation du produit pour votre usage particulier avant l'utilisation. Rien ici ne doit être interprété comme une recommandation de contrefaire des brevets existants ou d'enfreindre les lois ou règlements. Aucune garantie d'aucune sorte, expresse ou implicite, y compris l'aptitude à un usage particulier n'est faite concernant le produit décrit. Nous déclinons toute responsabilité pour toute blessure résultant d'une mauvaise utilisation ou d'une mauvaise de ce produit ou pourrait être soutenue en raison de l'inhalation, l'ingestion, l'absorption ou tout autre contact avec ce produit. En aucun cas, les légendes, les informations ou les données fournies ne doivent être considérées comme une partie de nos conditions générales de vente. En outre, les descriptions, les données et les informations fournies ci-dessous sont données gratis. Aucune obligation ou responsabilité pour la description, les données et informations fournies sont supposées. Tout comme étant donné et accepté à vos risques.

Empack Spraytech Inc.
98 Walker Drive
Brampton, Ontario, L6T 4H6
Canada
905-792-6571

PRODUCT: emzone Signal Air Horn 100 Pack 100g (3.5 oz.) **CODE: P7-046300**

SECTION 01: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Item Numbers	P7-046300
Product Identity	emzone Signal Air Horn 100 Pack 100g (3.5 oz.)
Manufacturer	Empack Spraytech Inc. 98 Walker Drive Brampton Ontario Canada L6T 4H6 905-792-6571
24 hour emergency telephone number	CHEM TREC: 800-424-9300.
Recommended Use	Signal air horn for boating, sports, outdoors and industrial sites.

SECTION 02: HAZARDS IDENTIFICATION

Hazard Classification:

Physical Hazards	Gases Under Pressure - Compressed gas. Aerosols - Category 3.
Health Hazards	Skin Irritation - Category 3. Eye Damage/Irritation - Category 2B.
Environmental Hazards	Not Classified.

Label Elements:

Signal Word	WARNING.
Hazard Statement	Contains gas under pressure; may explode if heated. Pressurized container: may burst if heated. Causes mild skin irritation. Causes eye irritation.

Precautionary Statements:

Prevention	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not pierce or burn, even after use. Wash hand thoroughly after handling.
Response	If Skin Irritation occurs: Get medical advice/attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Storage	Protect from sunlight. Store in a well-ventilated place. Protect from sunlight. Do not expose to temperatures exceeding 50°C /122°F.
Disposal	Dispose of contents/ container in accordance with local/regional/national/international regulations.

SECTION 03: COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS	CAS #	WT. %
1,1,1,2 Tetrafluoroethane	811-97-2	100

SECTION 04: FIRST AID MEASURES

Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration and obtain immediate medical assistance.
Skin Contact	Wash exposed area with soap and water. Get medical attention.
Eye Contact	Check for and remove contact lenses. Immediately flush eyes with water for a minimum of 15 minutes keeping eyelids open. Consult a doctor if any irritation occurs. Get medical attention if irritation persists.
Ingestion	Ingestion is unlikely to occur. If swallowed do not induce vomiting because of risk of aspiration into the lungs. If aspiration is suspected obtain immediate medical attention. Keep respiratory tract clear. Never give anything by mouth to an unconscious person.
Most important symptoms/effects, acute and delayed	Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Direct contact with eyes may cause temporary irritation. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. May cause redness and pain.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. In case of shortness of breath give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

PRODUCT: emzone Signal Air Horn 100 Pack 100g (3.5 oz.) **CODE: P7-046300**

SECTION 05: FIRE FIGHTING MEASURES

General Fire Hazards	Non Flammable Aerosol.
Special Protective Equipment and Precautions for Firefighters	Firefighters must use standard protective equipment including flame retardant coat, helmet with water to prevent vapor pressure build up. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out.
Suitable Extinguishing Media	Dry chemical powder. Carbon dioxide. Foam, water spray or fog.
Specific Hazards Arising from the Chemical.	In case of fire, the following can be released: Carbon Oxides (CO, CO2), Other unidentified Organic Compounds.
Hazardous Combustion Products	Hydrogen fluoride. Oxides of carbon.
Sensitivity to Mechanical Impact	No information available.
Sensitivity to Static Discharge	No information available.

SECTION 06: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Avoid walking through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 08).
Methods and Materials for Containment and Cleaning Up	Large spill or leak is unlikely in aerosol containers. If spill or leak occurs, ventilate enclosed spaces and disperse gas with floor-level forced-air ventilation. Exhaust vapours outdoors. Do not smoke or operate internal combustion engines. Remove flames and heating elements.
Environmental Precautions	Keep out of drains, sewers, ditches, and waterways. Minimize use of water to prevent environmental contamination.

SECTION 07: HANDLING AND STORAGE

Precautions for Safe Handling	Contents under pressure. Avoid breathing vapour of this product. Avoid contact with skin and eyes. Avoid prolonged exposure. Use in well-ventilated areas. Keep container tightly closed. Do not enter confined spaces unless adequately ventilated. Use in well ventilated area.
Conditions for Safe Storage including any Incompatibilities	Pressurized container. Keep container tightly closed in a dry, cool and well-ventilated place.

SECTION 08: EXPOSURE CONTROLS / PERSONAL PROTECTION

INGREDIENTS	ACGIH TLV TWA	ACGIH TLV STEL	OSHA PEL PEL	OSHA PEL STEL	NIOSH REL
1,1,1,2 Tetrafluoroethane	Not available	Not available	Not available	Not available	Not available

Appropriate Engineering Controls	Local exhaust ventilation required to maintain the point of use below the Threshold Limit Value if unprotected personnel are involved.
Individual Protection Measures:	
Eye/Face Protection	Do not get in eyes. Wear safety glasses with side-shields.
Skin Protection	Chemical resistant gloves are recommended. Avoid contact with the skin. Wear appropriate chemical resistant clothing. At all times wear rubber gloves impervious to the material, such as PVC or nitrile.
Respiratory Protection	Use approved NIOSH respirators for emergencies. Not normally required if good ventilation is maintained .
Thermal Hazards	None Known.
General Hygiene Considerations	When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment prior to use.

SECTION 09: PHYSICAL AND CHEMICAL PROPERTIES

Form	Compressed Gas.
Physical Appearance	Clear- Colorless.
Odor	Ether odor.
Odor Threshold (ppm)	N/A.
Specific Gravity (Aerosol)	Not available.
Specific Gravity	0.990-1.300.
Aerosol Vapour Pressure (psig, 21°C)	85.7 @21.1 °C.
Vapour Density (Air=1)	3.54.
pH	N/A.
Initial Boiling Point/Boiling Range (°C)	-26.5.
Melting/Freezing Point (°C)	N/A.
Flash Point (°C), Method	Not flammable.
Flashback	N/A.

PRODUCT: emzone Signal Air Horn 100 Pack 100g (3.5 oz.) **CODE: P7-046300**

SECTION 09: PHYSICAL AND CHEMICAL PROPERTIES

Evaporation Rate (n-Butyl Acetate = 1).....	No data.
VOC Content.....	N/A.
Solubility in water.....	0.9 g/L (in water).
Aerosol Flame Projection.....	N/A.
Auto Ignition Temperature (°C).....	743.
Lower Flammable Limit (% Vol).....	Not available.
Upper Flammable Limit (% Vol).....	Not available.
Coefficient of Water/Oil Distribution.....	N/A.
Viscosity.....	N/A.

SECTION 10: STABILITY AND REACTIVITY

Reactivity	
Chemical Stability.....	Material is stable under normal conditions.
Possibility of Hazardous Reactions.....	Will not occur.
Conditions to Avoid.....	Avoid sources of heat and flame, and electrostatic charge.
Incompatible Materials.....	Keep away from heat. Strong oxidizing agents. Alkali and alkaline earth metals, powdered aluminium, zinc, magnesium and strong oxidizers, since they may react or accelerate decomposition.
Hazardous Decomposition Products.....	See Section 05. Halogens, halogen acids (HF), Carbon monoxide, Carbon dioxide, and carbonyl halides.

SECTION 11: TOXICOLOGICAL INFORMATION

INGREDIENTS	LC50	LD50
1,1,1,2 Tetrafluoroethane	1,500,000 ppm (rat - 4h, inhalation)	Not available

Information on Likely Routes of Exposure:	
Routes of entry - Inhalation.....	May cause irritation of respiratory tract.
Routes of entry - Skin & Eye.....	May cause irritation.
Routes of entry - Ingestion.....	May cause irritation.
Routes of entry - Skin Absorption.....	May cause skin irritation.
Symptoms Related to the Physical, Chemical and Toxicological Characteristics	
Acute Toxicity.....	Contact with skin and eyes may cause mild to moderate irritation and frostbite. Symptoms may include redness, pain, numbness, prickling and itching. Inhalation of vapours causes irritation to the nose, throat and respiratory tract, with coughing, wheezing, dizziness, headache, drowsiness, nausea and vomiting. Inhalation of higher concentrations may result in central nervous system depression and unconsciousness. High vapour concentrations reduce oxygen available for breathing, resulting in asphyxiation.
Skin Corrosion/Irritation.....	N/A.
Serious Eye Damage/Eye Irritation	
Respiratory or Skin Sensitization.....	N/A.
Germ Cell Mutagenicity.....	No data available to indicate product or any components present at greater than 0.1% are mutagenic.
Carcinogenicity.....	None of the ingredients are listed as possibly carcinogenic to humans by IARC or ACGIH.
Reproductive Toxicity.....	No information is available.
STOT - Single Exposure.....	Not classified.
STOT - Repeated Exposure.....	Not classified.
Aspiration Hazard.....	Not classified.
Chronic Effects.....	No information is available, and no adverse effects are expected.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity.....	This material is non-toxic to Daphnia magna (4-hr EC50 930 mg/L), rainbow trout (96 -hr LC50 450 mg/L) and bacteria (16 -hr EC10>730 mg/L).
Persistence and degradability	The product itself has not been tested.
Bioaccumulation Potential.....	The product itself has not been tested.
Mobility in Soil.....	The product itself has not been tested.
Other Adverse Effects.....	None Known.

SECTION 13: DISPOSAL CONSIDERATIONS

Appropriate Disposal Methods.....	Dispose in accordance with local, provincial and federal regulations.

PRODUCT: emzone Signal Air Horn 100 Pack 100g (3.5 oz.) **CODE: P7-046300**

SECTION 14: TRANSPORT INFORMATION

TDG (Canada- Road).....	AEROSOLS, Class 2.2, UN1950.
DOT (US-Road).....	AEROSOLS, Class 2.2, UN1950, LTD QTY, Consumer Commodity ORM-D.
IMDG (International- Marine).....	AEROSOLS, Class 2.2, UN1950.
IATA (International- Air).....	AEROSOLS, Class 2.2, UN1950, LTD QTY .

SECTION 15: REGULATORY INFORMATION

Canada Regulations:.....	WHMIS Classification. A: Compressed gas.
Canadian Environmental Protection Act (CEPA).....	All ingredients listed appear on the Domestic Substances List (DSL).
US Regulations	
TSCA Inventory Status.....	All components are listed on TSCA .
OSHA.....	This product is considered hazardous under the Federal OSHA hazard communication standard.
California Proposition 65.....	This product does not contain any chemical(s) known to the state of California to cause cancer or reproductivity toxicity.

SECTION 16: OTHER INFORMATION

Disclaimer.....	The information contained herein is based on data considered accurate. No guarantee or warranty is expressed or implied regarding the accuracy of this data or the results obtained from the use thereof. The SDS provider assumes no responsibility for personal injury or property damage to vendees or users or third parties, caused by the material. Such vendees or users assume all risks with the use of the material. This product has been classified in accordance with the hazard criteria of the CPR and the SDS contains all the information required by the CPR. .
Abbreviations.....	ACGIH: American Conference of Governmental Industrial Hygienists; CAS: Chemical Abstract Service; NIOSH: National Institute for Occupational Safety and Health, OSHA: Occupational Safety and Health Administration- USA; TSCA: Toxic Substances Control Act 1976-USA; PEL: Permissible Exposure Limit; REL: Recommended Exposure Limit; TLV: Threshold Limit Value; VOC: Volatile Organic Content; WHMIS: Workplace Hazardous Materials Information System STOT: Specific Target Organ Toxicity.
Prepared by	Regulatory Affairs
Latest Revision	DEC 23/2016

SAFETY DATA SHEET
Commercial ABC Dry Chemical (Fire Extinguishing Agent, Pressurized and Non-pressurized)

1. IDENTIFICATION

Product Name	Commercial ABC Dry Chemical (Fire Extinguishing Agent, Pressurized and Non-pressurized)
Other Names	Multi-Purpose, Ammonium Phosphate, Monoammonium Phosphate
Recommended use of the chemical and restrictions on use	
Identified uses	Fire Extinguishing Agent
Restrictions on use	Consult applicable fire protection codes
Company Identification	Kidde Residential & Commercial 1016 Corporate Park Drive Mebane, NC 27302 USA
Customer Information Number	(919) 563-5911 (919) 304-8200
Emergency Telephone Number	
CHEMTREC Number	(800) 424-9300 (703) 527-3887 (International)
Issue Date	April 10, 2015
Supersedes Date	February 9, 2015

Safety Data Sheet prepared in accordance with OSHA's Hazard Communication Standard (29 CFR 1910.1200)and the Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

2. HAZARD IDENTIFICATION

This SDS covers the product listed above as sold in pressurized and non-pressurized containers. GHS classifications for both forms are listed below.

GHS Classification – Pressurized

Hazard Classification
Gas under pressure – Compressed gas

Label Elements
Hazard Symbols

Signal Word: Warning

Hazard Statements
Contents under pressure; may explode if heated.

2. HAZARD IDENTIFICATION

Precautionary Statements
Prevention
None
Response
None
Storage
Protect from sunlight.
Store in well-ventilated place.
Disposal
None

GHS Classification: Non - pressurized

Hazard Classification
This product is classified as not hazardous in accordance with the Globally Harmonized System of Classification and Labelling (GHS).

Label Elements
Hazard Symbols
None

Signal Word: None

Hazard Statements
None

Precautionary Statements
Prevention
None
Response
None
Storage
None
Disposal
None

Other Hazards
Mica may contain small quantities of quartz (crystalline silica) as an impurity. Prolonged exposure to respirable crystalline silica dust at concentrations exceeding the occupational exposure limits may increase the risk of developing a disabling lung disease known as silicosis. IARC found limited evidence for pulmonary carcinogenicity of crystalline silica in humans.

Specific Concentration Limits
The values listed below represent the percentages of ingredients of unknown toxicity.

Acute oral toxicity	< 10%
Acute dermal toxicity	< 10%
Acute inhalation toxicity	< 10%
Acute aquatic toxicity	< 10%

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CAS Number	Concentration
Monoammonium Phosphate	7722-76-1	55 - 65%
Ammonium Sulfate	471-34-1	30 - 40%
Mica	12001-26-2	< 5%
Clay	1332-58-7	< 5%
Amorphous Silica	7631-86-9	< 5%
Dye	NA	<1%

Note: Pressurized product uses nitrogen or compressed air as the expellant.

4. FIRST- AID MEASURES

Description of necessary first-aid measures

Eyes

Immediately flood the eye with plenty of water for at least 15 minutes, holding the eye open. Obtain medical attention if soreness or redness persists.

Skin

Wash skin thoroughly with soap and water. Obtain medical attention if irritation persists.

Ingestion

Dilute by drinking large quantities of water and obtain medical attention.

Inhalation

Move victim to fresh air. Obtain medical attention immediately for any breathing difficulty.

Most important symptoms/effects, acute and delayed

Aside from the information found under Description of necessary first aid measures (above) and Indication of immediate medical attention and special treatment needed, no additional symptoms and effects are anticipated.

Indication of immediate medical attention and special treatment needed

Notes to Physicians

Treat symptomatically.

5. FIRE - FIGHTING MEASURES

Suitable Extinguishing Media

This preparation is used as an extinguishing agent and therefore is not a problem when trying to control a fire. Use extinguishing agent appropriate to other materials involved. Keep pressurized containers and surroundings cool with water spray as they may rupture or burst in the heat of a fire.

Specific hazards arising from the chemical

Pressurized containers may explode in heat of fire.

Special Protective Actions for Fire-Fighters

Wear full protective clothing and self-contained breathing apparatus as appropriate for specific fire conditions.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Wear appropriate protective clothing. Prevent skin and eye contact. Remove leaking container to a safe place. Ventilate the area.

Environmental Precautions
Prevent large quantities of the material from entering drains or watercourses.

Methods and materials for containment and cleaning up
Sweep up or vacuum and transfer into suitable containers for recovery or disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Wear appropriate protective clothing. Prevent skin and eye contact.

Conditions for safe storage
Pressurized containers should be properly stored and secured to prevent falling or being knocked over. Do not drag, slide or roll pressurized containers. Do not drop pressurized containers or permit them to strike against each other. Never apply flame or localized heat directly to any part of the pressurized or plastic container. Store pressurized and plastic containers away from high heat sources. Storage area should be: - cool - dry - well ventilated - under cover - out of direct sunlight

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.

Mica
ACGIH TLV: 3 mg/m^3 TWA, measured as respirable fraction of the aerosol.
OSHA PEL**:** 20 mppcf, <1% crystalline silica
Clay as Kaolin, Respirable Fraction
ACGIH TLV: 2 mg/m^3 TWA
OSHA PEL: 15 mg/m^3 TWA, total dust
5 mg/m^3 TWA, respirable fraction
Nuisance Dust Limit
OSHA PEL: 50 mppcf or 15 mg/m^3 TWA, total dust
15 mppcf or 5 mg/m^3 TWA, respirable fraction

Appropriate engineering controls
Use with adequate ventilation. If this product is used in a pressurized system, there should be local procedures for the selection, training, inspection and maintenance of this equipment. When used in large volumes, use local exhaust ventilation.

Individual protection measures
Respiratory Protection
Not normally required. Use dust mask where dustiness is prevalent, or TLV is exceeded. In oxygen deficient atmospheres, use a self contained breathing apparatus, as an air purifying respirator will not provide protection.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Skin Protection
Gloves
Eye/Face Protection
Chemical goggles or safety glasses with side shields.
Body Protection
Normal work wear.

9. PHYSICAL AND CHEMICAL PROPERTIES

Non- Pressurized
Appearance

Physical State	Solid (powder)
Color	Pale Yellow
Odor	Odorless
Odor Threshold	No data available
pH	Not applicable
Specific Gravity	No data available
Boiling Range/Point (°C/F)	Not applicable
Melting Point (°C/F)	No data available
Flash Point (PMCC) (°C/F)	Not flammable
Vapor Pressure	No data available
Evaporation Rate (BuAc=1)	No data available
Solubility in Water	No data available
Vapor Density (Air = 1)	Not applicable
VOC (g/l)	None
VOC (%)	None
Partition coefficient (n-octanol/water)	No data available
Viscosity	No data available
Auto-ignition Temperature	No data available
Decomposition Temperature	No data available
Upper explosive limit	No data available
Lower explosive limit	No data available
Flammability (solid, gas)	No data available

Expellant - Nitrogen
Appearance

Physical State	Compressed gas
Color	Colorless
Odor	None
Odor Threshold	No data available
pH	Not applicable
Specific Gravity	0.075 lb/ft^3 @70^{o}F as vapor
Boiling Range/Point (°C/F)	-196^{o}C/-321 ^{o}F
Melting Point (°C/F)	No data available
Flash Point (PMCC) (°C/F)	Not flammable
Vapor Pressure	No data available
Evaporation Rate (BuAc=1)	No data available
Solubility in Water	No data available

9. PHYSICAL AND CHEMICAL PROPERTIES

Vapor Density (Air = 1)	Not applicable
VOC (g/l)	None
VOC (%)	None
Partition coefficient (n-octanol/water)	No data available
Viscosity	Not applicable
Auto-ignition Temperature	No data available
Decomposition Temperature	No data available
Upper explosive limit	Not explosive
Lower explosive limit	Not explosive
Flammability (solid, gas)	Not flammable

10. STABILITY AND REACTIVITY

Reactivity
Pressurized containers may rupture or explode if exposed to heat.

Chemical Stability
Stable under normal conditions.

Possibility of hazardous reactions
Hazardous polymerization will not occur.

Conditions to Avoid
Exposure to direct sunlight - contact with incompatible materials

Incompatible Materials
Strong oxidizing agents - strong acids - sodium hypochlorite

Hazardous Decomposition Products
Oxides of carbon - ammonia - oxides of phosphorus - nitrogen oxides

11. TOXICOLOGICAL INFORMATION

Acute Toxicity
Monoammonium Phosphate:
Oral LD50 (Rat) 5750 mg/kg
Dermal LD50 (Rabbit) >5000mg/kg
Inhalation LC50 (Rat) 5.1mg/l
Ammonium Sulfate:
Oral LD50 (Rat) 4250 mg/kg
Dermal LD50 (Rabbit) >2000mg/kg
Mica:
Oral LD50 (Rat) >2000 mg/kg
Amorphous Silica:
Oral LD50 (Rat) >5000 mg/kg
Dermal LD50 (Rabbit) >2000mg/kg

11. TOXICOLOGICAL INFORMATION

Clay:
Oral LD50 (Rat) >5000 mg/kg
Dermal LD50 (Rabbit) >5000mg/kg
Nitrogen
Simple asphyxiant

Specific Target Organ Toxicity (STOT) – single exposure
Monoammonium Phosphate: Available data indicates this component is not expected to cause target organ effects after a single exposure.
Ammonium Sulfate: Available data indicates this component is not expected to cause target organ effects after a single exposure.
Nitrogen: Exposure to nitrogen gas at high concentrations can cause suffocation by reducing oxygen available for breathing. Breathing very high concentrations can cause dizziness, shortness of breath, unconsciousness or asphyxiation.

Specific Target Organ Toxicity (STOT) – repeat exposure
Monoammonium Phosphate: Available data indicates this component is not expected to cause target organ effects after repeat exposure.
Ammonium Sulfate: Available data indicates this component is not expected to cause target organ effects after repeat exposure.

Serious Eye damage/Irritation
Monoammonium Phosphate: Not irritating (rabbit)
Ammonium Sulfate: Not irritating (rabbit)
Mica: Not irritating (rabbit)

Skin Corrosion/Irritation
Monoammonium Phosphate: Not irritating in rabbit test study
Ammonium Sulfate: Not irritating (rabbit)
Mica: Not irritating (rabbit)

Respiratory or Skin Sensitization
Monoammonium Phosphate: Not skin sensitizing based on test (Mouse local lymphnode assay (LLNA)) on an analogous compound
Ammonium Sulfate: Not sensitizing in Guinea pig maximisation test

Carcinogenicity
Mica may contain small quantities of quartz (crystalline silica) as an impurity. Prolonged exposure to respirable crystalline silica dust at concentrations exceeding the occupational exposure limits may increase the risk of developing a disabling lung disease known as silicosis. IARC has classified Silica Dust, Crystalline, in the form of quartz or cristobalite as 1 (carcinogenic to humans).

Germ Cell Mutagenicity
Monoammonium Phosphate: Not mutagenic in the mouse lymphoma cells in mammalian cell gene mutation assay
Ammonium Sulfate: Negative results in Ames Test, in vitro mammalian chromosome aberration test, and mammalian cell gene mutation assay.

11. TOXICOLOGICAL INFORMATION

Reproductive Toxicity
Monoammonium Phosphate: Available data indicates this component is not expected to cause reproductive toxicity or birth defects.
Ammonium Sulfate: Available data indicates this component is not expected to cause reproductive toxicity or birth defects.

Aspiration Hazard
Not an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicity
Monoammonium Phosphate:
LC50 rainbow trout >100 mg/l 96h
LC50 water flea 1790 mg/l 72h (similar substance)

Mobility in soil
No relevant studies identified.

Persistence/Degradability
No relevant studies identified.

Bioaccumulative Potential
No relevant studies identified.

Other adverse effects
No relevant studies identified.

13. DISPOSAL CONSIDERATIONS

Disposal Methods
Dispose of container in accordance with all applicable local and national regulations.

14. TRANSPORT INFORMATION

Safety Data Sheet information is intended to address a specific material and not various forms or states of containment. Specific volumes, pressures or hardware configurations containing such materials can dictate various different hazard classifications for transportation and labelling requirements. Under Federal Regulations only trained and qualified individuals are permitted to label and ship products following the applicable Department of Transportation (DOT), Federal Aviation Administration (FAA), Transport Canada (TC), International Maritime Dangerous Goods (IMDG) or International Air Transport Association (IATA) requirements.

15. REGULATORY INFORMATION

United States TSCA Inventory
This product contains ingredients that are listed on or exempt from listing on the EPA Toxic Substance Control Act Chemical Substance Inventory.

15. REGULATORY INFORMATION

Canada DSL Inventory
All ingredients in this product are listed on the Domestic Substance List (DSL) or the Non-Domestic Substance List (NDSL) or are exempt from listing.

SARA Title III Sect. 311/312 Categorization: Pressurized
Pressure hazard
SARA Title III Sect. 311/312 Categorization: Non-pressurized
None

SARA Title III Sect. 313
This product does not contain any chemicals that are listed in Section 313 at or above de minimis concentrations.

16. OTHER INFORMATION

NFPA Ratings
NFPA Code for Health - 1
NFPA Code for Flammability - 0
NFPA Code for Reactivity - 0
NFPA Code for Special Hazards - None

HMIS Ratings
HMIS Code for Health - 1
HMIS Code for Flammability - 0
HMIS Code for Physical Hazard - 0
HMIS Code for Personal Protection - See Section 8
*Chronic

Legend
ACGIH: American Conference of Governmental Industrial Hygienists
CAS#: Chemical Abstracts Service Number
EC50: Effect Concentration 50%
IARC: International Agency for Research on Cancer
LC50: Lethal Concentration 50%
LD50: Lethal Dose 50%
N/A: Denotes no applicable information found or available
OSHA: Occupational Safety and Health Administration
PEL: Permissible Exposure Limit
STEL: Short Term Exposure Limit
TLV: Threshold Limit Value
TSCA: Toxic Substance Control Act

Revision Date: April 10, 2015
Replaces: February 9, 2015
Changes made: Updated to GHS Classification.

Information Source and References
This SDS is prepared by Hazard Communication Specialists based on information provided by internal company references.

16. OTHER INFORMATION

Prepared By: EnviroNet LLC.

The information and recommendations presented in this SDS are based on sources believed to be accurate. Kidde Residential & Commercial assumes no liability for the accuracy or completeness of this information. It is the user's responsibility to determine the suitability of the material for their particular purposes. In particular, we make NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, with respect to such information, and we assume no liability resulting from its use. Users should ensure that any use or disposal of the material is in accordance with applicable Federal, State, and local laws and regulations.

7480 Bath Road
Mississauga, Ontario L4T 1L2
Tel. 905 676-1777
Fax 905 676-0582

SAFETY DATA SHEET

Revision Date: 15 June 2018 **Revision Number:** 1B

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Trade Name: FOAM FREE 900
Synonyms: Antifoaming Agent
Chemical Family: Silicone Antifoam
Chemical Formula: Mixture

1.2 Recommended use and restrictions on use

Application: Antifoaming Agent - Commercial
Uses Advised Against: No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier: Northland Chemical Inc.
7480 Bath Road
Mississauga, Ontario L4T 1L2
Tel. (905) 676-1777
Fax (905) 676-0582

1.4. Emergency telephone number

CANUTEC: (613) 996-6666
FOR CHEMICAL EMERGENCY ONLY

2. Hazard(s) Identification

2.1 Classification in accordance with the Hazardous Products Regulation, 2015

This product is not hazardous under the criteria of the Canadian Workplace Hazardous Materials Information System (WHMIS) 2015 adoption of Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

2.2. Label Elements

Signal Word(s): None

Hazard Statement: H402 – Harmful to aquatic life

Precautionary Statements:

P264 - Wash hands thoroughly after handling
P273 - Avoid release to the environment
P501 - Dispose of contents/container in accordance with local/regional/national/international regulations.

Other:

This product contains methylpolysiloxanes which can generate formaldehyde at approximately 150°C (300°F) and above, in atmospheres that contain oxygen. Formaldehyde is a skin and respiratory sensitizer, eye and throat irritant, acute toxicant, and potential cancer hazard.

2.3 Hazards not otherwise classified

None known

2.4 The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity: 0 %

3. Composition/information on Ingredients

This product contains no hazardous ingredients under the criteria of the Canadian Workplace Hazardous Materials Information System (WHMIS) 2015 adoption of Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Non-regulated ingredients: 100 %
OSHA Hazardous: No

4. First-Aid Measures

4.1. Description of first aid measures

Inhalation If inhaled, remove from area to fresh air. If breathing is difficult, give oxygen. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Eyes Remove contact lenses, if worn. In case of contact immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Get immediate medical attention.

Skin Remove contaminated clothing. Flush affected area thoroughly with water for at least 15 minutes. Wash with soap and water. Get medical attention if irritation persists. Launder clothing before reuse.

Ingestion Do not induce vomiting. Give 2 glasses of water. If vomiting occurs spontaneously, keep head below hips to avoid aspiration of material into lungs. Never give anything by mouth if person is unconscious or convulsing. Get immediate medical attention.

4.2 Most important symptoms/effects, acute and delayed

No information available.

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. Fire-fighting measures

5.1. Extinguishing media

Conditions of Flammability Not flammable or combustible

Suitable Extinguishing Media Product does not burn. As appropriate for surrounding materials, use alcohol-resistant foam, dry chemical or carbon dioxide. Water spray may be used to cool exposed containers.

Extinguishing media which must Not be used for safety reasons: None known.

5.2 Specific hazards arising from the substance or mixture

Special Exposure Hazards None known.

5.3 Special protective equipment and precautions for fire-fighters

Special Protective Equipment for Fire-Fighters

Full protective clothing and approved self-contained breathing apparatus required for firefighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid contact with skin, eyes, and clothing. Risk of slipping if material released.

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Wear appropriate personal protective equipment including a NIOSH/MSHA approved respirator. Contain spill. Prevent discharge into streams or sewers. Absorb with a liquid binding material such as diatomaceous earch. Scoop up material and transfer to suitable disposal containers for reuse or disposal. Flush area thoroughly with

water to remove residue. High risk of slipping.

7. Handling and storage

7.1. Precautions for Safe Handling

Handling Precautions	Avoid contact with eyes and skin. Wash thoroughly after handling and before eating or smoking.
Conditions for Save Storage	Keep container tightly closed in a cool, dry, and well ventilated place. Do not allow product to freeze. Material is difficult to pour at low temperature.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Information	Store in original packaging in a dry, cool, and well ventilated place. Keep away from direct sunlight, extreme high or low temperatures and incompatible materials. Close container when not in use. Do not reuse empty container. Use good housekeeping in storage and work areas.
Incompatible Materials	None known.

8. Exposure Controls/Personal Protection

Special Exposure Hazards None anticipated

8.1 Occupational Exposure Limits

Substances	**CAS Number**	**Ontario TWAEV**	**ACGIH TLV-TWA**
None			

8.2 Appropriate engineering controls

Engineering Controls Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.

8.3 Individual protection measures, such as personal protective equipment

Personal Protective Equipment	Provide adequate ventilation. If engineering controls and work practices cannot prevent excessive exposures, appropriate personal protective equipment must be worn.
Respiratory Protection	Use a NIOSH/MSHA approved respirator, if necessary.
Hand Protection	Handle with appropriate chemical resistant gloves.
Skin Protection	Wear chemical resistant clothing appropriate for the work environment to prevent contact with skin. Cover exposed skin. Full length trousers and long sleeved shirt are recommended. Clothing should be laundered before reuse.

Eye Protection	Wear appropriate protective eyeglasses or chemical safety goggles to protect against exposure. Where face shield where risk of splashing or spraying of material is possible.
Other Precautions	None known.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State:	Liquid
Color:	White to off-white
Odor:	Unknown.
Odor Threshold:	No data available

Property Remarks/ - Method	**Values**
pH (30% solution)	**Unknown**
Freezing Point/Range	N.A.
Melting Point/Range	N.A.
Boiling Point/Range	N.A.
Flash Point	Not applicable
Flammability (solid, gas)	Not applicable
Upper flammability limit	Not applicable
Lower flammability limit	Not applicable
Evaporation rate	Not applicable
Vapour Pressure	Not available
Vapour Density	Not available
Specific Gravity (water=1)	0.98 – 1.01 @ 20 °C
Water Solubility	Soluble
Solubility in other solvents	Soluble in toluene.
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

VOC Content (%)	Not applicable

10. Stability and Reactivity

10.1. Reactivity

No known hazardous reactions when stored and handled according to instructions.

10.2. Chemical Stability

Stable under normal storage conditions.

10.3. Possibility of Hazardous Reactions

Will Not Occur

10.4. Conditions to Avoid

High temperatures, Freezing temperatures

10.5. Incompatible Materials

Strong oxidizing agents..

10.6. Hazardous Decomposition Products

Carbon dioxide, Carbon monoxide, Silicon dioxide, Formaldehyde.

11. Toxicological Information

11.1 Information on likely routes of exposure

Principle Route of Exposure Eye or skin contact, inhalation, ingestion.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Acute Toxicity

Toxicology data for the components

Substances	CAS	LD50 Oral Mg/kg (Rat)	LD50 Dermal mg/kg (Rabbit)	LC50 Inhalation (Rat)
None				

Inhalation	None known.
Eye Contact	Solution may cause slight eye irritation.
Skin Contact	None known. May cause skin irritation.
Ingestion	None known.

11.3 Toxicity data

Chronic Effects/Carcinogenicity

Inhalation:	None Known.
Eye Contact:	Repeated or prolonged exposure may cause mild irritation.
Carcinogen:	None known
Mutagen:	No data available

Reproductive Effects:	No data available
Developmental Effects:	No data available
Teratogen:	No data available
STOT - single exposure:	No data available
STOT - repeated exposure:	No data available.
Respiratory or Skin sensitization:	No data available
Aspiration Hazard:	No data available
Synergistic effects:	No data available

12. Ecological Information Substances

12.1. Toxicity

Ecotoxicity Effects

Product Ecotoxicity Data	Acute Hazard Category 3. Harmful to aquatic life.
Substance Ecotoxicity Data	No data available

12.2. Persistence and degradability

Silicones and Inorganics – Not readily biodegradable, Emulsifiers – Readily biodegradable.

12.3. Bioaccumulative potential

Not expected

12.4. Mobility in soil

No information available.

12.5 Other adverse effects

None known.

13. Disposal Considerations

13.1. Waste treatment methods

Disposal Method	Follow all applicable Federal, Provincial, and Local regulations.
Contaminated Packaging	Follow all applicable Federal, Provincial, and Local regulations.

14. Transport Information

Canadian TDG	**Not Regulated for Transport**
US DOT	**Not Regulated for Transport**

15. Regulatory Information

Canadian DSL Inventory: All components listed on inventory or are exempt.

US TSCA Inventory:	All components listed on inventory or are exempt.
California Proposition 65:	None

16. Other Information

Preparation Information

Prepared by:	Technical Department
	Tel. (905) 676-1777
Revision Date:	15 June 2018
Reason for Revision:	Change to GHS format, Amend Physical properties.

Key or legend to abbreviations and acronyms

ACGIH	– American Conference of Governmental Industrial Hygienists
BW	– body weight
CAS	– Chemical Abstracts Service
EC50	– Effective Concentration 50%
LC50	– Lethal Concentration 50%
LD50	– Lethal Dose 50%
mg/kg	– milligram/kilogram
mg/L	– milligram/liter
mg/m^3	– milligram/cubic meter
mm	– millimeter
mmHg	– millimeter mercury
H	– hour
d	– day
NIOSH	– National Institute for Occupational Safety and Health
NTP	– National Toxicology Program
OEL	– Occupational Exposure Limit
PEL	– Permissible Exposure Limit
ppm	– parts per million
STEL	– Short Term Exposure Limit
TWA	– Time-Weighted Average
TWAEV	– Time-Weighted Average Exposure Value
UN	– United Nations
w/w	– weight/weight

Disclaimer Statement

The information supplied is present in good faith and has been derived from sources believed to be reliable. However, no warranty is extended regarding its accuracy or the results obtained from its use. Products supplied by our company are sold under the conditions that liability for any personal injury or damage whatsoever to any property real or personal arising from the handling or use will, in all cased, remain with the handler or user.

NORTHLAND CHEMICAL
Expert Wastewater Treatment

Technical Data Sheet
FOAM FREE 900

DESCRIPTION: Silicon - based defoamer / anti-foam

FOAM FREE 900 is a water dispersible, silicon emulsion that is useful to control foaming in many aqueous systems. **FOAM FREE 900** has excellent stability when diluted with water.

APPLICATION USE

- Chemical distillations
- Carpet Cleaning
- Sulfonation scrubbers
- Waste water treatment systems
- Gas processing
- Pesticide / Herbicide formulations
- Concentrate for Formulators

KEY PRODUCT FEATURES

- **Excellent Dilution Stability**
- **Effective in low concentrations**
- **Excellent Foam control**
- **Effective in hot and cold systems**

TYPICAL PROPERTIES

Appearance/Physical Form:	White liquid
Emulsifier Type:	non-ionic
Diluent:	Water
Specific Gravity 25ºC,	1.01
Active Content:	30%
Viscosity 25ºC cps:	10,000 cps max
pH	5 – 7

PACKAGING

- 20 kg pail, 204 kg drums, 1,020 kg tote

HOW TO USE

FOAM FREE 900 silicone anti-foam should be diluted prior to use. Where possible, **FOAM FREE 900** should be added prior to where the foaming occurs. **FOAM FREE 900** is typically effective in very low concentrations between 1-10 ppm of active silicone solids being effective in controlling foam in many aqueous systems. When evaluating a silicone anti-foam, it is suggested that testing begin at approx. 10 ppm of active silicone. This starting point represents an average level of active silicone found to be effective in many applications. The silicone anti-foam level may then be adjusted in either direction to determine the optimum effective concentration for the specific system requiring foam control. To produce optimum foam control, it is recommended that the anti-foam be entirely dispersed into the foaming system. This may be achieved by pre-diluting the anti-foam or by ensuring that the foaming system can provide adequate agitation to disperse the anti-foam.

STORAGE / HANDLING / SHELF LIFE

FOAM FREE 900 silicone anti-foam shows excellent stability when proper procedures are followed. Store in a cool area 4-27º C, (40 - 80 º F) in tightly closed containers. Storing the emulsion at temperatures above 46º C (115 º F) may cause it to separate. **FOAM FREE 900** contains water and should be protected from freezing. When storing a diluted anti-foam for more than a few days, additional anti-bacterial preservative may be required.

HEALTH HAZARDS

FOAM FREE 900 is non-hazardous according to GHS criteria.
Detailed information on **FOAM FREE 900** is available on the SDS.

TECHNICAL SERVICE

Northland technical representatives are available to advise and assist in the running of laboratory tests and full- scale plant testing to select correct product to suit the application conditions.

NORTHLAND CHEMICAL INC. 7480 Bath Road, Mississauga, Ontario, L4T 1L2, Tel: (905) 676-1777
www.northlandchemicalinc.com

7480 Bath Road
Mississauga, Ontario L4T 1L2
Tel. 905 676-1777
Fax 905 676-0582

SAFETY DATA SHEET

Revision Date: 15 June 2018 **Revision Number:** 1B

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Trade Name: FOAM FREE 900
Synonyms: Antifoaming Agent
Chemical Family: Silicone Antifoam
Chemical Formula: Mixture

1.2 Recommended use and restrictions on use

Application: Antifoaming Agent - Commercial
Uses Advised Against: No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier: Northland Chemical Inc.
7480 Bath Road
Mississauga, Ontario L4T 1L2
Tel. (905) 676-1777
Fax (905) 676-0582

1.4. Emergency telephone number

CANUTEC: (613) 996-6666
FOR CHEMICAL EMERGENCY ONLY

2. Hazard(s) Identification

2.1 Classification in accordance with the Hazardous Products Regulation, 2015

This product is not hazardous under the criteria of the Canadian Workplace Hazardous Materials Information System (WHMIS) 2015 adoption of Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

2.2. Label Elements

Signal Word(s): None

Hazard Statement: H402 – Harmful to aquatic life

Precautionary Statements:

P264 - Wash hands thoroughly after handling
P273 - Avoid release to the environment
P501 - Dispose of contents/container in accordance with local/regional/national/international regulations.

Other:

This product contains methylpolysiloxanes which can generate formaldehyde at approximately 150°C (300°F) and above, in atmospheres that contain oxygen. Formaldehyde is a skin and respiratory sensitizer, eye and throat irritant, acute toxicant, and potential cancer hazard.

2.3 Hazards not otherwise classified

None known

2.4 The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity: 0 %

3. Composition/information on Ingredients

This product contains no hazardous ingredients under the criteria of the Canadian Workplace Hazardous Materials Information System (WHMIS) 2015 adoption of Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Non-regulated ingredients: 100 %
OSHA Hazardous: No

4. First-Aid Measures

4.1. Description of first aid measures

Inhalation If inhaled, remove from area to fresh air. If breathing is difficult, give oxygen. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Eyes Remove contact lenses, if worn. In case of contact immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Get immediate medical attention.

Skin Remove contaminated clothing. Flush affected area thoroughly with water for at least 15 minutes. Wash with soap and water. Get medical attention if irritation persists. Launder clothing before reuse.

Ingestion Do not induce vomiting. Give 2 glasses of water. If vomiting occurs spontaneously, keep head below hips to avoid aspiration of material into lungs. Never give anything by mouth if person is unconscious or convulsing. Get immediate medical attention.

4.2 Most important symptoms/effects, acute and delayed

No information available.

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. Fire-fighting measures

5.1. Extinguishing media

Conditions of Flammability Not flammable or combustible

Suitable Extinguishing Media Product does not burn. As appropriate for surrounding materials, use alcohol-resistant foam, dry chemical or carbon dioxide. Water spray may be used to cool exposed containers.

Extinguishing media which must Not be used for safety reasons: None known.

5.2 Specific hazards arising from the substance or mixture

Special Exposure Hazards None known.

5.3 Special protective equipment and precautions for fire-fighters

Special Protective Equipment for Fire-Fighters

Full protective clothing and approved self-contained breathing apparatus required for firefighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid contact with skin, eyes, and clothing. Risk of slipping if material released.

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Wear appropriate personal protective equipment including a NIOSH/MSHA approved respirator. Contain spill. Prevent discharge into streams or sewers. Absorb with a liquid binding material such as diatomaceous earch. Scoop up material and transfer to suitable disposal containers for reuse or disposal. Flush area thoroughly with

water to remove residue. High risk of slipping.

7. Handling and storage

7.1. Precautions for Safe Handling

Handling Precautions	Avoid contact with eyes and skin. Wash thoroughly after handling and before eating or smoking.
Conditions for Save Storage	Keep container tightly closed in a cool, dry, and well ventilated place. Do not allow product to freeze. Material is difficult to pour at low temperature.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Information	Store in original packaging in a dry, cool, and well ventilated place. Keep away from direct sunlight, extreme high or low temperatures and incompatible materials. Close container when not in use. Do not reuse empty container. Use good housekeeping in storage and work areas.
Incompatible Materials	None known.

8. Exposure Controls/Personal Protection

Special Exposure Hazards None anticipated

8.1 Occupational Exposure Limits

Substances	**CAS Number**	**Ontario TWAEV**	**ACGIH TLV-TWA**
None			

8.2 Appropriate engineering controls

Engineering Controls Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.

8.3 Individual protection measures, such as personal protective equipment

Personal Protective Equipment	Provide adequate ventilation. If engineering controls and work practices cannot prevent excessive exposures, appropriate personal protective equipment must be worn.
Respiratory Protection	Use a NIOSH/MSHA approved respirator, if necessary.
Hand Protection	Handle with appropriate chemical resistant gloves.
Skin Protection	Wear chemical resistant clothing appropriate for the work environment to prevent contact with skin. Cover exposed skin. Full length trousers and long sleeved shirt are recommended. Clothing should be laundered before reuse.

Eye Protection	Wear appropriate protective eyeglasses or chemical safety goggles to protect against exposure. Where face shield where risk of splashing or spraying of material is possible.
Other Precautions	None known.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State:	Liquid
Color:	White to off-white
Odor:	Unknown.
Odor Threshold:	No data available

Property Remarks/ - Method	**Values**
pH (30% solution)	**Unknown**
Freezing Point/Range	N.A.
Melting Point/Range	N.A.
Boiling Point/Range	N.A.
Flash Point	Not applicable
Flammability (solid, gas)	Not applicable
Upper flammability limit	Not applicable
Lower flammability limit	Not applicable
Evaporation rate	Not applicable
Vapour Pressure	Not available
Vapour Density	Not available
Specific Gravity (water=1)	0.98 – 1.01 @ 20 °C
Water Solubility	Soluble
Solubility in other solvents	Soluble in toluene.
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

VOC Content (%)	Not applicable

10. Stability and Reactivity

10.1. Reactivity

No known hazardous reactions when stored and handled according to instructions.

10.2. Chemical Stability

Stable under normal storage conditions.

10.3. Possibility of Hazardous Reactions

Will Not Occur

10.4. Conditions to Avoid

High temperatures, Freezing temperatures

10.5. Incompatible Materials

Strong oxidizing agents..

10.6. Hazardous Decomposition Products

Carbon dioxide, Carbon monoxide, Silicon dioxide, Formaldehyde.

11. Toxicological Information

11.1 Information on likely routes of exposure

Principle Route of Exposure Eye or skin contact, inhalation, ingestion.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Acute Toxicity

Toxicology data for the components

Substances	CAS	LD50 Oral Mg/kg (Rat)	LD50 Dermal mg/kg (Rabbit)	LC50 Inhalation (Rat)
None				

Inhalation	None known.
Eye Contact	Solution may cause slight eye irritation.
Skin Contact	None known. May cause skin irritation.
Ingestion	None known.

11.3 Toxicity data

Chronic Effects/Carcinogenicity

Inhalation:	None Known.
Eye Contact:	Repeated or prolonged exposure may cause mild irritation.
Carcinogen:	None known
Mutagen:	No data available

Reproductive Effects:	No data available
Developmental Effects:	No data available
Teratogen:	No data available
STOT - single exposure:	No data available
STOT - repeated exposure:	No data available.
Respiratory or Skin sensitization:	No data available
Aspiration Hazard:	No data available
Synergistic effects:	No data available

12. Ecological Information Substances

12.1. Toxicity

Ecotoxicity Effects

Product Ecotoxicity Data	Acute Hazard Category 3. Harmful to aquatic life.
Substance Ecotoxicity Data	No data available

12.2. Persistence and degradability

Silicones and Inorganics – Not readily biodegradable, Emulsifiers – Readily biodegradable.

12.3. Bioaccumulative potential

Not expected

12.4. Mobility in soil

No information available.

12.5 Other adverse effects

None known.

13. Disposal Considerations

13.1. Waste treatment methods

Disposal Method	Follow all applicable Federal, Provincial, and Local regulations.
Contaminated Packaging	Follow all applicable Federal, Provincial, and Local regulations.

14. Transport Information

Canadian TDG	**Not Regulated for Transport**
US DOT	**Not Regulated for Transport**

15. Regulatory Information

Canadian DSL Inventory: All components listed on inventory or are exempt.

US TSCA Inventory:	All components listed on inventory or are exempt.
California Proposition 65:	None

16. Other Information

Preparation Information

Prepared by:	Technical Department
	Tel. (905) 676-1777
Revision Date:	15 June 2018
Reason for Revision:	Change to GHS format, Amend Physical properties.

Key or legend to abbreviations and acronyms

ACGIH	– American Conference of Governmental Industrial Hygienists
BW	– body weight
CAS	– Chemical Abstracts Service
EC50	– Effective Concentration 50%
LC50	– Lethal Concentration 50%
LD50	– Lethal Dose 50%
mg/kg	– milligram/kilogram
mg/L	– milligram/liter
mg/m^3	– milligram/cubic meter
mm	– millimeter
mmHg	– millimeter mercury
H	– hour
d	– day
NIOSH	– National Institute for Occupational Safety and Health
NTP	– National Toxicology Program
OEL	– Occupational Exposure Limit
PEL	– Permissible Exposure Limit
ppm	– parts per million
STEL	– Short Term Exposure Limit
TWA	– Time-Weighted Average
TWAEV	– Time-Weighted Average Exposure Value
UN	– United Nations
w/w	– weight/weight

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Material Safety Data Sheet

Version 3.3
Revision Date 06/04/2011
Print Date 04/24/2012

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Formalin solution, neutral buffered, 10%

Product Number : HT501128
Brand : Sigma
Product Use : For laboratory research purposes.

Supplier : Sigma-Aldrich Canada, Ltd
2149 Winston Park Drive
OAKVILLE ON L6H 6J8
CANADA

Manufacturer : Sigma-Aldrich Corporation
3050 Spruce St.
St. Louis, Missouri 63103
USA

Telephone : +1 9058299500
Fax : +1 9058299292
Emergency Phone # (For both supplier and manufacturer) : 1-800-424-9300
Preparation Information : Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

Target Organs

Eyes, Kidney, Liver, Heart, Central nervous system

WHMIS Classification

B3	Combustible Liquid	Combustible Liquid
D1B		Toxic by ingestion
D2A		Toxic by skin absorption
D2B		Toxic by inhalation.
E		Carcinogen
		Respiratory sensitiser
		Moderate eye irritant
		Skin sensitiser
		Corrosive

GHS Classification

Flammable liquids (Category 4)
Acute toxicity, Oral (Category 4)
Skin irritation (Category 3)
Serious eye damage (Category 1)
Respiratory sensitization (Category 1)
Skin sensitization (Category 1)
Carcinogenicity (Category 2)
Specific target organ toxicity - single exposure (Category 1)

GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)

H227	Combustible liquid
H302	Harmful if swallowed.
H316	Causes mild skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H351	Suspected of causing cancer.
H370	Causes damage to organs.

Precautionary statement(s)

P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P280	Wear protective gloves/ eye protection/ face protection.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P307 + P311	IF exposed: Call a POISON CENTER or doctor/ physician.

HMIS Classification

Health hazard:	3
Chronic Health Hazard:	*
Flammability:	2
Physical hazards:	0

Potential Health Effects

Inhalation	Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Skin	Toxic if absorbed through skin. Causes skin burns.
Eyes	Causes eye burns.
Ingestion	Toxic if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS-No.	EC-No.	Index-No.	Concentration
Water			
7732-18-5	231-791-2	-	>= 93.45 - <= 94.58 %
Formaldehyde			
50-00-0	200-001-8	605-001-00-5	>= 3.7 - <= 4 %
Methanol			
67-56-1	200-659-6	603-001-00-X	>= 1 - <= 1.5 %
Disodium hydrogenorthophosphate			
7558-79-4	231-448-7	-	0.65 %
Sodium dihydrogenorthophosphate monohydrate			
10049-21-5	231-449-2	-	0.4 %

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.Continue rinsing eyes during transport to hospital.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Conditions of flammability
Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

Explosion data - sensitivity to mechanical impact
no data available

Explosion data - sensitivity to static discharge
no data available

Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Basis
Formaldehyde	50-00-0	TWA	0.3 ppm	Canada. British Columbia OEL
Remarks	IARC "1" applies to substances categorized as carcinogenic to humans, and used when there is sufficient evidence of carcinogenicity in humans. ACGIH "A2" applies to those substances that are considered suspected human carcinogens. Sensitizer: sensitization critical effect			
		C	1 ppm	Canada. British Columbia OEL

	IARC "1" applies to substances categorized as carcinogenic to humans, and used when there is sufficient evidence of carcinogenicity in humans. ACGIH "A2" applies to those substances that are considered suspected human carcinogens. Sensitizer: sensitization critical effect			
		TWAEV	1 ppm 1.5 mg/m3	Canada. Ontario OELs
		STEV	1 ppm	Canada. Ontario OELs
		(c)	1 ppm 1.3 mg/m3	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
	Suspected Human Carcinogen (means that the human data are accepted as adequate in quality but are conflicting or insufficient to classify the agent as A1)			
		TWA	0.75 ppm 0.9 mg/m3	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
	Suspected Human Carcinogen (means that the human data are accepted as adequate in quality but are conflicting or insufficient to classify the agent as A1)			
		C	2 ppm 3 mg/m3	Canada. Quebec OELs
	A substance which may not be recirculated in accordance with section 108 A substance to which exposure must be reduced to a minimum in accordance with section 42 Carcinogenic effect suspected in humans			
		CEV	1.5 ppm	Canada. Ontario OELs
		STEL	1 ppm	Canada. Ontario Regulation 491/09 made under the Occupational Health and Safety Act.
		C	1.5 ppm	Canada. Ontario Regulation 491/09 made under the Occupational Health and Safety Act.
Methanol	67-56-1	STEV	250 ppm 328 mg/m3	Canada. Quebec OELs
Remarks	Skin (percutaneous)			
		TWA	200 ppm	Canada. British Columbia OEL
	Contributes significantly to the overall exposure by the skin route.			
		STEL	250 ppm	Canada. British Columbia OEL
	Contributes significantly to the overall exposure by the skin route.			
		TWAEV	200 ppm 260 mg/m3	Canada. Ontario OELs
	Skin			
		STEV	250 ppm 325 mg/m3	Canada. Ontario OELs
	Skin			
		TWA	200 ppm 262 mg/m3	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
	Substance may be readily absorbed through intact skin			
		STEL	250 ppm 328 mg/m3	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
	Substance may be readily absorbed through intact skin			

		TWAEV	200 ppm 262 mg/m3	Canada. Quebec OELs
	Skin (percutaneous)			
		TWA	200 ppm 262 mg/m3	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
	Substance may be readily absorbed through intact skin			
		STEL	250 ppm 328 mg/m3	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
	Substance may be readily absorbed through intact skin			

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection
Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Specific engineering controls
Use mechanical exhaust or laboratory fumehood to avoid exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	liquid
Colour	no data available

Safety data

pH	no data available
Melting point/freezing point	no data available
Boiling point	100 °C (212 °F) at 1,013 hPa (760 mmHg)
Flash point	85 °C (185 °F)
Ignition temperature	no data available
Autoignition temperature	no data available
Lower explosion limit	7 %(V)
Upper explosion limit	70 %(V)

Vapour pressure	53 hPa (40 mmHg) at 39 °C (102 °F)
Density	1.080 g/cm3
Water solubility	completely miscible
Partition coefficient: n-octanol/water	no data available
Relative vapour density	no data available
Odour	no data available
Odour Threshold	no data available
Evaporation rate	no data available

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
no data available

Conditions to avoid
Heat, flames and sparks.

Materials to avoid
Strong bases, Acids, Oxidizing agents, Alkali metals, Strong oxidizing agents, Amines, Strong acids, Acid chlorides, Acid anhydrides, Reducing agents, Peroxides, Isocyanates, Phenol, Aniline

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50
no data available

Inhalation LC50
no data available

Dermal LD50
no data available

Other information on acute toxicity
no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
Eyes: no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

IARC: 1 - Group 1: Carcinogenic to humans (Formaldehyde)

Reproductive toxicity

no data available

Teratogenicity

no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation	Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Ingestion	Toxic if swallowed.
Skin	Toxic if absorbed through skin. Causes skin burns.
Eyes	Causes eye burns.

Signs and Symptoms of Exposure
Methyl alcohol may be fatal or cause blindness if swallowed., Cannot be made non-poisonous., Effects due to ingestion may include:, Nausea, Dizziness, Gastrointestinal disturbance, Weakness, Confusion., Drowsiness, Unconsciousness, May cause convulsions.

Synergistic effects
no data available

Additional Information
RTECS: Not available

12. ECOLOGICAL INFORMATION

Toxicity

no data available

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects

no data available

13. DISPOSAL CONSIDERATIONS

Product
This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
NA-Number: 1993 Class: CBL Packing group: III

Proper shipping name: Combustible liquid, n.o.s. (Formaldehyde, Methanol)
Reportable Quantity (RQ): 2500 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
Not dangerous goods

IATA
Not dangerous goods

15. REGULATORY INFORMATION

WHMIS Classification

B3	Combustible Liquid	Combustible Liquid
D1B		Toxic by ingestion
D2A		Toxic by skin absorption
D2B		Toxic by inhalation.
E		Carcinogen
		Respiratory sensitiser
		Moderate eye irritant
		Skin sensitiser
		Corrosive

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

16. OTHER INFORMATION

Further information
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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

The Procter & Gamble Company
P&G Household Care
Fabric & Home Care Innovation Center
5299 Spring Grove Avenue
Cincinnati, OH 45217-1087

MATERIAL SAFETY DATA SHEET

MSDS #: RQ1007298 Issue Date: 1/4/2011
Supersedes: RQ1008096 Issue Date: 10/7/2010

SECTION I - PRODUCT IDENTIFICATION

Identity: **Liquid Hand Dishwashing Detergents** **Finished Product**

Brands: **GAIN**

(Ultra Gain Original Fresh [99434039], Ultra Gain Apple Mango Tango [99435746], Ultra Gain Spring Lavender [99434238], Ultra Gain Citrus Splash [99434239], Ultra Gain Bleach Alternative [99721610], Ultra Gain Lemon Zest Dishwashing Liquid/Antibacterial Hand Soap [99633093])

P&G Telephone Number: 1-800-253-2753
or call Local Poison Control Center or your physician.

SECTION II - HAZARDS IDENTIFICATION

Potential Health Hazards (Acute and Chronic): (See Section 11 for more information)

Ingestion: Ingestion may cause transient gastrointestinal irritation.

Eye Contact: May cause mild, transient irritation.

Skin: Transient irritation with prolonged exposure to concentrated material.

Inhalation: N/A

Signs and Symptoms of Exposure:

Ingestion: May result in nausea, vomiting, and/or diarrhea.

Eye Contact: May cause stinging, tearing, itching, swelling, and/or redness.

Skin: Prolonged contact with concentrated material may be drying or transiently irritating to skin.

Inhalation: N/A

Potential Environmental Effects: (See Section 12 for more information)

SECTION III - COMPOSITION AND INGREDIENTS

Ingredients listed on the product label are: biodegradable surfactants and **no phosphate**. For Gain Bleach Alternative, ingredients listed on the product label are: biodegradable surfactants, enzymes, and **no phosphate.** For Gain Lemon Zest Antibacterial Hand Soap, active ingredient is triclosan at 0.1%. Inactive ingredients for Gain Antibacterial Hand Soap are listed in the Drug Facts box on back label.

Hazardous Ingredients as defined by OSHA, 29 CFR 1910.1200. and/or WHMIS under the HPA:

Chemical Name	Common Name	CAS No.	Composition Range	LD50/LC50
Ethyl alcohol	Ethanol	64-17-5	0.1-1%	LD50(oral, rat) – 7.06 g/kg

These substances are listed because in their pure bulk form they meet the OSHA and/or WHMIS definition of hazardous. Any hazards associated with this finished product are listed in Section II of this MSDS.

SECTION IV – FIRST AID INFORMATION

First Aid Procedures:

Ingestion: Drink 1 or 2 glasses of water.

Eye Contact: Flush thoroughly with water for 15 minutes.

Skin: If prolonged contact occurs, rinse thoroughly with water. If spilled on clothing, change clothes. If symptoms persist or recur, seek medical attention.

Inhalation: N/A

Other: Consumer product package has the following precautionary statement on the back label: "For external use only. Keep out of the reach of children. If Dawn gets in eyes, rinse thoroughly with water. If swallowed, drink a glass of water to dilute."

SECTION V - FIRE FIGHTING INFORMATION

Flammable Properties: The liquid hand dishwashing detergents have a flashpoint of 115-135°F (46.1-57.2°C) Pensky-Martens (Closed cup). However, the detergents do **not** sustain combustion according to ASTM D4206.

Flammable Properties:

Upper Flammable Limit: N/A

Lower Flammable Limit: N/A

Explosive Limits: UEL: N/A LEL: N/A

Auto-ignition Temperature: N/A

Hazardous Combustion Products: N/A

Explosion Data (Sensitivity to Mechanical Impact): N/A

Explosion Data (Sensitivity to Static Discharge): N/A

Extinguishing Media:

Suitable: CO_2, water or dry chemical may be used.

Unsuitable: N/K

Protection of Firefighters:

Specific Hazards Arising from the Material: None.

SECTION VI - ACCIDENTAL RELEASE MEASURES

Personal Precautions: None

Environmental Precautions: DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS. Solutions of the detergents may be allowed to be flushed down sewer - First check with your local water treatment plant. Recycling is recommended for undiluted scrap product. Do not landfill.

Steps To Be Taken in Case Material is Released or Spilled: Prevent spills from reaching a waterway. Sorbents may be used. Read "Waste Disposal Method" below for further information.

SECTION VII – HANDLING AND STORAGE

Precautions To Be Taken in Handling: No special precautions necessary.

Precautions To B e Taken in Storage: No special precautions necessary.

SECTION VIII - EXPOSURE CONTROLS / PERSONAL PROTECTION

Recommended Exposure Guidelines: N/A

Engineering Controls: N/A

Personal Protective Equipment (PPE): N/A

Eye/Face Protection: None required with normal household use.

Industrial Setting: For splash protection, use chemical goggles. Eye wash fountain is recommended.

Skin Protection: None required with normal household use.

Industrial Setting: Protective gloves (rubber, neoprene) should be used for prolonged direct contact.

Respiratory Protection: No special precautions for casual exposure.

Ventilation *Local Exhaust*: None required with normal consumer use. *Special*: None

Industrial (General): Normal/general dilution ventilation is acceptable. *Other*: None

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

Appearance (color, physical form, shape): Clear, opaque or colored liquids.

Flash Point (Method Used): 115-135°F (46.1-57.2°C) Pensky-Martens (Closed cup) but do **not** sustain combustion according to ASTM D4206.

Odor: Perfumed

Reserve Alkalinity: N/A

Odor Threshold: N/A

Solubility in Water: Complete

Physical State: Liquid hand dishwashing solution

Decomposition Temperature: N/K

Vapor Pressure (mm Hg): N/K

Evaporation Rate (nBuOAc=1): N/K

Vapor Density (Air=1): N/K

Specific Gravity/Density: ca. 1

Boiling Point: N/K

Melting/Freezing Point: ~ 30 °F (-1.1°C)

Partition Coefficient (n-octanol/water): N/K

pH (10% solution): 9

Volatile Organic Compound (VOC): Not applicable - Product not regulated for VOC Content at State or Federal level

SECTION X - STABILITY AND REACTIVITY

Chemical Stability: Stable

Conditions to Avoid: None known

Incompatible Materials: None

Hazardous Decomposition Products: None known

Possibility of Hazardous Reactions: None known

SECTION XI - TOXICOLOGICAL INFORMATION

Liquid hand dishwashing detergents have a relatively low order of toxicity, may cause transient irritation and are expected to be emetic.

Chronic Effects: No chronic health effects reported.

Target Organs: No target organs reported.

Carcinogenicity: This finished product is not carcinogenic. **NTP:** No **IARC:** No **OSHA:** No

SECTION XII - ECOLOGICAL INFORMATION

All surfactants are readily biodegradable.

SECTION XIII - DISPOSAL CONSIDERATIONS

Waste Disposal Method: **DISPOSAL SHOULD BE IN ACCORDANCE WITH FEDERAL, STATE/PROVINCIAL AND LOCAL REGULATIONS**

Non Household Setting: Products covered by this MSDS, in their original form, when disposed as waste, are considered **non hazardous waste** according to Federal RCRA regulations (40 CFR 261). Disposal should be in accordance with local, state and federal regulations. Solutions of diluted detergent in the course of use, may be allowed to be flushed down sewer. First check with your local water treatment plant. Recycling is recommended for undiluted scrap product. Do not landfill.

California Hazardous Waste: Not hazardous, in accordance with 22 CCR 66261.20 through 22 CCR 66261.24

Household Use: Household product is safe for disposal down the drain during detergent use or in the trash. Dispose of empty bottle in the trash or recyle where facilities exist.

SECTION XIV - TRANSPORT INFORMATION

Products covered by this MSDS, in their original form, are not regulated for transportation.

Ground Transport (US DOT): Not regulated

Air Transport (IATA): Not regulated

Marine/Water Transport (IMDG): Not regulated

SECTION XV - REGULATORY INFORMATION

United States

All intentionally-added components of this product are listed on the US TSCA Inventory.

This product is not subject to warning labeling under California Proposition 65.

EPA Reg. No.: Not Applicable

This product contains the following SARA 313/302/304/311/312 chemicals:

None

This product contains the following CERCLA chemicals:

Chemical Name	CAS Number	Max Range in Product (%)
Ethanol	64-17-5	1.0%

State Right-to-Know:

The following ingredients present in the finished product are listed on state right-to-know lists or state worker exposure lists:

Ingredient	CAS #	Max Level	State				
			IL	MA	NJ	PA	RI
Ethanol	64-17-5	1.0 %	X	X	X	X	X

Perfumes contained within the products covered by this MSDS comply with appropriate IFRA guidance

Canada

All ingredients are CEPA approved for import to Canada by Procter & Gamble. This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and this MSDS contains all information required by the Controlled Products Regulations.

SECTION XVI - OTHER INFORMATION

Perfumes contained within the products covered by this MSDS comply with appropriate IFRA guidance.

P&G Hazard Rating:	Health:	1	4=EXTREME
	Flammability:	1	3=HIGH
	Reactivity:	0	2=MODERATE
			1=SLIGHT
			0=NOT SIGNIFICANT

*N/A. - Not Applicable *N/K. - Not Known

Data supplied is for use only in connection with occupational safety and health.

DISCLAIMER: This MSDS is intended to provide a brief summary of our knowledge and guidance regarding the use of this material. The information contained here has been compiled from sources considered by Procter & Gamble to be dependable and is accurate to the best of the Company's knowledge. It is not meant to be an all-inclusive document on worldwide hazard communication regulations.

This information is offered in good faith. Each user of this material needs to evaluate the conditions of use and design the appropriate protective mechanisms to prevent employee exposures, property damage or release to the environment. Procter & Gamble assumed no responsibility for injury to the recipient or third persons, or for any damage to any property resulting from misuse of the product.

Date: 23 February 2010
Supercedes: 15 October 2007

MATERIAL SAFETY DATA SHEET

IN CASE OF EMERGENCY CALL CHEMTREC AT 1-800-424-9300

1. PRODUCT IDENTIFICATION AND COMPANY IDENTIFICATION:

Product Name: **GOJO® ORANGE SMOOTH HAND CLEANER**

Company Name & Address: GOJO Industries, Inc.
One GOJO Plaza, Suite 500
Akron, OH 44311

Emergency Phone: **1-800-424-9300 CHEMTREC**
Non-Emergency Phone: (330) 255-6000
MSDS Request Phone: (330) 255-6000 x8804

2. INFORMATION ON INGREDIENTS:

HAZARDOUS INGREDIENTS	CAS NUMBER	OSHA PEL	ACGIH TLV	% RANGE
None				

Other ingredient(s) with notification requirements:	CAS NUMBER	List
Petroleum Distillates	8002-05-9	MA 1; NJ 1; PA 1
Mineral Oil (Paraffinum Liquidum)	8042-47-5	NJ; PA
Propylene Glycol	57-55-6	CN 1; PA 1
D-Limonene	5989-27-5	CN 1

3. HAZARDS IDENTIFICATION:

EMERGENCY OVERVIEW

When used according to instructions, the product applicable to this MSDS is safe and presents no immediate or long-term health hazard. However, abnormal entry routes, such as gross ingestion, may require immediate medical attention.

Potential Health Effects:

HMIS: Health 1 Flammability 1 Reactivity 0 Personal Protection None

Eye Contact: May cause eye irritation.
Skin Contact: No irritation or reaction expected.
Inhalation: Not applicable.
Ingestion: May cause upset stomach, nausea (Abnormal entry route).
Carcinogenicity: Not listed as a carcinogen by NTP, IARC, OSHA or ACGIH.

4. FIRST AID MEASURES:

Eye Contact: Do not rub eyes. Flush eyes thoroughly with water for 15 minutes. If condition worsens or irritation persists, contact physician.
Skin Contact: Not applicable.
Inhalation: Not applicable.
Ingestion: Do not induce vomiting. Contact a physician or Poison Control Center.

5. FIRE FIGHTING MEASURES:

NFPA: Health 1 Fire 1 Reactivity 0

Flashpoint °F/°C (PMCC method): >212°F/100°C
Unusual Fire and Explosion Hazards: None known.
Special Fire Fighting Procedures: None known.

Extinguishing Media: X Water Fog X Alcohol Foam X CO_2 X Dry Chemical ____ Other

6. ACCIDENTAL RELEASE MEASURES:

No special requirements. Water clean up and rinse. CAUTION – WILL CAUSE SLIPPERY SURFACES.

7. HANDLING AND STORAGE:

Store at normal room temperature away from reach of small children. Keep containers sealed. Use older containers first. Avoid freezing conditions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

Eye Protection:	None required under normal conditions.
Skin Protection:	None required under normal conditions.
Respiratory Protection:	None required under normal conditions.
Ventilation:	None required under normal conditions.
Protective Equipment or Clothing:	None required under normal conditions.

9. PHYSICAL AND CHEMICAL PROPERTIES:

Appearance and Odor	Orange opaque gel, orange odor.
pH (undiluted):	9 typical
VOC , %:	7

10. STABILITY AND REACTIVITY:

Stable/Non reactive product.

11. TOXICOLOGICAL INFORMATION:

No acute or chronic toxic effects expected when used according to directions.

12. ECOLOGICAL CONSIDERATIONS:

No ecological or special considerations when used according to directions. Not considered environmentally harmful from normal dilution, expected usage and typical drainage to sewers, septic systems and treatment plants.

13. DISPOSAL CONSIDERATIONS:

No special considerations when disposed according to local, state and Federal regulations.

14. TRANSPORT INFORMATION:

Not classified as a hazardous material.

15. REGULATORY AND OTHER INFORMATION:

TSCA: All ingredients are listed or exempt per reference 15 USC 2602 (2)(B)(iv).

Complies with current FDA regulations for cosmetic and/or over-the-counter drug products.

WHMIS: Not Controlled

Notice: The information herein is based on data considered to be accurate as of the date of preparation of this material safety data sheet. However, no warranty or representation, expressed or implied, is made as to the accuracy or completeness of the foregoing data and safety information. The user assumes all liability for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices or from any hazards inherent in the nature of the product.

Date: 2 September 2010
Supercedes: 15 October 2007

MATERIAL SAFETY DATA SHEET

IN CASE OF EMERGENCY CALL CHEMTREC AT 1-800-424-9300

1. PRODUCT IDENTIFICATION AND COMPANY IDENTIFICATION:

Product Name: **GOJO® ORIGINAL FORMULA™ HAND CLEANER**

Company Name & Address: GOJO Industries, Inc.
One GOJO Plaza, Suite 500
Akron, OH 44311

Emergency Phone: **1-800-424-9300 CHEMTREC**
Non-Emergency Phone: (330) 255-6000
MSDS Request Phone: (330) 255-6000 x8804

2. INFORMATION ON INGREDIENTS:

HAZARDOUS INGREDIENTS	CAS NUMBER	OSHA PEL	ACGIH TLV	% RANGE
Petroleum Distillates (vapor)	64742-47-8	---	200 mg/m3	< 40%
Mineral Oil (mist)	8042-47-5	5 mg/m3	5 mg/m3	< 15%
Mineral Spirits	8032-32-4	500 ppm	100 ppm	< 5%

Other ingredient(s) with notification requirements:	CAS NUMBER	List
Petroleum Distillates	64742-47-8	MA 1; NJ 1; PA 1
Mineral Oil (mist)	8042-47-5	MA; NJ; PA; CN
Mineral Spirits	8032-32-4	MA 1; NJ 1; PA 1; CN 1
Propylene Glycol	57-55-6	PA 1: CN

3. HAZARDS IDENTIFICATION:

EMERGENCY OVERVIEW

When used according to instructions, the product applicable to this MSDS is safe and presents no immediate or long-term health hazard. However, abnormal entry routes, such as gross ingestion, may require immediate medical attention.

Potential Health Effects:

HMIS: Health 1 Flammability 1 Reactivity 0 Personal Protection None

Eye Contact: May cause eye irritation.
Skin Contact: No irritation or reaction expected.
Inhalation: Not applicable.
Ingestion: May cause upset stomach, nausea (Abnormal entry route).
Carcinogenicity: Not listed as a carcinogen by NTP, IARC, OSHA or ACGIH.

4. FIRST AID MEASURES:

Eye Contact: Do not rub eyes. Flush eyes thoroughly with water for 15 minutes. If condition worsens or irritation persists, contact physician.
Skin Contact: Not applicable.
Inhalation: Not applicable.
Ingestion: Do not induce vomiting. Contact a physician or Poison Control Center.

5. FIRE FIGHTING MEASURES:

NFPA: Health 1 Fire 1 Reactivity 0

Flashpoint °F/°C (PMCC method): >212°F/100°C
Unusual Fire and Explosion Hazards: None known.
Special Fire Fighting Procedures: None known.

Extinguishing Media: X Water Fog X Alcohol Foam X CO_2 X Dry Chemical ____ Other

6. ACCIDENTAL RELEASE MEASURES:

No special requirements. Water clean up and rinse. CAUTION – WILL CAUSE SLIPPERY SURFACES.

7. HANDLING AND STORAGE:

Store at normal room temperature away from reach of small children. Keep containers sealed. Use older containers first. Avoid freezing conditions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

Eye Protection:	None required under normal conditions.
Skin Protection:	None required under normal conditions.
Respiratory Protection:	None required under normal conditions.
Ventilation:	None required under normal conditions.
Protective Equipment or Clothing:	None required under normal conditions.

9. PHYSICAL AND CHEMICAL PROPERTIES:

Appearance and Odor	White opaque gel, characteristic solvent odor
pH (undiluted):	9 typical
VOC , %:	7

10. STABILITY AND REACTIVITY:

Stable/Non reactive product.

11. TOXICOLOGICAL INFORMATION:

No acute or chronic toxic effects expected when used according to directions.

12. ECOLOGICAL CONSIDERATIONS:

No ecological or special considerations when used according to directions. Not considered environmentally harmful from normal dilution, expected usage and typical drainage to sewers, septic systems and treatment plants.

13. DISPOSAL CONSIDERATIONS:

No special considerations when disposed according to local, state and Federal regulations.

14. TRANSPORT INFORMATION:

Not classified as a hazardous material.

15. REGULATORY AND OTHER INFORMATION:

TSCA: All ingredients are listed or exempt per reference 15 USC 2602 (2)(B)(iv).

Complies with current FDA regulations for cosmetic and/or over-the-counter drug products.

WHMIS: Not controlled

Notice: The information herein is based on data considered to be accurate as of the date of preparation of this material safety data sheet. However, no warranty or representation, expressed or implied, is made as to the accuracy or completeness of the foregoing data and safety information. The user assumes all liability for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices or from any hazards inherent in the nature of the product.

M A T E R I A L S A F E T Y D A T A S H E E T

SECTION I - PRODUCT & COMPANY IDENTIFICATION

Product Name:	GOO GONE- 8 oz.
Product Code(S):	GG06, GG12
Date:	12-12-12
Distributed By:	THE HOMAX GROUP INC. 1835 Barkley Blvd, Suite 101. Bellingham, WA, 98226
Business Phone:	1-800-729-9029
Transportation Emergencies:	CALL CHEMTREC AT 1-800-424-9300

SECTION 2- HAZARD IDENTIFICATION

POTENTIAL HEALTH EFFECTS:
ROUTES OF EXPOSURE: EYE CONTACT, SKIN CONTACT, INHALATION, INGESTION.

EYE CONTACT: CAUSES EYE IRRITATION. PROLONGED OR REPEATED CONTACT MAY CAUSE SEVERE EYE IRRITATION

SKIN CONTACT: CAUSES SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY CAUSE DERMATITIS AND DEFATTING OF SKIN. SKIN ABSORPTION MAY CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION, LIVER DAMAGE, AND KIDNEY DAMAGE.

INGESTION: INGESTION MAY CAUSE VOMITING, CENTRAL NERVOUS SYSTEM DEPRESSION, AND LUNG INFLAMMATION AND DAMAGE DUE TO ASPIRATION OF MATERIAL INTO LUNGS. HARMFUL OR FATAL IF ASPIRATED INTO LUNGS.

INHALATION: MAY CAUSE RESPIRATORY TRACT IRRITATION, HEADACHE, NAUSEA, DROWSINESS, CENTRAL NERVOUS SYSTEM DEPRESSION, CONVULSIONS AND LOSS OF CONSCIOUSNESS.

CHRONIC EFFECT: SEE SECTION 11 OF THIS MSDS

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SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL	CAS NUMBER	WEIGHT %
Hydrotreated light distillates	64742-47-8	90% to 95%
d-Limonene	5989-27-5	1% to 5%
Tripropyleneglycol methyl ether	25498-49-1	1% to 5%

*The ingredients in the balance of this product do not contribute significant hazards beyond those described in this document. All pertinent health, safety and environmental information has been presented, per the requirements of the US Federal OSHA Hazard Communication Standard (29CFR 1910.1200).

SECTION 4 - FIRST AID MEASURES:

EYE CONTACT: IMMEDIATELY FLUSH WITH LARGE QUANTITIES OF WATER FOR 15 MINUTES. HOLD EYES OPEN. SEEK MEDICAL ATTENTION IF IRRITATION PERSISTS.
SKIN CONTACT: IMMEDIATELY FLUSH WITH WATER FOR 15 MINUTES. GET MEDICAL ATTENTION IF IRRITATION PERSISTS. REMOVE CONTAMINATED CLOTHING AND LAUNDER BEFORE RESUSE.

INGESTION: IF SWALLOWED, **DO NOT INDUCE VOMITING**. OBTAIN MEDICAL TREATMENT IMMEDIATELY. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.
INHALATION: MOVE PERSON TO FRESH AIR. IF BREATHING DIFFICULTY PERSISTS, GET MEDICAL ATTENTION. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION.

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT: 186 F
LOWER EXPLOSION LIMIT: DATA NOT AVAILABLE
UPPER EXPLOSION LIMIT: DATA NOT AVAILABLE
EXTINGUISHING MEDIA: DRY CHEMICAL, FOAM OR CARBON DIOXIDE. DO NOT USE WATER.
UNUSUAL FIRE AND EXPLOSION HAZARDS: VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL LONG DISTANCES TO A SOURCE OF IGNITION AND FLASH BACK. VAPORS CAN FORM EXPLOSIVE MIXTURES IN AIR AT ELEVATED TEMPERATURES. CLOSED CONTAINERS MAY BURST IF EXPOSED TO EXTREME HEAT OR FIRE.
FIRE FIGHTING INSTRUCTIONS: FIREFIGHTERS SHOULD USE FULL PROTECTIVE CLOTHING, EYE PROTECTION, AND SELF-CONTAINED BREATHING APPARATUS. WATER MAY BE USED TO COOL AND PROTECT EXPOSED CONTAINERS.
HAZARDOUS COMBUSTION PRODUCTS: TOXIC GASES, CARBON MONOXIDE, AND CARBON DIOXIDE.

SECTION 6- ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: EVACUATE UNNECESSARY PERSONS AND KEEP FROM ENTERING SPILL AREA.
SAFEGUARDS: PREVENT SPILL FROM ENTERING DRAINS AND CONTAMINATING SOIL, SURFACE WATER OR GROUND WATER. VENTILATE AREA OF LEAK OR SPILL.
SPILL CLEAN UP: SPILLS MAY BE COLLECTED WITH ABSORBENT MATERIALS.PLACE COLLECTED MATERIAL IN PROPER CONTAINER.

SECTION 7- HANDLING AND STORAGE

HANDLING PRECAUTIONS: AVOID CONTACT WITH EYES AND SKIN. KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAME. DO NOT USE IN OR ON ELECTRICAL EQUIPMENT DUE TO POSSIBILITY OF SHOCK HAZARD. WASH HANDS IMMEDIATELY AFTER HANDLING. KEEP OUT OF REACH OF CHILDREN
STORAGE: STORE IN ORIGINAL CONTAINER IN A COOL DRY PLACE. STORE IN WELL VENTILATED AREA. KEEP CONTAINER TIGHTLY CLOSED.

SECTION 8- EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS

REPORTABLE COMPONENTS	OSHA	ACGIH	NIOSH
Hydrotreated light distillates	PEL (5mg/m^3) STEL (10mg/m^3)	N/A	N/A
d-Limonene	None Established	None Established	None Established
Tripropyleneglycol methyl ether	None Established	None Established	None Established

PERSONAL PROTECTION

EYE PROTECTION: NO SPECIAL REQUIREMENT FOR NORMAL USE.
SKIN PROTECTION: FOR PROLONGED OR REPEATED CONTACT, USE PROTECTIVE GLOVES.

RESPIRATORY PROTECTION: USE WITH ADEQUATE VENTILATION.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: LIQUID
COLOR: YELLOW
ODOR: CITRUS
SPECIFIC GRAVITY: 0.8
PH: N/A
VISCOSITY: N/A
SOLUBILITY IN WATER: NEGILIGIBLE
BOILING POINT: DATA NOT AVAILABLE.
VAPOR PRESSURE (mm Hg): DATA NOT AVAILABLE **.**
VAPOR DENSITY: DATA NOT AVAILABLE.
EVAPORATION RATE: DATA NOT AVAILABLE **.**
PARTITION COEFFICIENT (n-octanol/water): DATA NOT AVAILABLE.
ARCHITECTUAL COATING VOC: COMPLIES WITH ALL US STATE AND FEDERAL VOC CONTROL LIMITS.
AEROSOL COATING VOC: COMPLIES WITH ALL US STATE AND FEDERAL VOC CONTENT LIMITS.
CONSUMER PRODUCT VOC: COMPLIES WITH ALL U.S. STATE AND FEDERAL VOC CONTENT LIMITS.

SECTION 10- STABILITY AND REACTIVITY

CONDITIONS TO AVOID: HEAT, SPARKS AND OPEN FLAMES. CONTACT WITH OXIDIZABLE MATERIALS.
INCOMPATABILE MATERIALS: OXIDIZERS, ACIDS, HALOGENS, AND PEROXIDES.
POSSIBILITY OF HAZARDOUS REACTIONS: NONE KNOWN.

SECTION11- TOXICOLOGICAL INFORMATION

COMPONENT DATA

	LD50	LC50	CARCINOGENICITY STATUS		
CHEMICAL	**ORL RAT**	**INH RAT**	**IARC**	**NTP**	**OSHA**
Hydrotreated light distillates	> 5 g/kg	N/A	No	No	No
d-Limonene	N/A	N/A	No	No	No
Tripropyleneglycol methyl ether	3400 mg/kg	N/A	No	No	No

CHRONIC TOXICOLOGICAL DATA

SENSITIZATION: NO KNOWN EFFECTS.
CARCINOGENICITY: NO KNOWN EFFECTS.
MUTAGENICITY: NO KNOWN EFFECTS.
REPRODUCTIVE EFFECTS: NO KNOWN EFFECTS.
TERATOGENICITY: NO KNOWN EFFECTS.

SECTION 12 -ECOLOGICAL INFORMATION

NO SPECIFIC ENVIRONMENTAL TOXICITY DATA IS AVAILABLE.

SECTIN 13 - DISPOSAL CONSIDERATIONS

DISPOSE IN ACCORDANCE WITH FEDERAL, STATE, PROVINCIAL AND LOCAL REGULATIONS.

SECTION 14 -TRANSPORT INFORMATION

NOT REGULATED FOR TRANSPORT

SECTION 15-REGULATORY INFORMATION

UNITED STATES
ALL INGREDIENTS ARE LISTED OR OTHERWISE EXEMPT FROM THE TSCA INVENTORY.

CHEMICAL	SARA 302	SARA 313	CA PROP 65	CERCLA RQ
Hydrotreated light distillates	No	No	No	No
d-Limonene	No	No	No	No
Tripropyleneglycol methyl ether	No	No	No	No

SECTION 16- OTHER INFORMATION

DISCLAIMER: THE INFORMATION IN THIS MSDS IS BELIEVED TO BE OBTAINED FROM RELIABLE SOURCES. HOWEVER, THE DATA IS PROVIDED WITHOUT ANY WARRANTY, EXPRESSED OR IMPLIED, REGARDING ITS CORRECTNESS OR ACCURACY. SINCE THE USE, HANDLING, STORAGE AND DISPOSAL OF THIS PRODUCT ARE BEYOND THE SELLER'S CONTROL, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE SAFE CONDITIONS FOR THE USE OF THIS PRODUCT AND TO ASSUME LIABILITY OF LOSS, DAMAGE, OR EXPENSE ARISING OUT OF THE PRODUCT'S MISUSE. USER IS RESPONSIBLE TO COMPLY WITH ALL FEDERAL, STATE, PROVINCIAL AND LOCAL LAWS AND REGULATIONS.

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/23/2008 Reviewed on 07/23/2008

1 Identification of substance

Trade name: GREEN ZINC PHOSPHATE

Product code: A-702

Manufacturer/Supplier: Valspar
1000 Lake Road
Medina, OH 44256
phone: 330-725-4511
www.plasti-kote.com

Information department: Health & Safety Department
Emergency information: Phone: 888-345-5732

2 Composition/Data on components

Chemical Description: This product is a mixture of the substances listed below with nonhazardous additions.

Dangerous components:		
67-64-1	Acetone	33.02%
74-98-6	propane	15.73%
106-97-8	n-butane	9.24%
108-88-3	Toluene	8.37%
110-19-0	isobutyl acetate	4.36%
64-17-5	ethyl alcohol	4.3%
1330-20-7	xylene (mix)	3.55%
64742-89-8	VM&P Naptha	1.73%
64742-47-8	Mineral Spirits	1.42%
1314-13-2	zinc oxide	0.21%

Additional information: For the wording of the listed risk phrases refer to section 3.

3 Hazards identification

Hazard description: Harmful
Extremely flammable

Physical dangers: Extremely flammable.
Irritating to eyes.
Possible risk of harm to the unborn child
Keep out of the reach of children.

Effects of chronic overexposure: May cause permanent brain and nervous system damage. Repeated overexposure can also damage kidneys, lungs, liver, heart, and blood. Intentional misuse by deliberately inhaling the contents may be harmful or fatal.

NFPA ratings (scale 0 - 4): Health = 1
Fire = 4
Reactivity = 3

HMIS-ratings (scale 0 - 4): Health= 1
Fire= 4
Physical Hazard= 3

4 First aid measures

After inhalation: Supply fresh air; consult doctor in case of complaints.
After skin contact: Remove contaminated clothing. Wash exposed area with soap and water.
After eye contact: Move to fresh air. Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
After swallowing: Contact physician or poison control center.

5 Fire fighting measures

Extinguishing agents: CO2, sand, extinguishing powder, or water spray. Fight larger fires with water spray or alcohol resistant foam.
Protective equipment: No special measures required.

6 Accidental release measures

Personal safety precautions: Wear protective equipment. Keep unprotected persons away.

(Contd. on page 2)

Material Safety Data Sheet
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Trade name: GREEN ZINC PHOSPHATE

(Contd. of page 1)

Environmental safety precautions: Do not allow product to reach sewage systems or ground water.

Measures for cleaning/ collecting: Do not flush with water or aqueous cleansing agents. Use diluted caustic solution. Soak up spills with inert absorbent material. Refer to section 13 for disposal information.
Ensure adequate ventilation.

7 Handling and storage

Fire/explosion protection: Do not spray on a naked flame or any incandescent material. Do not smoke. Protect from electrostatic discharges.

Storage requirements: Use only receptacles specifically permitted for this substance/product.

8 Exposure controls and personal protection:

Components with limit values that require monitoring at the workplace:	
67-64-1 Acetone	
PEL	2400 mg/m³, 1000 ppm
REL	590 mg/m³, 250 ppm
TLV	Short-term value: 1782 mg/m³, 750 ppm Long-term value: 1188 mg/m³, 500 ppm BEI
74-98-6 propane	
PEL	1800 mg/m³, 1000 ppm
REL	1800 mg/m³, 1000 ppm
TLV	Varies mg/m³, 1000 ppm
106-97-8 n-butane	
REL	1900 mg/m³, 800 ppm
TLV	Varies mg/m³, 1000 ppm
108-88-3 Toluene	
PEL	Short-term value: C 300; 500* ppm Long-term value: 200 ppm *10-min peak per 8-hr shift
REL	Short-term value: 560 mg/m³, 150 ppm Long-term value: 375 mg/m³, 100 ppm
TLV	75 mg/m³, 20 ppm
110-19-0 isobutyl acetate	
PEL	700 mg/m³, 150 ppm
REL	700 mg/m³, 150 ppm
TLV	713 mg/m³, 150 ppm
64-17-5 ethyl alcohol	
PEL	1900 mg/m³, 1000 ppm
REL	1900 mg/m³, 1000 ppm
TLV	Short-term value: 1880 mg/m³, NIC-1000 ppm Long-term value: 1880 mg/m³, 1000 ppm NIC-A3
1330-20-7 xylene (mix)	
PEL	435 mg/m³, 100 ppm
REL	Short-term value: 655 mg/m³, 150 ppm Long-term value: 435 mg/m³, 100 ppm
TLV	Short-term value: 651 mg/m³, 150 ppm Long-term value: 434 mg/m³, 100 ppm BEI

Protective hygienic measures: Keep away from foodstuffs and animal feed. Wash hands after use.

Breathing equipment: Use suitable respiratory protective device in case of insufficient ventilation.
A respirator is generally not necessary when using this product outdoors or in large open areas. In cases where short and/or long term overexposure exists, a charcoal filter respirator should be worn. Please consult an authority on chemical hygeine monitoring if you suspect overexposure conditions exist and need a specific recommendation on proper ventilation techniques and personal protection.

Protection of hands: Protective gloves. The glove material has to be impermeable and resistant to the substance. No glove recommendation can be given.

(Contd. on page 3)

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Trade name: GREEN ZINC PHOSPHATE

(Contd. of page 2)

Eye protection: Tightly sealed goggles

9 Physical and chemical properties:

General Information:	
Form:	Aerosol
Color:	According to trade name description in section 1.
Odor:	Aromatic
Boiling point/Boiling range:	-44°C
Flash point:	-19°C
Ignition temperature:	365°C
Auto igniting:	Product is not self-igniting.
Danger of explosion:	Stable at normal temperatures. Can may burst when exposed to temperatures exceeding 120 degrees fahrenheit. In use, may form flammable/explosive vapour-air mixture.
Lower Explosion Limit:	1.7 Vol %
Upper Explosion Limit:	10.9 Vol %
Vapor Pressure:	40 PSI, 2750 hPa
Density at 20°C:	0.77168 g/cm³
Specific Gravity:	Between 0.77 and 0.85 (Water equals 1.00)
VOC content:	574.5 g/l / 4.79 lb/gl
VOC content (less exempt solvents):	50.5 %
MIR value:	50.5 %
MIR Value:	1.15
Solids content:	16.3 %

10 Stability and reactivity:

Conditions to be avoided: Do not allow the can to exceed 120 degrees Fahrenheit. Stable at normal temperatures.
Possibility of Hazardous Reactions: No dangerous reactions known.

11 Toxicological information:

Primary effect on the skin: No irritant effect.
Primary effect on the eye: Irritating effect.
Sensitization: No sensitizing effects known.
Additional toxicological information: Harmful

12 Ecological information

Other information: This product does not contain any chloroflourocarbons (CFC's),chlorinated solvents, lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyl (PBB), or polybrominated diphenyl ether (PDBE). No specific ecological data is available for this product.
Acquatic toxicity: Hazardous for water, do not empty into drains.

13 Disposal considerations

DISPOSAL METHOD: Dispose of in accordance with local, state, and federal regulations. Do not puncture, incinerate, or compact. Partially empty cans must be disposed of responsibly. Do not heat or cut empty containers with electric or gas torches.
Recommendation: Completely empty cans should be recycled.

14 Transport information:

Hazard class:	2.1
Identification number:	N/A
Label	2.1
ADR/RID class:	2 5F Gases
UN-Number:	1950
IMDG Class:	2.1
Packaging group:	II

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Trade name: GREEN ZINC PHOSPHATE

(Contd. of page 3)

EMS Number:	F-D,S-U
Marine pollutant:	No
ICAO/IATA Class:	2.1
Proper shipping name:	Aerosols, Flammable Consumer Commodity ORM-D

15 Regulations

SARA Section 355 (extremely hazardous substances):

None of the ingredients in this product are listed.

SARA Section 313 (Specific toxic chemical listings):

108-88-3	Toluene
1330-20-7	xylene (mix)

TSCA (Toxic Substances Control Act): All ingredients are listed.

PROPOSITION 65 Chemicals known to cause cancer:

100-41-4	ethyl benzene
1333-86-4	Carbon black

PROPOSITION 65 Chemicals known to cause developmental toxicity: 108-88-3 Toluene

Canadian WHMIS: Class A, B5---Flammable Aerosols

EPA: A= Known human carcinogen B= Probable human carcinogen
C= Possible human carcinogen
D= Not classifiable as to human carcinogenicity: Inadequate human and animal evidence of carcinogenicity (or no data is available).

67-64-1	Acetone	I
108-88-3	Toluene	II
110-19-0	isobutyl acetate	D
1330-20-7	xylene (mix)	I

IARC: Group 2B: The ingredient is possibly carcinogenic to humans. There is limited evidence of carcinogenicity.
Group 3: The ingredient is unclassifiable as to its carcinogenicity to humans.

108-88-3	Toluene	3
1330-20-7	xylene (mix)	3

ACGIH TLVs: A1-designates a confirmed human carcinogen.
A2-designates a suspected human carcinogen.
A3-designates an animal carcinogen.
A4-designates "not classifiable as a human carcinogen".

67-64-1	Acetone	A4
108-88-3	Toluene	A4
110-19-0	isobutyl acetate	A4
64-17-5	ethyl alcohol	A4
1330-20-7	xylene (mix)	A4

NIOSH:

1333-86-4	Carbon black

Hazard symbols: Harmful
Extremely flammable

Hazard-determining components of labelling: Toluene

Risk phrases: Extremely flammable.
Irritating to eyes.
Possible risk of harm to the unborn child

Safety phrases: Keep out of the reach of children.
Do not breathe gas/fumes/vapour/spray.
Do not empty into drains, dispose of this material and its container at hazardous or special waste collection point
Wear suitable protective clothing and gloves.
If swallowed, seek medical advice immediately and show this container or label.

(Contd. on page 5)

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Trade name: GREEN ZINC PHOSPHATE

(Contd. of page 4)

Use only in well-ventilated areas.

Special labeling of certain preparations: Keep out of the reach of children.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Contact: Regulatory Affairs

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises Dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
VOC: Volatile Organic Compounds (USA, EU)

SAFETY DATA SHEET

Hydrochloric acid 20 BÉ

Section 1. Identification

Product identifier : Hydrochloric acid 20 BÉ

Product code : Q04089

Relevant identified uses of the substance or mixture

Identified uses
Industrial applications

Supplier's details : QUADRA CHEMICALS LTD.
3901 F.X Tessier
Vaudreuil-Dorion, QC
CANADA J7V 5V5
1-800-665-6553

Emergency telephone number (with hours of operation) : **TRANSPORTATION EMERGENCY - 24HRS/DAY - 7 DAYS/WEEK IN CANADA - CALL 1-888-922-3330**

Section 2. Hazard identification

Classification of the substance or mixture : CORROSIVE TO METALS - Category 1
ACUTE TOXICITY (oral) - Category 4
ACUTE TOXICITY (inhalation) - Category 2
SKIN CORROSION - Category 1
SERIOUS EYE DAMAGE - Category 1
Health Hazards Not Otherwise Classified - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : May be corrosive to metals.
Fatal if inhaled.
Harmful if swallowed.
Causes digestive tract burns.
Causes respiratory tract burns.
Causes severe skin burns and eye damage.

Precautionary statements

Prevention : Wear protective gloves. Wear protective clothing. Wear eye or face protection. Wear respiratory protection. Keep only in original packaging. Use only outdoors or in a well-ventilated area. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

Section 2. Hazard identification

Response : Absorb spillage to prevent material damage. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up. Store in a corrosion resistant container with a resistant inner liner.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : Keep container tightly closed. Do not breathe vapor or spray. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling.

Percentage of the mixture consisting of ingredient(s) of unknown oral toxicity: 33%
Percentage of the mixture consisting of ingredient(s) of unknown dermal toxicity: 33%

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	% (w/w)	CAS number
Hydrochloric acid	31 - 33	7647-01-0

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash contaminated skin with soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First-aid measures

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Fatal if inhaled. Corrosive to the respiratory system.

Skin contact : Causes severe burns.

Ingestion : May cause burns to mouth, throat and stomach. Harmful if swallowed. Corrosive to the digestive tract. Causes burns.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : Adverse symptoms may include the following:
stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Absorb spillage to prevent material damage. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Absorb spillage to prevent material damage. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). The spilled material may be neutralized with sodium carbonate, sodium bicarbonate or sodium hydroxide. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from alkalis. Empty containers retain product residue and can be hazardous. Do not reuse container. Absorb spillage to prevent material damage.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store in a corrosion resistant container with a resistant inner liner. Store locked up. Separate from alkalis. Keep away from metals. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Hydrochloric acid	**ACGIH TLV (United States, 3/2018).** C: 2 ppm

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Section 8. Exposure controls/personal protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Physical state : Liquid. [Clear.]

Color : Colourless to pale yellow.

Odor : Pungent. [Strong]

Odor threshold : Not available.

pH : <1

Melting point : -52.5°C (-62.5°F)

Boiling point : 85°C (185°F)

Flash point : Not available.

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : 4.7 kPa (35 mm Hg) [room temperature]

Vapor density : 1.267 [Air = 1]

Relative density : 1.16

Density : 1.161 to 1.19 g/cm^3

Solubility : Easily soluble in the following materials: cold water.

Dispersibility properties : Not available.

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Dynamic (room temperature): 1.75 mPa·s (1.75 cP)

Volatility : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : oxidizing materials
reducing materials
metals
alkalis
moisture

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Hydrochloric acid	LC50 Inhalation Gas. LC50 Inhalation Gas. LD50 Oral	Mouse Rat Rabbit	555 ppm 1560 ppm 900 mg/kg	4 hours 4 hours -
Hydrochloric acid 20 BÉ	LC50 Inhalation Vapor LC50 Inhalation Vapor	Mouse Rat	471 mg/m³ 1221 mg/m³	4 hours 4 hours

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Hydrochloric acid	Eyes - Mild irritant Skin - Mild irritant	Rabbit Human	- -	0.5 minutes 5 milligrams 24 hours 4 Percent	- -

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Carcinogenicity Classification

Product/ingredient name	IARC	NTP	ACGIH
Hydrochloric acid	3	-	A4

Reproductive toxicity

Not available.

Section 11. Toxicological information

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Oral, Inhalation.

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Fatal if inhaled. Corrosive to the respiratory system.

Skin contact : Causes severe burns.

Ingestion : May cause burns to mouth, throat and stomach. Harmful if swallowed. Corrosive to the digestive tract. Causes burns.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : Adverse symptoms may include the following:
stomach pains

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Section 11. Toxicological information

Route	ATE value
Inhalation (gases)	4822.9 ppm

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Hydrochloric acid	Acute LC50 240000 µg/l Marine water	Crustaceans - Carcinus maenas - Adult	48 hours
	Acute LC50 282 ppm Fresh water	Fish - Gambusia affinis - Adult	96 hours

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Hydrochloric acid	0.25	-	low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

Section 14. Transport information

	TDG Classification
UN number	1789
UN proper shipping name	HYDROCHLORIC ACID
Transport hazard class(es)	8
Packing group	II
Additional information	ERP / PIU # 2-0032

Section 15. Regulatory information

Canada inventory : All components are listed or exempted.

Section 16. Other information

History

Date of issue/Date of revision : 7 November 2019

Prepared by : Regulatory Affairs

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
LogPow = logarithm of the octanol/water partition coefficient
UN = United Nations
HPR = Hazardous Products Regulations

Procedure used to derive the classification

Classification	Justification
CORROSIVE TO METALS - Category 1	Expert judgment
ACUTE TOXICITY (oral) - Category 4	Expert judgment
ACUTE TOXICITY (inhalation) - Category 2	On basis of test data
SKIN CORROSION - Category 1	On basis of test data
SERIOUS EYE DAMAGE - Category 1	On basis of test data
Health Hazards Not Otherwise Classified - Category 1	Calculation method

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET

02-02-17

1. COMPANY AND PRODUCT IDENTIFICATION

Product Name	Liquid Bacteria Cultures
Description	Turbid, light tan liquid, with characteristic fermentation odor.
Other means of Identification	None
Recommended Use	This is a concentrate. After proper dilution, use as a bacterial treatment.
Uses advised against	No information available

2. HAZARDS IDENTIFICATION

Classification

This product is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin Sensitization / **Subcategory 1A**

GHS Label Elements, including Precautionary Statements

Signal Word Warning

Hazard Statements May cause an allergic skin reaction

Precautionary Statements – Prevention
Avoid breathing dust/fume/gas/mist/vapors/spray.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves and eye protection.

Precautionary Statements – Response
See First Aid Measures Section

Skin
IF ON SKIN: Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice/attention.
Wash contaminated clothing before reuse.

Precautionary Statements – Storage
None

Precautionary Statements – Disposal
Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazards not otherwise classified (HNOC)
Not applicable

Other information
Causes mild skin irritation
Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

Interactions with Other Chemicals
No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a buffered and preserved aqueous solution containing naturally-occurring viable bacterial cultures.

HAZARDOUS INGREDIENTS

Name	CAS #	% BY WEIGHT	TRADE SECRET
1,2-Benzisothiazolin-3-one	2634-33-5	0.15 – 0.35	*

*The exact percentage (concentration) of composition has been withheld as a trade secret

4. FIRST AID MEASURES

General Advice Show this safety data sheet to the Doctor in attendance

Eye Contact Rinse thoroughly with plenty of water, also under eyelids. If symptoms persist, call a physician.

Skin Contact Wash with soap and water. May cause an allergic skin reaction. In the case of skin irritation or allergic reactions, see a physician.

Inhalation Remove to fresh air.

Ingestion Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Itching. Rashes. Hives.

Indication of any immediate medical attention and special treatment needed

Notes to Physician May cause sensitization of susceptible persons. Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media

CAUTION: Use of water spray when fighting fire may be inefficient.

Specific Hazards Arising from the Chemical

Product is or contains a sensitizer. May cause sensitization by skin contact.

Uniform Fire Code Sensitizer: Liquid

Hazardous Combustion Products

Carbon oxides.

Explosion Data

Sensitivity to Mechanical Impact No
Sensitivity to Static Discharge No

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus, pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Avoid contact with skin and eyes

Environmental precautions

Refer to protective measures listed in Sections 7 and 8

Methods and material for containment and cleaning up

Containment Prevent further leakage or spillage if safe to do so.
Cleaning up Pick up and transfer to properly labelled containers. Soak up with inert absorbent material.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling	Handle in accordance with good industrial hygiene and safety practices. Avoid contact with skin and eyes.

Conditions for safe storage, including any incompatibilities

Storage	Keep container tightly closed.
Incompatible Products	Strong acids and alkalis, and strong oxidizing agents may react with product and inactivate bacterial cultures.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters

Exposure Guidelines	This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region-specific regulatory bodies.
Other Exposure Guidelines	Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992)

Appropriate Engineering Controls

Engineering Measures	Showers, Eyewash stations, Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/Face Protection	None required for consumer use. If splashes are likely to occur, wear safety glasses with side-shields.
Skin and Body Protection	None required for consumer use. Repeated or prolonged contact: Wear protective gloves and protective clothing.
Respiratory Protection	No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practices. Take off contaminated clothing and wash before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Physical State	Liquid
Appearance	Straw-colored
Odor	Characteristic
Odor threshold	No information available

Property	
pH	6.5 – 8.8
Melting/Freezing Point	No data available
Boiling Point/ Boiling Range	100 °C / 212 °F
Flash Point	None
Evaporation Rate	No data available
Flammability (solid, gas)	None
Upper/Lower flammability Limits	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	1.01
Water Solubility	Dispersible
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Viscosity	Water-thin
VOC Content (%)	Negligible

10. STABILITY AND REACTIVTY

Reactivity
No data available.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization
Hazardous polymerization does not occur.

Conditions to Avoid
Do not exposed to extreme temperatures for long periods of time. Close containers when not in use.

Incompatible Materials
Strong acids and alkalis, and strong oxidizing agents may react with product and inactivate bacterial cultures.

Hazardous Decomposition Products
Carbon oxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation	Specific test data for the mixture is not available.
Eye Contact	Specific test data for the mixture is not available.
Skin Contact	Specific test data for the mixture is not available. May cause sensitization by skin contact.
Ingestion	Specific test data for the mixture is not available.

Component Information No information available.

Information on toxicological effects

Symptoms	Itching. Rashes. Hives

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization	May cause sensitization of susceptible persons. May cause sensitization by skin contact.
Mutagenic Effects	No information available.
Carcinogenicity	Contains no ingredient listed as a carcinogen.
Reproductive Toxicity	No information available.
STOT – single exposure	No information available.
STOT – repeated exposure	No information available.
Chronic Toxicity	No known effect based on available information.
Target Organ Effects	Skin.
Aspiration Hazard	No information available.

Numerical measures of Toxicity
Not applicable

12. ECOLOGICAL INFORMATION

Eco-toxicity, Persistence and Degradability, and Bioaccumulation

This product is not expected to be dangerous to the environment with respect to mobility, persistency and biodegradability, bio-accumulative potential, aquatic toxicity, and other data related to eco-toxicity.

Other adverse effects

None known.

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal Methods	This material, as supplied, is not a hazardous waste according to Federal Regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult with the appropriate State, Regional, or Local regulations for additional requirements.
Contaminated Packaging	Dispose of contents/containers in accordance with local regulations.

14. TRANSPORTATION INFORMATION

DOT	Not Regulated
Proper Shipping Name	Not Regulated
Hazard Class	N/A

TDG	Not Regulated
MEX	Not Regulated
ICAO	Not Regulated
IATA	Not Regulated
IMDG/IMO	Not Regulated
RID	Not Regulated
ADR	Not Regulated
ADN	Not Regulated

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL	All components are listed on the DSL

TSCA – United States Toxic Substances Control Act – Section 8(b) Inventory
DSL – Canadian Domestic Substances List

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical which is subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or State level pertaining to releases of this material.

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals

US State Right-to-Know Regulations

This product does not contain any substances above threshold limits that are regulated by State right-to-know.

16. OTHER INFORMATION

Hazardous Material Information System (HMIS)	**HEALTH**	**1**
	FLAMMABILITY	**0**
	PHYSICAL HAZARD	**0**
	PERSONAL PROTECTION	**B**

ADDITIONAL INFORMATION

The information supplied in this Safety Data Sheet is designed only as guidance for the safe use, storage and handling of the product. This information is correct to the best of our knowledge and belief at the date of publication, however, no guarantee is made to its accuracy. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any other process.

END OF SDS

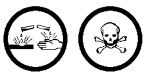
Material Safety Data Sheet

Anachemia

255 Norman.
Lachine (Montreal), Que
H8R 1A3

EMERGENCY NUMBERS:

(USA) CHEMTREC : 1(800) 424-9300 (24hrs)
(CAN) CANUTEC : 1(613) 996-6666 (24hrs)
(USA) Anachemia : 1(518) 297-4444
(CAN) Anachemia : 1(514) 489-5711

WHMIS	Protective Clothing	TDG Road/Rail
WHMIS CLASS: E D-1A		TDG CLASS: 8 PIN: UN1789 PG: II
		

Section I. Product Identification and Uses

Product name	**HYDROCHLORIC ACID**
Chemical formula	HCl
Synonyms	Muriatic acid, Chlorohydric acid, Hydrogen chloride, AC-4955, AC-4955PG, AC-4955SP, AC-4955T, AC-4955GC, CD-4955, EP-4955, EG-4955, R-2830S, 46475, 46414, 46416, 46549, 46390, 46396, 46399, 46405
Supplier	Anachemia Canada. 255 Norman. Lachine (Montreal), Que H8R 1A3
Material uses	For laboratory use only.

CI#	Not available.
CAS#	7647-01-0
Code	AC-4955
Formula weight	36.46
Supersedes	

Section II. Ingredients

Name	CAS #	%	TLV
1) HYDROCHLORIC ACID (as HCl)	7647-01-0	30-38	Exposure limits: ACGIH Ceiling limit 2 ppm (3 mg/m3)
2) WATER	7732-18-5	Balance	Not established by ACGIH

Toxicity values of the hazardous ingredients

HYDROCHLORIC ACID:
ORAL (LD50): Acute: 900 mg/kg (Rabbit).
VAPOR (LC50): Acute: 3124 ppm (Rat) (1 hour(s)). 1108 ppm (Mouse) (1 hour(s)).
VAPOR (LCLo): Acute: 1300 ppm (Human) (30M).

Section III. Physical Data

Physical state and appearance / Odor	Colorless fuming liquid with a pungent odor.
pH (1% soln/water)	0.1 (1M solution)
Odor threshold	5-10 ppm
Percent volatile	100% (V/V)
Freezing point	-46.2 to -25.4°C
Boiling point	108 to 110°C
Specific gravity	1.16 to 1.19 (Water = 1)
Vapor density	1.3 (Air = 1)
Vapor pressure	150 to 160 mm of Hg (@ 20°C)
Water/oil dist. coeff.	Not available.
Evaporation rate	>1
Solubility	Miscible in water.

Section IV. Fire and Explosion Data

Flash point	Not applicable.
Flammable limits	Not applicable.
Auto-ignition temperature	Not available.
Fire degradation products	Hydrogen chloride gas.
Fire extinguishing procedures	Use extinguishing media suitable for surrounding materials. Wear adequate personal protection to prevent contact with material or its combustion products. Self contained breathing apparatus with a full facepiece operated in a pressure demand or other positive pressure mode. Cool containing vessels with flooding quantities of water until well after fire is out. DO NOT get water inside container.
Fire and Explosion Hazards	Flammable/explosive hydrogen gas may be formed upon contact of this product with metals. The sensitivity to impact is not applicable. The sensitivity to static discharge is not applicable. Emits toxic and corrosive fumes under fire conditions.

Section V. Toxicological Properties

Routes of entry	Inhalation and ingestion. Eye contact. Skin contact.
Effects of Acute Exposure	Harmful by ingestion, inhalation or skin absorption. Corrosive. Target organs: skin, eyes, lungs, respiratory system. 50 ppm (HYDROCHLORIC ACID) is immediately dangerous to life or health.
Eye	Vapors, liquids and mists are extremely corrosive to the eyes. Brief contact of the vapors will be severely irritating. Brief contact of the liquid or mist will severely damage the eyes and prolonged contact may cause permanent eye injury which may be followed by blindness.
Skin	Causes severe burns. Severe pain and brownish or yellow stains: usually penetrates the full thickness of the skin. Lesser exposures may cause dermatitis and photosensitization.
Inhalation	Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract. Inhalation may be fatal as a result of spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, laryngitis, dyspnea, headache, nausea, and vomiting. Can cause lung damage.
Ingestion	Burns in mouth, pharynx and gastrointestinal tract. Weakness from falling blood pressure, nausea, vomiting, dysphagia, abdominal pain, cardiovascular collapse, convulsions, coma and death possible. Asphyxia may occur from edema of the glottis.

Section V. Toxicological Properties

Effects of Chronic Overexposure	Erosion of the teeth, ulceration of the nose, mouth and gums, bronchitis. Repeated or prolonged skin contact can cause severe dermatitis or burns. Carcinogenic effects: Not available. Mutagenic effects: Not available. Teratogenic effects: Not available. Toxicity of the product to the reproductive system: Not available. To the best of our knowledge, the chemical, physical, and toxicity of this substance has not been fully investigated.

Section VI. First Aid Measures

Eye contact	Immediate first aid is needed to prevent eye damage. Immediately flush eyes with copious quantities of water for at least 30 minutes holding lids apart to ensure flushing of the entire surface. Speed is essential. Seek immediate medical attention. Do not use chemical antidotes.
Skin contact	Immediately flush skin with plenty of water for at least 30 minutes while removing contaminated clothing and shoes. Do not use chemical antidotes. Speed is essential. Seek immediate medical attention. Wash contaminated clothing before reusing. Discard contaminated leather articles such as shoes and belt.
Inhalation	Remove patient to fresh air. Administer approved oxygen supply if breathing is difficult. Administer artificial respiration or CPR if breathing has ceased. Call a physician.
Ingestion	If conscious, wash out mouth with water. Have conscious person drink several glasses of water or milk, repeating if vomiting. DO NOT induce vomiting. Aim to dilute acid 100 times approximately. Seek immediate medical attention. Never give anything by mouth to an unconscious or convulsing person.

Section VII. Reactivity Data

Stability	Stable. Conditions to avoid: High temperatures, sparks, open flames and all other sources of ignition, contamination.
Hazardous decomp. products	Not available.
Incompatibility	Reacts with most common metals to produce hydrogen. Amines, metal oxides, acetic anhydride, beta-propiolacetone, vinyl acetate, mercuric sulfate, calcium phosphide, formaldehyde, alkalies, carbonates, bases, sulfuric acid, chlorosulfonic acid, nitric acid, oxidizing agents, cyanides, sulfides, fluorides, phosphides, acetylides, bromides, carbides, silicides, hydroxides, propylene oxide, fluorine, water reactive materials, silver perchlorate, carbon tetrachloride, perchloric acid, 2-aminoethanol, ammonium hydroxide, ethylenediamine, ethyleneimine, oleum, copper and aluminum and their alloys, alkali metals, sulfites.
Reaction Products	Will corrode a wide variety of metals. Hazardous polymerization will not occur.

Section VIII. Preventive Measures

Protective Clothing in case of spill and leak	Wear self-contained breathing apparatus, rubber boots and heavy rubber gloves. Full suit.
Spill and leak	Evacuate and ventilate the area. Cover with soda ash or lime. This will release carbon dioxide, so use caution. Place in a suitable container and mark for disposal. Wash spill site after material pick up is complete. DO NOT empty into drains. DO NOT touch damaged container or spilled material. Stay upwind: Keep out of low areas.
Waste disposal	According to all applicable regulations. Harmful to aquatic life at high concentrations. Can be dangerous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers.
Storage and Handling	Store in a cool place away from heated areas, sparks, and flame. Store in a well ventilated area. Store away from incompatible materials. Do not add any other material to the container. Do not wash down the drain. Do not breathe gas/fumes/vapor/spray. In case of insufficient ventilation, wear suitable respiratory equipment. Keep away from direct sunlight or strong incandescent light. Keep container tightly closed and dry. Manipulate under an adequate fume hood. Protect from moisture. Do not use pressure to dispense. May corrode metallic surfaces. Empty containers may contain a hazardous residue. Handle and open container with care. Take off immediately all contaminated clothing. This product must be manipulated by qualified personnel. Do not get in eyes, on skin, or on clothing. Wash well after use. In accordance with good storage and handling practices. Do not allow smoking and food consumption while handling. Wear suitable protective clothing. In case of accident or if you feel unwell, seek medical advice immediately (show the label when possible.).

Section IX. Protective Measures

Protective clothing	Face shield and splash goggles. Impervious gloves (neoprene), apron, coveralls, and/or other resistant protective clothing as required for workplace conditions to prevent contact with hydrochloric acid solutions. Sufficient to protect skin. None required if handled in closed ventilation system. Where required (leak, spill, open handling of liquid) use a NIOSH-approved chemical cartridge respirator for gas below 50 ppm. For gas above 50 ppm or mist, use NIOSH approved self-contained breathing apparatus or air-supplied respirator, both with full facepieces. Have available and use as appropriate: suits, aprons, and boots. Do not wear contact lenses. Make eye bath and emergency shower available. Ensure that eyewash station and safety shower is proximal to the work-station location.
Engineering controls	Use in a chemical fume hood to keep airborne levels below recommended exposure limits. Ventilation should be corrosion proof. Do not use in unventilated spaces.

Section X. Other Information

Special Precautions or comments

Corrosive! Toxic! Causes severe burns! Risk of serious damage to eyes. Do not breathe vapor. Avoid all contact with the product. Avoid prolonged or repeated exposure. Use in a chemical fume hood. Handle and open container with care. Container should be opened only by a technically qualified person. Solutions are highly corrosive.
Synergistic materials: Not available.
RTECS NO: MW4025000 (Hydrochloric acid).

NFPA

Prepared by MSDS Department/Département de F.S..

Validated 20-Apr-2009

While the company believes the data set forth herein are accurate as of the date hereof, the company makes no warranty with respect thereto and expressly disclaims all liability for reliance thereon. Such data are offered solely for your consideration, investigation and verification.

KLEARWATER EQUIPMENT & TECHNOLOGIES

46 MASTERS AVE SE, CALGARY, AB T3M2B1
P: 403-254-4240 E: INFO@KLEARWATER.CA

TECHNICAL DATA SHEET

HYDROFLOC 708 E (CATIONIC EMULSION POLYMER)

Commonly used as a thickening or dewatering aid in Municipal and Industrial Wastewater processes. If operating a Centrifuge, Belt/Screw Press, DAF, etc. please contact our Water Chemistry Specialists to find the best solution for your application.

Product Data

Milky viscous liquid emulsion of polyacrylamide	
Molecular Weight	very High
Charge Density	Low-medium
Specific Gravity	1.0 - 1.10 g/mL
Average solids content	37 – 43 %
Bulk Viscosity (cps)	500 - 2000 cps
Maximum use concentration	10 g/L (1.0%)
storage temperature	5 - 35°C
Shelf life	6 months

Available Packaging Size

1050 kg Tote, 204 kg Drum, 25kg pail, custom sizes upon request

Contact Klearwater with any questions or for our Safety Data Sheet

Water is Life, We Treat it Accordingly

KLEARWATER EQUIPMENT & TECHNOLOGIES

2720 7TH AVE NE, CALGARY, AB T2A5G6
P: 403-254-4240 E: INFO@KLEARWATER.CA

TECHNICAL DATA SHEET

HYDROFLOC 760 (CATIONIC EMULSION POLYMER)

Commonly used as a dewatering aid in Municipal and Industrial Wastewater processes If you are operating a Centrifuge, Belt/Screw Press, DAF, etc. please contact one of our Water Chemistry Specialists to find the best solution for your application.

Product Data

Milky viscous liquid emulsion polymer

Molecular Weight	very High
Charge Density	High
Specific Gravity	1.0 - 1.10 g/mL
Average solids content	48 – 52 %
Bulk Viscosity (cps)	1200 cps
storage temperature	5 - 35°C
Shelf life	6 months

Available Packaging Size

1040 kg Tote, 204 kg Drum, 20kg pail, custom sizes upon request

Contact Klearwater with any questions or for our Safety Data Sheet

Water is Life, We Treat it Accordingly

ETHYLENE GLYCOL **ICSC: 0270 (May 2018)**

1,2-Ethanediol
1,2-Dihydroxyethane
2-Hydroxyethanol
Glycol
Glycol alcohol
Ethylene alcohol
Monoethylene glycol

CAS #: 107-21-1

EC Number: 203-473-3

	ACUTE HAZARDS	PREVENTION	FIRE FIGHTING
FIRE & EXPLOSION	Combustible.	NO open flames.	Use water spray, powder, alcohol-resistant foam, carbon dioxide.

PREVENT GENERATION OF MISTS!

	SYMPTOMS	PREVENTION	FIRST AID
Inhalation	Cough. Dizziness. Headache.	Use ventilation.	Fresh air, rest. Refer for medical attention.
Skin	Redness.	Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
Eyes	Redness. Pain.	Wear safety goggles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.
Ingestion	Sore throat. Nausea. Vomiting. Abdominal pain. Drowsiness. Unconsciousness.	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer immediately for medical attention.

SPILLAGE DISPOSAL

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Collect leaking and spilled liquid in sealable containers as far as possible. Wash away remainder with plenty of water.

STORAGE

Separated from strong oxidants, strong bases and strong acids. Dry. Ventilation along the floor.

PACKAGING

CLASSIFICATION & LABELLING

According to UN GHS Criteria

WARNING

Harmful if swallowed
May cause damage to kidneys and central nervous system

Transportation
UN Classification

International Labour Organization
World Health Organization

Prepared by an international group of experts on behalf of ILO and WHO, with the financial assistance of the European Commission.
© ILO and WHO 2021
European Commission

ETHYLENE GLYCOL **ICSC: 0270**

PHYSICAL & CHEMICAL INFORMATION

Physical State; Appearance
ODOURLESS COLOURLESS VISCOUS HYGROSCOPIC LIQUID.

Physical dangers

Chemical dangers
On combustion, forms toxic gases. Reacts with strong oxidants, strong acids and strong bases. This generates fire and explosion hazard.

Formula: $HOCH_2CH_2OH$
Molecular mass: 62.1
Boiling point: 197°C
Melting point: -13°C
Relative density (water = 1): 1.1
Solubility in water: miscible
Vapour pressure, Pa at 20°C: 6.5
Relative vapour density (air = 1): 2.1
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.00
Flash point: 111.11°C c.c., 115°C o.c.
Auto-ignition temperature: 398°C
Explosive limits, vol% in air: 3.2-15.3
Octanol/water partition coefficient as log Pow: -1.36
Viscosity: 21 mPa*s at 20°C

EXPOSURE & HEALTH EFFECTS

Routes of exposure
The substance can be absorbed into the body by inhalation and through the skin.

Effects of short-term exposure
The substance is irritating to the eyes and respiratory tract. The substance may cause effects on the kidneys, central nervous system and acid-base balance in the body. This may result in renal failure, brain injury and metabolic acidosis. Exposure could cause lowering of consciousness.

Inhalation risk
A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C.

Effects of long-term or repeated exposure

OCCUPATIONAL EXPOSURE LIMITS

TLV: (vapour and aerosol): 25 ppm as TWA.
TLV: (vapour): 50 ppm as STEL.
TLV: (inhalable aerosol): 10 mg/m^3 as STEL.
A4 (not classifiable as a human carcinogen).
EU-OEL: 52 mg/m^3 as TWA; 104 mg/m^3 as STEL; (skin)

ENVIRONMENT

Environmental effects of the substance have been adequately investigated, but no significant effects have been found.

NOTES

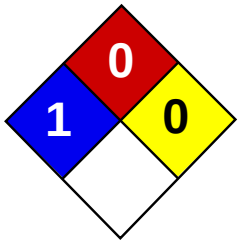
Specific treatment is necessary in case of poisoning with this substance; the appropriate means with instructions must be available.

ADDITIONAL INFORMATION

EC Classification

All rights reserved. The published material is being distributed without warranty of any kind, either expressed or implied. Neither ILO nor WHO nor the European Commission shall be responsible for the interpretation and use of the information contained in this material.

See Also:
Toxicological Abbreviations
Ethylene glycol (PIM 227)
Ethylene glycol (PIM 227F, French)



Material Safety Data Sheet
Iodine Solution, 5% MSDS

Section 1: Chemical Product and Company Identification

Product Name: Iodine Solution, 5%

Catalog Codes: SLI2020

CAS#: Mixture.

RTECS: Not applicable.

TSCA: TSCA 8(b) inventory: Iodine; Potassium Iodide; Water

CI#: Not available.

Synonym: Lugol's Solution;

Chemical Name: Not applicable.

Chemical Formula: Not applicable.

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Iodine	7553-56-2	5
Potassium Iodide	7681-11-0	10
Water	7732-18-5	85

Toxicological Data on Ingredients: Iodine: ORAL (LD50): Acute: 14000 mg/kg [Rat]. 22000 mg/kg [Mouse]. Potassium Iodide LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of ingestion. Slightly hazardous in case of skin contact (irritant, permeator), of eye contact (irritant).

Potential Chronic Health Effects:
Hazardous in case of ingestion. Slightly hazardous in case of skin contact (irritant, sensitizer), of eye contact (irritant), . CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. [Potassium Iodide]. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/ female, Development toxin [POSSIBLE] [Potassium Iodide]. The substance is toxic to thyroid. The substance may be toxic to blood, kidneys, liver, skin, eyes. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.

Skin Contact:
Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Not applicable.

Explosion Hazards in Presence of Various Substances: Non-explosive in presence of open flames and sparks, of shocks.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Potassium iodide + Fluorine Perchlorate will explode on contact. (Potassium Iodide)

Section 6: Accidental Release Measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Absorb with an inert material and put the spilled material in an appropriate waste disposal. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep container dry. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

Personal Protection: Splash goggles. Lab coat. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
Iodine STEL: 1 (mg/m3) from ACGIH (TLV) [United States] STEL: 0.1 (ppm) from ACGIH (TLV) [United States] TWA: 1 CEIL: 1 (mg/m3) from OSHA (PEL) [United States] TWA: 0.1 CEIL: 0.1 (ppm) from OSHA (PEL) [United States] STEL: 0.1 (ppm) [United Kingdom (UK)] STEL: 1.1 (mg/m3) [United Kingdom (UK)] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sharp Characteristic.

Taste: Not available.

Molecular Weight: Not applicable.

Color: Red. Brown. (Dark.)

pH (1% soln/water): Neutral.

Boiling Point: 100°C (212°F)

Melting Point: 0°C (32°F)

Critical Temperature: Not available.

Specific Gravity: 1.05 (Water = 1)

Vapor Pressure: The highest known value is 2.3 kPa (@ 20°C) (Water).

Vapor Density: 1 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, methanol, diethyl ether, acetone.

Solubility:
Easily soluble in cold water, hot water, diethyl ether. Soluble in methanol. Partially soluble in acetone.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials

Incompatibility with various substances: Slightly reactive to reactive with oxidizing agents, reducing agents, organic materials, metals, acids.

Corrosivity: Not available

Special Remarks on Reactivity:
Moisture Sensitive. Light Sensitive. Air Sensitive. Air causes decomposition to iodine. Reacts violently with strong oxidizers, bromotrifluorides, chlorotrifluorides, fluorine perchlorate, metallic salts. Attacks metals in moist environments. Also incompatible with salts of alkaloids, chloral hydrate, calomel (mercurous chloride), potassium chlorate, tartaric and other acids, oxidants, diazonium salts, charcoal, ozone, strong reducers, alkali metals, metals (brass, aluminum magnesium, zinc, cadmium, copper, tin, nickel, steel), metallic salts, organic materials, light. (Potassium Iodide). Incompatible with liquid chlorine, acetaldehyde, ammonia, salt + ethanol, ammonium hydroxide, methyl alcohol, antimony, silver azide, lithium, potasssium , sodium, phosphorous, bromine pentafluoride, fluorine, oxygen difluoride, magnesium, finely divided metals, organic solvents, rubber goods, plastics, zinc, aluminum, alkali metals, sulphur, ammonia solutions, Bromine trifluoride, reducing agents, iron, ethanol + butadiene; ethanol + phosphorous; ethanol + methanol + HgO; foramide + pyrindine + sulfur trioxide; formamide; halogens or interhalogens; mercuric oxide; metal carbides; oxygen; pyridine; sodium hydride. Violent reaction with iodine and aluminum + diethyl ether ... (and) titanium (above 113 deg C) (Iodine)

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Eye contact. Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 14000 mg/kg [Rat]. (Iodine).

Chronic Effects on Humans:
MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. [Potassium Iodide]. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Development toxin [POSSIBLE] [Potassium Iodide]. Contains material which may cause damage to the following organs: blood, kidneys, liver, skin, eyes.

Other Toxic Effects on Humans:
Hazardous in case of ingestion. Slightly hazardous in case of skin contact (irritant, permeator), of inhalation.

Special Remarks on Toxicity to Animals:
Lowest Published Lethal Dose: LDL [Human] - Route: Oral; Dose: 28 mg/kg LCL [Rat] - Route: Inhalation; Dose: 137 ppm/1H (Iodine)

Special Remarks on Chronic Effects on Humans:
Can cause adverse reproductive efects and birth defects based on animal data. May affect genetic material based on animal data (Potassium Iodide)

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation. It can cause brown stains on the skin. It can be absorbed through the skin. Eyes: Eye contact with liquid causes irritation. Iodine vapors may cause eye irritation. Eye contact with an excessive amount of iodine vapor may also cause blepharitis. Inhalation: Low hazard during normal industrial handling. Excessive inhalation of iodine vapors may cause respiratory tract, nasal, and mucous membrane irritation. Symptoms may include coughing, tightness in the chest, rhinitis, dyspnea/respiratory distress, coughing, sneezing, pulmonary edema, chemical pneumonitis, edema of the larynx and bronchi, pharyngitis, swelling of the parotid gland, and cachexia. High exposure may lead to lung disease and may also affect behavior/central nervous system (delirium, hallucination, depression, seizure,

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations:
Illinois toxic substances disclosure to employee act: Iodine Rhode Island RTK hazardous substances: Iodine Pennsylvania RTK: Iodine Minnesota: Iodine Massachusetts RTK: Iodine Massachusetts spill list: Iodine New Jersey: Iodine TSCA 8(b) inventory: Iodine; Potassium Iodide; Water

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada): Not controlled under WHMIS (Canada).

DSCL (EEC):
R36/38- Irritating to eyes and skin. R40- Possible risks of irreversible effects. R62- Possible risk of impaired fertility. R63- Possible risk of harm to the unborn child. S2- Keep out of the reach of children. S36/37- Wear suitable protective clothing and gloves. S46- If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 0

Reactivity: 0

Personal Protection: j

National Fire Protection Association (U.S.A.):

Health: 1

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:

Gloves. Lab coat. Not applicable. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/09/2005 05:51 PM

Last Updated: 11/01/2010 12:00 PM

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MATERIAL SAFETY DATA SHEET

99-0504

Prepared to OSHA, ACC, ANSI, NOHSC, WHMIS & 2001/58 EC Standards | MSDS Revision: 2.3 | MSDS Revision Date: 03/15/2013

1. PRODUCT IDENTIFICATION

1.1	Product Name:	**K & N AIR FILTER OIL AEROSOL**
1.2	Chemical Name:	See ingredients listed in section 3
1.3	Synonyms:	None reported by the manufacturer
1.4	Trade Names:	K & N Air Filter Oil Aerosol
1.5	Product Use:	Automotive Lubricant
1.6	Manufacturer's Name:	K&N Engineering, Inc.
1.7	Manufacturer's Address:	P.O. Box 1329, Riverside, CA 92502-1329 USA
1.8	Business Phone:	+1 (800) 858-3333
1.9	Emergency Phone:	**CHEMTREC +1 (800) 424-9300/+1 (703) 527-3887 (CCN 632715) - SEE ALSO LAST 2 PAGES**

CHEMICAL RESPONSE CARD:	**21**
RESPONSE TEAM PPE:	
WHMIS:	
HEALTH:	**2**
FLAMMABILITY:	**4**
REACTIVITY:	**0**
PERSONAL PROTECTION:	**X**

2. HAZARD IDENTIFICATION

2.1 Hazard Identification:

This product is classified as a HAZARDOUS SUBSTANCE and as DANGEROUS GOODS according to the classification criteria of NOHSC:1088 (2004) and ADG Code (Australia). Extremely flammable aerosol. Vapor Harmful. Excessive inhalation of vapors may cause dizziness, nausea, and headache, loss of consciousness or even death if exposure is prolonged. May be harmful or fatal if swallowed. Repeated exposure may present additional hazards.

2.2 Routes of Entry:

Inhalation:	YES	Absorption:	YES	Ingestion:	YES

2.3 Effects of Exposure:

EYES: May cause irritation, redness and tearing.
SKIN: may cause irritation, defatting, drying and cracking of skin.
INGESTION: May cause, gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of material into the lungs may cause chemical pneumonitis, which can be fatal. Can be fatal if inhaled or ingested.
INHALATION: Vapors may be irritating to nose, throat and respiratory tact. Excessive inhalation of vapors may cause kidney damage, cardiac arrhythmia and Central Nervous System effects including dizziness, weakness, fatigue, nausea, headache and possible unconsciousness.

2.4 Symptoms of Exposure:

EYES: May cause irritation, redness and tearing.
SKIN: may cause irritation, defatting, drying and cracking of skin.
INGESTION: May cause, gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of material into the lungs may cause chemical pneumonitis, which can be fatal. Can be fatal if inhaled or ingested.
INHALATION: Vapors may be irritating to nose, throat and respiratory tact. Excessive inhalation of vapors may cause kidney damage, cardiac arrhythmia and Central Nervous System effects including dizziness, weakness, fatigue, nausea, headache and possible unconsciousness.

2.5 Acute Health Effects:

EYES: May cause irritation, redness and tearing.
SKIN: may cause irritation, defatting, drying and cracking of skin.
INGESTION: May cause, gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of material into the lungs may cause chemical pneumonitis, which can be fatal. Can be fatal if inhaled or ingested.
INHALATION: Vapors may be irritating to nose, throat and respiratory tact. Excessive inhalation of vapors may cause kidney damage, cardiac arrhythmia and Central Nervous System effects including dizziness, weakness, fatigue, nausea, headache and possible unconsciousness.

2.6 Chronic Health Effects:

Prolonged or repeated skin contact may cause irritation, dry skin, skin rash and inflammation.

2.7 Target Organs:

Eyes and upper respiratory tract.

2.8 Toxicological Properties:

None reported by the manufacturer.

See Section 16 for Additional Definitions of Terms Used.

NOTE: All WHMIS required information is included – it is located in appropriate sections based on the ANSI Z400.1-2004 format.

3. COMPOSITION & INGREDIENTS

CHEMICAL NAME(S)	CAS No.	RTECS No.	EINECS No.	%	EXPOSURE LIMITS IN AIR (mg/m³) ACGIH ppm TLV	ACGIH ppm STEL	NOHSC ppm ES-TWA	NOHSC ppm ES-STEL	NOHSC ppm ES-PEAK	OSHA ppm PEL	OSHA ppm STEL	OSHA ppm IDLH	OTHER
DISTILLATES (PETROLEUM), HYDROTREATED HEAVY PARAFFINIC	64742-54-7	PY8035501	265-157-1	≤ 100	5	NF	NF	NF	NF	5	NF	NF	MIST
1-DECENE, HOMOPOLYMER, HYDROGENATED	68037-01-4	NA	500-183-1	≤ 3.0	NA	NA	NF	NF	NF	NA	NA	NA	
C.I. SOLVENT RED 164 (DYE)	71819-51-7	NA	NA	≤ 0.1	NA	NA	NF	NF	NF	NA	NA	NA	
PETROLEUM GASES, LIQUIFIED SWEETENED	68476-86-8	NA	270-705-8	NA	10	NA	NF	NF	NF	10	NA	NA	MIST

4. FIRST AID MEASURES

4.1 First Aid:

EYES: Immediately flush eyes with plenty of running water for at least 15 minutes, lifting upper and lower lids, occasionally. If irritation persists, repeat flushing. Get medical attention.

SKIN: Wash thoroughly with soap and water. If irritation persists, seek medical attention. Remove contaminated clothing and wash before reuse.

INGESTION: If ingested call physician or poison control center immediately. Do no induce vomiting. Rinse mouth with water. Aspiration of material into lungs due to vomiting may cause chemical pneumonitis which can be fatal.

INHALATION: Remove affected person to fresh air. If breathing if difficult, administer oxygen. If breathing stops give artificial respiration. Keep person warm, quiet and get medical attention.

4.2 Medical Conditions Aggravated by Exposure:

Personnel with pre-existing skin disorders should avoid repeated or prolonged contact with this product.

HEALTH	2
FLAMMABILITY	4
REACTIVITY	0
PROTECTIVE EQUIPMENT	X

EYES	SKIN		

5. FIREFIGHTING MEASURES

5.1 Flashpoint & Method:

> 232 °C (450 °F) liquid

5.2 Autoignition Temperature:

NA

5.3 Flammability Limits: Lower Explosive Limit (LEL): NA Upper Explosive Limit (UEL): NA

5.4 Fire & Explosion Hazards:

The flammability of an aerosol by WHMIS definition is determined by its flame-extension or its flashback. The flame extension of this product is great than 45 cm. Fire Code: Level 3 Aerosol (as per NFPA 30B). Do not use in presence of open flames or sparks. Do not place in hot water or near radiators, stoves or other sources of heat. Exposure to heat or sunlight may cause cans to burst and propel contents. Water from fog nozzles may be helpful in cooling un-ruptured containers to prevent build-up. Burning may produce hazardous products of combustion including fumes, smoke, carbon dioxide and/or carbon monoxide.

5.5 Extinguishing Methods:

Dry chemical, foam, and carbon dioxide.

5.6 Firefighting Procedures:

Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. Avoid spreading burning liquid with water used to cool containers. Keep containers cool until well after the fire is out. Prevent runoff from fire control or dilution from entering sewers, drains, drinking water supply, or any natural waterway. Firefighters should wear full-face, self-contained breathing apparatus (MSHA/NIOSH approved or the equivalent) and impervious clothing.

6. ACCIDENTAL RELEASE MEASURES

6.1	Spills: **Secure spill area, eliminate all sources of ignition, and maximize ventilation. Stop spill or leak at source if safely possible. Deny entry to all unprotected individuals. Individuals involved in the cleanup must wear appropriate personal protective equipment. Recover free liquid or cover with inert absorbent material and place into appropriate container(s) for disposal. For small liquid spills, absorb or cover with dry earth, sand, or other inert non-combustible absorbent material and place into waste containers for later disposal. Contain large spills to maximize product recovery or disposal. If necessary, dike well ahead of the spill to prevent runoff into drains, sewers or any natural waterway or drinking supply. Contact appropriate local and/or provincial authorities for assistance and/or reporting requirements. For water spills, remove from surface by skimming or with suitable absorbents. If allowed by federal & provincial environmental agencies, sinking and/or suitable dispersants may be used in unconfined waters. Consult an expert on disposal of recovered material. Ensure disposal on compliance with government requirements & secure conformity to local disposal regulations. Notify the appropriate federal & provincial authorities immediately. Take all additional action necessary to prevent & remedy the adverse effects of the spill.**

7. HANDLING & STORAGE INFORMATION

7.1	Work & Hygiene Practices: **Do not use in the presence of open flame, sparks or ignition sources. Keep away from heat. Avoid breathing vapors or spray mists. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. After handling, always wash hand thoroughly with soap and water.**
7.2	Storage & Handling: **Store in a cool, dry place. Do not place in hot water or near radiators, stoves or sources of heat. Do not puncture or incinerate container or store at temperatures over 50°C or in direct sunlight.** **Maximum recommended shelf-life: 36 months.**
7.3	Special Precautions: **Contents under pressure. Container may explode if heated. Direct inhalation of spray may be harmful. Keep out of reach of children.**

8. EXPOSURE CONTROLS & PERSONAL PROTECTION

8.1	Ventilation & Engineering Controls: **The use of mechanical dilution ventilation is recommended to maintain airborne concentrations below the recommended occupational exposure limits, whenever this material is used in a confined space, is heated above normal temperatures (up to 38°C) or is agitated.**
8.2	Respiratory Protection: **Vaporization or misting is not expected at ambient temperatures. Therefore, the need for respiratory protection is not anticipated under normal use conditions and with adequate ventilation. If elevated airborne concentrations above applicable workplace exposure levels are anticipated, a NIOSH-approved organic vapor respirator equipped with a dust/mist pre-filter should be used. Protection factors vary depending upon the type of respirator used. Respirators should be used in accordance with OSHA requirements (29 CFR 1910.134).**
8.3	Eye Protection: **Safety glasses equipped with side shields should be adequate protection under most conditions of use. Wear goggles and/or face shield if splashing or spraying is anticipated. Wear goggles and face shield if material is heated above 125°F (51°C). Have suitable eye wash water available.**
8.4	Hand Protection: **Use gloves constructed of chemical resistant materials such as neoprene or heavy nitrile rubber if frequent or prolonged contact is expected. Use heat-protective gloves when handling product at elevated temperatures.**
8.5	Body Protection: **Avoid prolonged and/or repeated skin contact. Use clean and impervious protective clothing (e.g., neoprene or Tyvek®) if splashing or spraying conditions are present. Protective clothing should include long-sleeves, apron, boots and additional facial protection. Remove oil contaminated clothing. Launder oil contaminated clothing before reusing. Contaminated leather goods should be removed promptly and discarded.**

9. PHYSICAL & CHEMICAL PROPERTIES

9.1	Density:	**0.864 (7.197 lbs/gallon) - liquid**
9.2	Boiling Point:	**> 260 °C (500 °F)**
9.3	Melting Point:	**NA**
9.4	Evaporation Rate:	**NA**
9.5	Vapor Pressure:	**NA**
9.6	Molecular Weight:	**NA**
9.7	Appearance & Color:	**Red Oily Liquid**
9.8	Odor Threshold:	**Characteristic Petroleum Odor**
9.9	Solubility:	**Negligible @ 25 °C**
9.10	pH	**NA**
9.11	Viscosity:	**≥ 7.5 cSt @ 100 °C**
9.12	Coefficient Oil/Water Distribution:	**NA**
9.13	Additional Information:	**NA**

10. STABILITY & REACTIVITY

10.1	Stability: **Stable, when used as intended.**
10.2	Hazardous Decomposition Products: **Carbon, nitrogen and sulfur oxides, hydrocarbons, phosgene.**
10.3	Hazardous Polymerization: **Will not occur.**
10.4	Conditions to Avoid: **Heat, sparks, open flame and all possible ignition sources.**
10.5	Incompatible Substances: **Avoid contact with strong oxidizing agents, strong reducing agents, strong acids and strong alkalis.**

11. TOXICOLOGICAL INFORMATION

11.1	Toxicity Data: **Based on animal testing from similar materials & products, the acute toxicity of this product is expected to be: Distillates, Petroleum, Solvent-Refined, Heavy Paraffinic – LD_{50} (oral, rat) > 5000 mg/kg; LD_{50} (dermal, rabbit) > 2000 mg/kg.**	
11.2	Acute Toxicity: **Mineral oil mists derived from highly refined oils are reported to have low acute and sub-acute toxicities in animals. Effects from single and short-term repeated exposures to high concentrations of mineral oil mists well above applicable workplace exposure levels include lung inflammatory reaction, lipoid granuloma formation and lipoid pneumonia. In acute and sub-acute studies involving exposures to lower concentrations of mineral oil mists at or near current work place exposure levels produced no significant toxicological effects.**	
11.3	Chronic Toxicity: **In long term studies (up to two years) no carcinogenic effects have been reported in any animal species tested.**	
11.4	Suspected Carcinogen: **Carc. Cat. 2 – suspected human carcinogen (Annex I of EU Directive 67/548/EEC); Not listed by OSHA, NTP or ACGIH.**	
11.5	Reproductive Toxicity:	
	Mutagenicity:	**This product is not expected to cause mutagenic effects in humans.**
	Embryotoxicity:	**This product is not expected to cause embryotoxic effects in humans.**
	Teratogenicity:	**This product is not expected to cause teratogenic effects in humans.**
	Reproductive Toxicity:	**This product is not expected to cause reproductive harm in humans.**
11.6	Irritancy of Product: **NA**	
11.7	Biological Exposure Indices: **NA**	
11.8	Physician Recommendations: **The viscosity range of the product(s) represented by this MSDS is between 100 and 400 SUS at 100°F. Accordingly, upon ingestion there is a moderate risk of aspiration. Careful gastric lavage or emesis may be considered to evacuate large quantities of material. Subcutaneous or intramuscular injection requires prompt surgical debridement.**	

12. ECOLOGICAL INFORMATION

12.1	Environmental Stability: **Analysis for ecological effects has not been conducted on this product. However, if spilled, this product and any contaminated soil or water may be harmful to human, animal, and aquatic life. Also, the coating action associated with petroleum and petroleum products can be harmful or fatal to aquatic life and waterfowl.**
12.2	Effect on Plants & Animals: **An environmental fate analysis has not been conducted on this specific product. However, plants and animals may experience harmful or fatal effects when coated with petroleum-based products.**
12.3	Effect on Aquatic Life: **Petroleum-based (mineral) lube oils will normally float on water. In stagnant or slow-flowing waterways, an oil layer can cover a large surface area. As a result, this oil layer might limit or eliminate natural atmospheric oxygen transport into the water. With time, if not removed, oxygen depletion in the waterway can result in a loss of marine life or create an anaerobic environment. This material contains phosphorus which is a controlled element for disposal in effluent waters in most sections of North America. Phosphorus is known to enhance the formation of algae. Severe algae growth can reduce oxygen content in the water possibly below levels necessary to support marine life.**

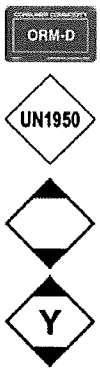
13. DISPOSAL CONSIDERATIONS

13.1	Waste Disposal: **Dispose of in accordance with local & state or provincial hazardous waste laws. U.S. EPA Characteristic Hazardous Waste: D001 (ignitability)**
13.2	Special Considerations: **If the material is unsuitable for recycling or reclamation, enclosed-controlled incineration is recommended unless otherwise prohibited by local ordinance.**

14. TRANSPORTATION INFORMATION

The basic description (ID Number, proper shipping name, hazard class & division, packing group) is shown for each mode of transportation. Additional descriptive information may be required by 49 CFR, IATA/ICAO, IMDG and the CTDGR.

14.1	49 CFR (GND): **CONSUMER COMMODITY, ORM-D**
14.2	IATA (AIR): **ID8000, CONSUMER COMMODITY, 9, PACKING INSTRUCTION Y963**
14.3	IMDG (OCN): **UN1950, AEROSOLS, 2.1, LTD QTY**
14.4	TDGR (Canadian GND): **LIMITED QUANTITY / QUANTITÉ LIMITÉE**
14.5	ADR/RID (EU): **UN1950, AEROSOLS, 2.1, LTD QTY**
14.6	MEXICO (SCT): **UN1950, AEROSOLES, 2.1, CANTIDAD LIMITADA**
14.7	ADGR (AUS): **UN1950, AEROSOLS, 2.1, LTD QTY**



15. REGULATORY INFORMATION

15.1	SARA Reporting Requirements: **This product does not contain any substances that are subject to SARA Section 313 reporting requirements.**
15.2	SARA Threshold Planning Quantity: **NA**
15.3	TSCA Inventory Status: **All chemical substances of this product are listed on the TSCA inventory or are otherwise exempt from inventory status.**
15.4	CERCLA Reportable Quantity (RQ): **NA**
15.5	Other Federal Requirements: **NA**
15.6	Other Canadian Regulations **All chemical substances of this product are listed on the CEPA DSL/NDSL or are exempt from list requirements. This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.**
15.7	State Regulatory Information: **New Jersey Worker & Community Right to Know Act, N.J.A.C. 8:59-5 Labeling Information: Lubricating Oil Distillates (Petroleum), Hydrotreated Heavy Paraffinic can be found on the following state right to know lists: California, Massachusetts, Minnesota, New Jersey, Pennsylvania, and Rhode Island.**
15.8	67/548/EEC (European Union) Requirements: **The primary components of this product are listed in Annex I of EU Directive 67/548/EEC:** **Distillates (Petroleum), Hydrotreated Heavy Paraffinic: (Xi) Irritant.** **Risk Phrases (R): 36-66 – Irritating to eyes. Repeated exposure may cause skin dryness or cracking.** **Safety Phrases (S): (2)-9-16 - Keep out of reach of children. Keep container in a well-ventilated place. Keep away from sources of ignition. No smoking.** **Petroleum Gases, Liquefied Sweetened: (F+) Highly Flammable.** **Risk Phrases (R): 12 – Extremely flammable.** **Safety Phrases (S): (2)-9-16-45-53 – Keep out of reach of children. Keep container in a well-ventilated place. Keep away from sources of ignition. No smoking. Avoid exposure-obtain special instructions before use. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).** **HazChem Code: None allocated. Poison schedule: S5**

16. OTHER INFORMATION

16.1	Other Information: **NA**
16.2	Terms & Definitions: **Please see next to last 2 pages of this MSDS.**
16.3	Disclaimer: This Material Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR §1910.1200. Other government regulations must be reviewed for applicability to this product. To the best of ShipMate's & K & N Engineering's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either expressed or implied, are provided. The information contained herein relates only to the specific product(s). If this product(s) is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.
16.4	Prepared for: **K & N Engineering, Inc.** **PO Box 1329** **Riverside, CA 92502** **Phone: +1 (800) 858-3333** **Fax: +1 (951) 826-4001** **e-mail: tech@knfilters.com**
16.5	Prepared by: **Steven Charles Hunt** **ShipMate, Inc.** **780 Buckaroo Trail, Suite D** **Sisters, OR 97759 USA** **Phone: +1 (310) 370-3600** **Fax: +1 (310) 370-5700** **e-mail: shipmate@shipmate.com**

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these that are commonly used include the following:

GENERAL INFORMATION:

CAS No.	Chemical Abstract Service Number

EXPOSURE LIMITS IN AIR:

ACGIH	American Conference on Governmental Industrial Hygienists
TLV	Threshold Limit Value
OSHA	U.S. Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
IDLH	Immediately Dangerous to Life and Health

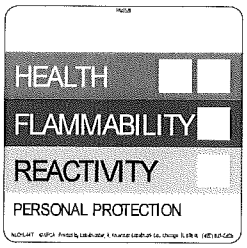
FIRST AID MEASURES:

CPR	Cardiopulmonary resuscitation - method in which a person whose heart has stopped receives manual chest compressions and breathing to circulate blood and provide oxygen to the body.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: HMIS

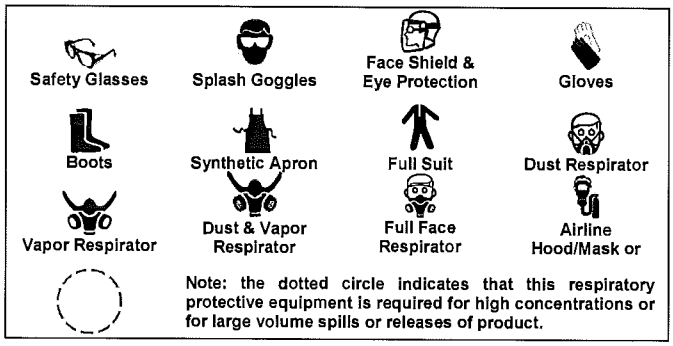
HEALTH, FLAMMABILITY & REACTIVITY RATINGS:

0	Minimal Hazard
1	Slight Hazard
2	Moderate Hazard
3	Severe Hazard
4	Extreme Hazard



PERSONAL PROTECTION RATINGS:

A	
B	
C	
D	
E	
F	
G	
H	
I	
J	
K	
X	Consult your supervisor or S.O.P. for special handling directions.



FLAMMABILITY LIMITS IN AIR:

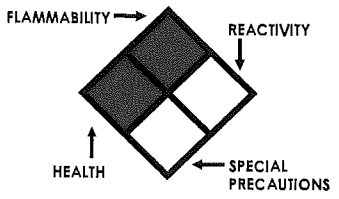
Autoignition Temperature	Minimum temperature required to initiate combustion in air with no other source of ignition
LEL	Lower Explosive Limit - lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source
UEL	Upper Explosive Limit - highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source

OTHER STANDARD ABBREVIATIONS:

NA	Not Available
NR	No Results
NE	Not Established
NF	Not Found
ND	Not Determined
ML	Maximum Limit
SCBA	Self-Contained Breathing Apparatus

NATIONAL FIRE PROTECTION ASSOCIATION: NFPA HAZARD RATINGS:

0	Minimal Hazard
1	Slight Hazard
2	Moderate Hazard
3	Severe Hazard
4	Extreme Hazard
ACD	Acidic
ALK	Alkaline
COR	Corrosive
~~W~~	Use No Water
OX	Oxidizer



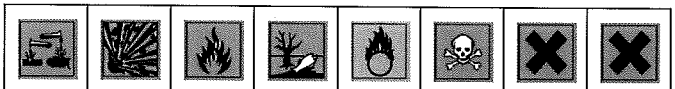
TOXICOLOGICAL INFORMATION:

LD_{50}	Lethal Dose (solids & liquids) which kills 50% of the exposed animals s
LC_{50}	Lethal concentration (gases) which kills 50% of the exposed animal
ppm	Concentration expressed in parts of material per million parts
TD_{lo}	Lowest dose to cause a symptom
TCLo	Lowest concentration to cause a symptom
TD_{lo}, LD_{lo}, & LD_o or TC, TC_o, LC_{lo}, & LC_o	Lowest dose (or concentration) to cause lethal or toxic effects
IARC	International Agency for Research on Cancer
NTP	National Toxicology Program
RTECS	Registry of Toxic Effects of Chemical Substances
BCF	Bioconcentration Factor
TL_m	Median threshold limit
log K_{ow} or log K_{oc}	Coefficient of Oil/Water Distribution

REGULATORY INFORMATION:

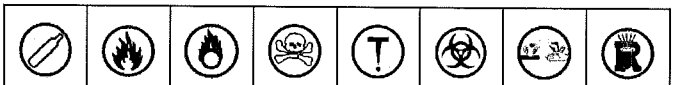
CPR	Canada's Controlled Product Regulations
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
EU	European Union (European Union Directive 67/548/EEC)
DSL	Canadian Domestic Substance List
MAK	Mandat und die Arbeitsweise der Kommission (Work Area Commission)
NDSL	Canadian Non-Domestic Substance List
NOHSC	National Occupational Health & Safety Code (Australia)
PSL	Canadian Priority Substances List
TC	Transport Canada
TSCA	U.S. Toxic Substance Control Act
WHMIS	Canadian Workplace Hazardous Material Information System

EC INFORMATION:



C	E	F	N	O	T+	Xi	Xn
Corrosive	Explosive	Flammable	Harmful	Oxidizing	Toxic	Irritant	Harmful

WHMIS INFORMATION:



A	B	C	D1	D2	D3	E	F

CHEMTREC In-Country Dial Numbers	Local # Provided in Country	Toll Free in Country*	Greeting Language

AFRICA			
CHEMTREC South Africa*		0-800-983-611	English

SOUTH AMERICA			
CHEMTREC Argentina (Buenos Aires)	+(54)-1159839431		Latin American Spanish
CHEMTREC Brazil (Rio De Janeiro)	+(55)-2139581449		Portuguese
CHEMTREC Chile (Santiago)	+(56)-225814934		Latin American Spanish
CHEMTREC Colombia *		01800-710-2151	Latin American Spanish
CHEMTREC Mexico*		01-800-681-9531	Latin American Spanish
CHEMTREC Peru (Lima)	+(51)-17071295		Latin American Spanish

ASIA			
CHEMTREC China*	4001-204937		Mandarin
CHEMTREC Hong Kong (Hong Kong)*		800-968-793	Cantonese
CHEMTREC India *		000-800-100-7141	Hindi
CHEMTREC Indonesia*		001-803-017-9114	Indonesian
CHEMTREC Japan (Tokyo)	+(81)-345209637		Japanese
CHEMTREC Malaysia *		1-800-815-308	Malay
CHEMTREC Philippines *		1-800-1-116-1020	Tagalog
CHEMTREC Philippines (Manila)	+(63) 632-395-3308		Tagalog
CHEMTREC Singapore*		800-101-2201	English and Mandarin
CHEMTREC Singapore	+(65)-31581349		English and Mandarin
CHEMTREC South Korea*		00-308-13-2549	Korean
CHEMTREC Taiwan*		00801-14-8954	Mandarin
CHEMTREC Thailand *		001-800-13-203-9987	Thai

AUSTRALASIA			
CHEMTREC Australia (Sydney)	+(61)-290372994		English
CHEMTREC New Zealand (Auckland)*	+(64)-98010034		English

EUROPE			
CHEMTREC Belgium (Brussels)	+(32)-28083237		French and Flemish
CHEMTREC Czech Republic (Prague)	+(420)-228880039		Czech
CHEMTREC Denmark	+(45)-69918573		Danish
CHEMTREC France	+(33)-975181407		French
CHEMTREC Germany *		0800-181-7059	German
CHEMTREC Hungary (Budapest)	+(36)-18088425		Hungarian
CHEMTREC Italy *		800-789-767	Italian
CHEMTREC Italy (Milan)	+(39)-0245557031		Italian
CHEMTREC Netherlands	+(31)-858880596		Dutch
CHEMTREC Poland (Warsaw)	+(48)-223988029		Polish
CHEMTREC Portugal	+(351)-308801773		Portuguese
CHEMTREC Russia*		8-800-100-6346	Russian
CHEMTREC Slovakia (Bratislava)	+(421)-233057972		Slovak
CHEMTREC Spain*		900-868538	European Spanish
CHEMTREC Sweden (Stockholm)	+(46)-852503403		Swedish
CHEMTREC Switzerland (Zurich)	+(41)-435016715		Swiss German, French and Italian
CHEMTREC UK (London)	+(44)-870-8200418		English

MIDDLE EAST			
CHEMTREC Bahrain (Bahrain)	+(973)-16199372		Arabic
CHEMTREC Israel (Tel Aviv)	+(972)-37630639		Hebrew

*Phone numbers for countries marked with an asterisk must be dialed within the country

HENKEL CORPORATION
6685 KENNEDY ROAD,SUITE #1
MISSISSAUGA, ONTARIO CANADA L5T 3A5
(905) 696-2770

PRODUCT : LEPAGE CONTACT CEMENT THINNER/CLEANER

SECTION 01: PRODUCT INFORMATION

MANUFACTURER.....HENKEL CORPORATION
6685 KENNEDY ROAD,SUITE #1
MISSISSAUGA, ONTARIO
CANADA ; L5T 3A5
(905) 696-2770
AFTER HOURS - CANUTEC (613) 996-6666
WHMIS CLASSIFICATION WHMIS.....B2 D2B. D2B, D2A, E. WHEN THIS PRODUCT IS LABELLED AS A CONSUMER PRODUCT
CLASSIFICATION WHMIS IT IS EXEMPT FROM WHMIS REGULATIONS. (SEE SECTION 12(f) OF THE HAZARDOUS
CLASSIFICATION WHMIS PRODUCTS ACT).
CLASSIFICATION WHMIS
CLASSIFICATION
T.D.G. CLASSIFICATION.....HEPTANE SOLUTIONS CLASS 3 UN1993 PG II. WHEN THIS PRODUCT IS LABELLED AS A
CONSUMER COMMODITY IT IS EXEMPT FROM T.D.G. REGULATIONS
PRODUCT NAME.....LEPAGE CONTACT CEMENT THINNER/CLEANER
CHEMICAL FAMILY.....ORGANIC SOLVENT
MATERIAL USE.....ADHESIVE PRIMER. THINNER.

SECTION 02: HAZARDOUS INGREDIENTS

HAZARDOUS INGREDIENTS	%	EXPOSURE LEVELS	C.A.S. #	LD/50, ROUTE, SPECIES	LC/50, ROUTE, SPECIES
Solvent naptha (petroleum), light aliphatic	60-100	TLV: 300ppm 8hrTWA PEL: 500ppm 8hrTWA	64742-89-8	>5g/kg,oral,rat >3.16g/kg,skin, rabbit	Not available
Toluene	10 - 30	TLV-TWA:188mg/m3 PEL-TWA:375mg/m3	108-88-3	2.6-7.5g/kg,oral,rat 14.1ml/kg,skin,rbt	8800 ppm,4hr,rat
Acetone	10 - 30	TLV-TWA: 750 ppm	67-64-1	3g/kg,oral,mouse 5.8g/kg,oral,rat 20g/kg,skin,rabbit	Not available

SECTION 03: PHYSICAL DATA

PHYSICAL STATE.....Liquid
APPEARANCE & ODOUR.....Colourless. Hydrocarbon odour
ODOUR THRESHOLD (ppm).....Not available
VAPOUR PRESSURE (mm Hg).....Not available
VAPOUR DENSITY (AIR=1).....Greater than 1
BY VOLUME
BY WEIGHT
EVAPORATION RATE.....>1 (Butyl Acetate = 1)
BOILING POINT (deg C).....56 deg C
pH.....Not applicable
SPECIFIC GRAVITY.....0.7-0.8
SOLUBILITY IN WATER (% W/W).....Miscible
COEFFICIENT OF WATER/OIL.....Not available
DISTRIBUTION

SECTION 04: FIRE & EXPLOSION DATA

FLAMMABILITY.....Yes
IF YES, UNDER WHICH.....Static discharge possible. Avoid ignition sources in the presence of
CONDITIONS? flammable or combustible liquids.
AUTO IGNITION TEMPERATURE.....> 250 deg C
EXTINGUISHING MEDIA.....Foam. Dry chemical. CO2
SPECIAL PROCEDURES.....A solid stream of water directed on hot and/or burning material may cause
violent frothing. Fire fighters should be equipped with self-contained
breathing apparatus to protect against potentially toxic and irritating
fumes.
FLASH POINT (C), METHOD.....-12 deg C, CC
LOWER FLAMMABLE LIMIT (% VOL)....1.0
UPPER FLAMMABLE LIMIT (% VOL)....10.0
HAZARDOUS COMBUSTION PRODUCTS....Oxides of carbon (CO,CO2). Hydrocarbons

SECTION 05: REACTIVITY DATA

CHEMICAL STABILITY:
YES.....Under normal conditions
NO, WHICH CONDITIONS ?
COMPATIBILITY WITH OTHER
SUBSTANCES:
YES
NO, WHICH ONES?.....Strong oxidizing agents

PRODUCT : LEPAGE CONTACT CEMENT THINNER/CLEANER

SECTION 05: REACTIVITY DATA

REACTIVITY CONDITIONS ?.....Excessive heat, sparks and open flame. KEEP AWAY FROM SPARKS OR OPEN FLAME.
HAZARDOUS PRODUCTS OF DECOMPOSITION.....Oxides of carbon (CO,CO2) at high temperatures.

SECTION 06: TOXICOLOGICAL PROPERTIES

SKIN CONTACT.....Prolonged or repeated contact may cause dryness. Can cause drying and defatting of skin leading to irritation and dermatitis.
SKIN ABSORPTION.....May be absorbed by the skin.
EYE CONTACT.....Direct contact may cause moderate to severe irritation and moderate transient corneal injury.
INHALATION.....High vapour concentrations are irritating to the eyes and the respiratory tract. May cause headaches and dizziness; are anaesthetic. May affect central nervous system.
INGESTION.....Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting, may cause bronchopneumonia or pulmonary edema. May cause irritation of the gastrointestinal tract.
EFFECTS OF ACUTE EXPOSURE.....Refer to route of entry.
EFFECTS OF CHRONIC EXPOSURE.....Dermatitis. May aggravate existing eye, skin, and lung conditions. Prolonged or repeated contact can cause nervous system damage.
LD 50 OF MATERIAL, SPECIES & ROUTE.....See hazardous ingredients section (2)
LC 50 OF MATERIAL, SPECIES & ROUTE.....See hazardous ingredients section (2).
EXPOSURE LIMIT OF MATERIAL.....See hazardous ingredients section (2)
IRRITANCY OF MATERIAL.....Refer to route of entry
SENSITIZING CAPABILITY OF MATERIAL.....None known
TERATOGENICITY OF MATERIAL.....Not available
CARCINOGENICITY OF MATERIAL.....Not indicated
REPRODUCTIVE EFFECTS.....Not available
MUTAGENICITY OF MATERIAL.....Not available
SYNERGISTIC MATERIALS.....Not available

SECTION 07: PREVENTATIVE MEASURES

GLOVES/ TYPE.....Wear impervious gloves (in neoprene or rubber).
RESPIRATORY/TYPE.....None required under normal use. Use a NIOSH/MSHA approved respirator whenever mist or spray is generated.
EYE/TYPE.....Safety glasses with side-shields
FOOTWEAR/TYPE.....Standard work shoes.
CLOTHING/TYPE.....Standard work clothes.
VENTILATION REQUIREMENTS.....Explosion-proof exhaust ventilation. Avoid breathing mists; if general ventilation or local exhaust is inadequate, persons exposed to mists should wear approved breathing devices.
LEAK/SPILL.....Eliminate all sources of ignition. Stop leak if safe to do so. For small spills:. Wipe up or absorb with sand or other absorbent material. For large spills:. Dike far ahead of spill for later disposal. No smoking, flames or flares in hazard area! Keep unnecessary people away.
WASTE DISPOSAL.....Dispose of as a flammable material in accordance with current local, provincial and federal regulations.
HANDLING PROCEDURES AND EQUIPMENT.....Keep away from heat, sparks, and open flame. Ventilate adequately, otherwise wear an appropriate breathing apparatus. Wear neoprene gloves if direct contact is likely; wear eye protection. Avoid contact with strong oxidizers. Use adequate ventilation. Do not take internally. Wash thoroughly after handling.
STORAGE NEEDS.....Store in a cool and dry place, for product integrity. KEEP AWAY FROM CHILDREN. Keep away from heat, sparks, and open flames.
SPECIAL SHIPPING INSTRUCTIONS.....Ship in accordance with applicable Transportation of Dangerous Goods (TDG) regulations.

SECTION 08: FIRST AID MEASURES

EYE CONTACT.....Immediately flush with water for a minimum of 15 minutes holding lids apart to ensure flushing of entire surface. Washing within 1 minute is essential to achieve maximum effectiveness. Seek medical attention immediately.
INGESTION.....Dilute with large quantities of water or milk. DO NOT induce vomiting. Get immediate medical attention. Never give anything by mouth to an unconscious person.
INHALATION.....Remove to fresh air. If breathing is difficult, give oxygen. If breathing has stopped, give artificial respiration. Get medical attention.
SKIN CONTACT.....Remove contaminated clothing. Wash affected area with water and soap. Seek medical attention if irritation occurs or persists. Wash clothing before reuse.

SECTION 09: PREPARATION INFORMATION

PREPARED BY:.....Regulatory Affairs
TELEPHONE NUMBER:.....(440)937-7000

PRODUCT : LEPAGE CONTACT CEMENT THINNER/CLEANER

SECTION 09: PREPARATION INFORMATION

DISCLAIMER2:.....All information, recommendations, and suggestions appearing herein concerning our product are based upon tests and data believed to be reliable. However, it is the user's responsibility to determine the safety, toxicity, and suitability for his own use of the product described herein. Since the actual use by others is beyond our control, no guarantee, express or implied, is made by Henkel Corporation as to the effects of such use, the results obtained, or the safety and toxicity of the product nor does Henkel Corporation assume any liability arising out of use, by others, of the product referred to herein. The information herein is not to be construed as absolutely complete since additional information may be necessary or desirable when particular or exceptional conditions or circumstan ces exist or because of applicable laws or government regulations.

PREPARATION DATE.....FEB 04/2008

CANUTEC EMERGENCY (613) 996-6666

Material Safety Data Sheet

Revision Number: 000.0

Issue date: 11/22/2010

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: LePage Prestite Blue Contact Cement
Product use: Adhesive
IDH number: 1504619
Region: Canada

Company address:
Henkel Canada Corporation
6685 Kennedy Road, Suite #1
Mississauga, Ontario L5T 3A5

Contact information:
Telephone: 800.624.7767
MEDICAL EMERGENCY Phone: Poison Control Center
1-877-671-4608 (toll free) or 1-303-592-1711
TRANSPORT EMERGENCY Phone: CHEMTREC
1-800-424-9300 (toll free) or 1-703-527-3887

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Physical state: Clear
Color: Yellow
Odor: Solvent
WHMIS hazard class: B.2, D.2.B

DANGER: EXTREMELY FLAMMABLE.
VAPOR HARMFUL.
MAY BE HARMFUL IF SWALLOWED.
CAUSES EYE, SKIN AND RESPIRATORY TRACT IRRITATION.

Relevant routes of exposure: Eyes, Inhalation, Skin, Ingestion

Potential Health Effects

Inhalation: Vapors may cause headaches, nausea, dizziness and respiratory tract irritation.
Skin contact: Irritating to skin.
Eye contact: Liquid or vapors may irritate the eyes.
Ingestion: Harmful if swallowed.

Existing conditions aggravated by exposure: Not available

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous components	CAS NUMBER	%
Solvent naphtha (petroleum), light aliphatic	64742-89-8	30 - 60
Methyl ethyl ketone	78-93-3	10 - 30
n-Heptane	142-82-5	10 - 30
1,3-Butadiene, 2-chloro-, homopolymer	9010-98-4	10 - 30
Propyl acetate	109-60-4	5 - 10

4. FIRST AID MEASURES

Inhalation: Move to fresh air, consult doctor if complaint persists.

Skin contact: Rinse immediately with plenty of running water, seek medical advice if necessary.

Eye contact: In case of contact with the eyes, rinse immediately with plenty of water for 15 minutes, and seek immediate medical attention.

Ingestion: Do not induce vomiting. Seek medical advice.

5. FIRE FIGHTING MEASURES

Flash point: -9 °C (15.8 °F) no method

Autoignition temperature: Not available

Flammable/Explosive limits - lower: Not available

Flammable/Explosive limits - upper: Not available

Extinguishing media: Water spray (fog), foam, dry chemical or carbon dioxide.

Special firefighting procedures: Wear self contained breathing apparatus. Wear full protective clothing.

Unusual fire or explosion hazards: None known

Hazardous combustion products: Carbon dioxide. Carbon monoxide.

Sensitivity to Mechanical Impact: Not available

Sensitivity to static discharge: Not available

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions: Do not allow product to enter sewer or waterways.

Clean-up methods: Soak up with inert absorbent. Store in a closed container until ready for disposal.

7. HANDLING AND STORAGE

Handling: Prevent contact with eyes, skin and clothing. Do not breathe vapor and mist. Wash thoroughly after handling.

Storage: Keep the container tightly closed and in a cool, well-ventilated place.

For information on product shelf life, please review labels on container or check the Technical Data Sheet.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous components	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Solvent naphtha (petroleum), light aliphatic	None	None	None	None
Methyl ethyl ketone	200 ppm TWA 300 ppm STEL	200 ppm (590 mg/m3) TWA	None	None
n-Heptane	400 ppm TWA 500 ppm STEL	500 ppm (2,000 mg/m3) TWA	None	None
1,3-Butadiene, 2-chloro-, homopolymer	None	None	None	None
Propyl acetate	200 ppm TWA 250 ppm STEL	200 ppm (840 mg/m3) TWA	None	None

Engineering controls: Use local ventilation if general ventilation is insufficient to maintain vapor concentration below established exposure limits.

Respiratory protection:	Use NIOSH approved respirator if there is potential to exceed exposure limit(s).
Eye/face protection:	Safety goggles or safety glasses with side shields.
Skin protection:	Disposable rubber or plastic gloves. Use impermeable gloves and protective clothing as necessary to prevent skin contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Clear
Color:	Yellow
Odor:	Solvent
Odor threshold:	Not available
pH:	Not available
Vapor pressure:	Not available
Boiling point/range:	Not available
Melting point/ range:	Not available
Vapor density:	Not available
Flash point:	-9 °C (15.8 °F) no method
Flammable/Explosive limits - lower:	Not available
Flammable/Explosive limits - upper:	Not available
Autoignition temperature:	Not available
Evaporation rate:	Not available
Solubility in water:	Not available
Partition coefficient (n-octanol/water):	Not available
VOC content:	Not available

10. STABILITY AND REACTIVITY

Stability:	Stable at normal conditions.
Hazardous reactions:	Not available
Hazardous decomposition products:	In the event of a fire, carbon monoxide (CO) and carbon dioxide (CO2) are released.
Incompatible materials:	Strong oxidizing agents.
Conditions to avoid:	Heat, flames, sparks and other sources of ignition.

11. TOXICOLOGICAL INFORMATION

Toxicologically synergistic products: Not available

Refer to the following for Irritancy of Product, Sensitization to Product, Carcinogenicity, Reproductive Toxicity, Teratogenicity, and Mutagenicity.

Hazardous components	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)	ACGIH Carcinogen
Solvent naphtha (petroleum), light aliphatic	No	No	No	No
Methyl ethyl ketone	No	No	No	No
n-Heptane	No	No	No	No
1,3-Butadiene, 2-chloro-, homopolymer	No	No	No	No
Propyl acetate	No	No	No	No

Hazardous components	LD50s and LC50s	Health Effects/Target Organs
Solvent naphtha (petroleum), light aliphatic	None	Irritant
Methyl ethyl ketone	Oral LD50 (RAT) = 2,300 - 3,500 mg/kg Oral LD50 (RAT) = 4,500 - 6,800 mg/kg Dermal LD50 (rabbit) > 8,000 mg/kg Inhalation LC50 (RAT, 4 h) = 11,700 mg/l	Irritant, Central nervous system
n-Heptane	Inhalation LC50 (RAT, 4 h) = 103 mg/l	Central nervous system, Irritant
1,3-Butadiene, 2-chloro-, homopolymer	None	No Target Organs
Propyl acetate	Oral LD50 (RAT) = 9,370 mg/kg Oral LD50 (rabbit) = 6.64 g/kg	Central nervous system, Irritant

12. ECOLOGICAL INFORMATION

Ecological information: Not available

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Follow all local, state, federal and provincial regulations for disposal.

14. TRANSPORT INFORMATION

The shipping classification in this section are for bulk packaging only. Shipping classification may be different for non-bulk packaging as exceptions may apply. Refer to shipping documents for package specific transportation classification.

Canada Transportation of Dangerous Goods - Ground

Proper shipping name: ADHESIVES
Hazard class or division: 3
Identification number: UN 1133
Packing group: II

International Air Transportation (ICAO/IATA)

Proper shipping name: Adhesives
Hazard class or division: 3
Identification number: UN 1133
Packing group: II

Water Transportation (IMO/IMDG)

Proper shipping name: ADHESIVES (Heptanes)
Hazard class or division: 3
Identification number: UN 1133
Packing group: II
Marine pollutant: Heptanes

15. REGULATORY INFORMATION

Canada Regulatory Information

CEPA DSL/NDSL Status: All components are listed on or are exempt from listing on the Canadian Domestic Substances List.

United States Regulatory Information

TSCA 8 (b) Inventory Status: All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.

16. OTHER INFORMATION

This material safety data sheet contains changes from the previous version in sections: First issue.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulation (CPR), and the MSDS contains all the information required by the CPR.

Prepared by: Karim Nasr, Regulatory Affairs Specialist

DISCLAIMER: The data contained herein are furnished for information only and are believed to be reliable. However, Henkel Corporation does not assume responsibility for any results obtained by persons over whose methods Henkel Corporation has no control. It is the user's responsibility to determine the suitability of Henkel's products or any production methods mentioned herein for a particular purpose, and to adopt such precautions as may be advisable for the protection of property and persons against any hazards that may be involved in the handling and use of any of Henkel Corporation's products. In light of the foregoing, Henkel Corporation specifically disclaims all warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation further disclaims any liability for consequential or incidental damages of any kind, including lost profits.

SECTION I: IDENTIFICATION OF PRODUCT

COMPANY:	**Diversity Technologies Corp.** **8750 – 53rd Ave.** **Edmonton, AB T6E 5G2**	DATE: PHONE: FAX:	**November 30, 2017** **780-440-4923** **780-469-1899**
PRODUCT NAME:	**LINSEED SOAP**		
PRODUCT USE:	Lubricant		
CHEMICAL FAMILY:	Not available	CAS #:	Not available

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

WHMIS CLASSIFICATION:	Not WHMIS controlled.
WORKPLACE HAZARD:	Not applicable

TRANSPORTATION OF DANGEROUS GOODS (TDG)

PROPER SHIPPING NAME:	Not regulated under TDG
TDG CLASSIFICATION:	Not applicable
UN NUMBER (PIN):	Not applicable
PACKING GROUP:	Not applicable

SECTION II: HAZARDOUS INGREDIENTS

INGREDIENT	% (w/w)	CAS NUMBER	LD_{50}Oral-Rat	LC_{50}Inhal-Rat	ACGIH-TLV

Contains no hazardous ingredients.

SECTION III: HEALTH HAZARDS

ROUTE OF ENTRY:	☐ EYE CONTACT ☐ SKIN CONTACT ☐ INHALATION ☐ INGESTION
EYE CONTACT:	Causes irritation.
SKIN CONTACT:	Prolonged or repeated contact may cause slight irritation.
INGESTION:	No information available. Not considered toxic based on information available for similar materials.
INHALATION:	Not a likely source of contact during normal use.
CARCINOGENICITY:	No information available.
TERATOGENICITY:	No information available.
REPRODUCTIVE TOXICITY:	No information available.
MUTAGENICITY:	No information available.
SYNERGISTIC PRODUCTS:	No information available.

SECTION IV: FIRST AID MEASURES

SKIN CONTACT:	Wipe away excess. Removed contaminated clothing; thoroughly wash affected area with soap and water. If irritation develops and persists, obtain medical attention.
EYE CONTACT:	Immediately flush with gently flowing warm water for minimum of 15 minutes. If irritation persists, obtain medical attention.
INGESTION:	If conscious, give 1 to 2 glasses of water and induce vomiting. Keep head below hips to prevent aspiration of vomitus. Obtain medical attention. Never give anything by mouth if patient is unconscious, rapidly losing consciousness or convulsing.
INHALATION:	Move to fresh air. Apply oxygen or artificial respiration if required. If breathing difficulties, or distress, continue obtain medical attention.

SECTION V: PHYSICAL DATA

APPEARANCE AND ODOUR:	Brown liquid; mild soap odour		
SPECIFIC GRAVITY:	Not available		
BOILING POINT (°C):	100		
MELTING POINT (°C):	0		
SOLUBILITY IN WATER:	Soluble	pH:	9.5 – 11.5
PERCENT VOLATILE BY VOLUME:	Not available		
EVAPORATION RATE:	Not available		
VAPOUR PRESSURE (mmHg):	Not available		
VAPOUR DENSITY (air = 1):	Not available		
BULK DENSITY:	Not available		

SECTION VI: FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:	Not available
FLAMMABLE LIMITS:	Not available
EXTINGUISHING MEDIA:	Dry chemical, CO_2, alcohol foam or water spray.
SPECIAL FIRE FIGHTING PROCEDURES:	Self-contained breathing apparatus required for fire-fighting personnel. Move containers from fire area, or cool with water spray, if possible.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Not available.
HAZARDOUS COMBUSTION PRODUCTS:	Oxides of carbon.

SECTION VII: REACTIVITY DATA

STABILITY:	☑ STABLE	☐ UNSTABLE
INCOMPATIBILITY (CONDITIONS TO AVOID):	Avoid contact with strong oxidizers.	
CONDITIONS OF REACTIVITY:	Not available.	
HAZARDOUS DECOMPOSITION PRODUCTS:	Not available.	
HAZARDOUS POLYMERIZATION:	☑ WILL NOT OCCUR	☐ MAY OCCUR

SECTION VIII: PREVENTIVE MEASURES

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:	Not required for normal use.
VENTILATION:	Not required for normal use.
PROTECTIVE GLOVES:	Personal preference.
EYE PROTECTION:	Safety glasses with side-shields recommended.
OTHER PROTECTIVE EQUIPMENT (SPECIFY):	Wear clothing adequate to protect against exposure. Ensure eye-wash station and emergency shower are available.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Wash thoroughly after handling. Avoid contact with eyes, skin or clothing. Launder contaminated clothing before reuse. Store in a cool, dry area away from oxidizing agents.

STEPS TO BE TAKEN IN CASE THE MATERIAL IS SPILLED OR RELEASED

Use appropriate safety equipment. Scoop up excess material. Collect uncontaminated material for repackaging. Collect contaminated material in approved containers for disposal. Wipe up remaining spill with absorbent compound to prevent slipping hazard. Wash spill area thoroughly with water.

WASTE DISPOSAL METHOD

Dispose in accordance with federal, provincial and local regulations. It may be possible to dispose of uncontaminated material in land fill; check with local operator. It is the responsibility of the end-user to determine if material meets the criteria of hazardous waste at the time of disposal.

SECTION IX: PREPARATION

The information contains herein is given in good faith, but no warranty, expressed or implied, is made.

DATE ISSUED:	**November 30, 2017**
SUPERSEDES:	**November 20, 2014**
BY:	Regulatory Affairs
PHONE:	780-440-4923

PRODUCT SAFETY DATA SHEET

Product Name: Lithium-Ion Battery Packs (less than or equal to 100 Watt Hours)

* * * Section 1 – Identification * * *

Product Identifier: **Detachable Battery Packs**

Black & Decker VPX0111 (7 Volt)
Black & Decker BL1110, BL1310, BL1510, BL1512, BK1512 (10.8 Volt)
Black & Decker LB12, LBX12, LBXR12, LBXR1512 (12 Volt Max)
Black & Decker A1114L, A1514L, BL1114, BL1314, BL1514 (14.4 Volt)
Black & Decker LB16, LBX16, LBXR16 (16 Volt Max)
Black & Decker A1518L, A1118L, LB018, BL1118, BL1318, BL1518, BL2018 (18 Volt)
Black & Decker LB20, LBX20, LBXR20, LBXR2020, LB2X4020, LBXR20BT (20 Volt Max)
Black & Decker BL1336, BL1536, BL2036, BL20362 (36 Volt)
Black & Decker LBX36, LBXR36, LBXR2040, LBX2540, LBXR2540 (40 Volt Max)
Black & Decker BL1554
Black & Decker LBX1560
Bostitch 9B12070R (3.6 Volt)
Bostitch 9R201436, 9R201498, 9R209111, 9R209775 (12/10.8 Volt)
Bostitch BCB182, BCB183 (18 Volt)
Bostitch BCB203, BCB204 (20 Volt)
DEWALT DCB080 (8 Volt)
DEWALT DCB121, DCB123, DCB125, DCB127 (10.8 Volt)
DEWALT DCB120, DCB127 (12 Volt Max)
DEWALT DC9140, DE9140, DE9141, DC9144, DCB140, DCB141, DCB142, DCB143, DCB144, DCB145 (14.4 Volt)
DEWALT DC9180, DE9180, DC9181, DE9181, DC9182, DE9182, DCB180, DCB181, DCB182, DCB183, DCB183B, DCB184, DCB184B, DCB185, DCB187 (18 Volt)
DEWALT DCB200, DCB201, DCB203, DCB203BT, DCB204, DCB204BT, DCB205, DCB205BT, DCB207, DCB230 (20 Volt Max)
DEWALT DCB546 with Transport Cap. Battery pack is considered 3 batteries each having a Whr rating of 36 Whr when Transport Cap in place. (18 Volt/54 Volt)
DEWALT DCB547 with Transport Cap. Battery pack is considered 3 batteries each having a Whr rating of 54 Whr when Transport Cap in place. (18 Volt/54 Volt)
DEWALT DCB606 with Transport Cap. Battery pack is considered 3 batteries each having a Whr rating of 40 Whr when Transport Cap in place. (20Volt Max/60Volt Max)
DEWALT DCB609 with Transport Cap. Battery pack is considered 3 batteries each having a Whr rating of 60 Whr when Transport Cap in place. (20Volt Max/60Volt Max)
DEWALT DC9280, DE9280 (28 Volt)
DEWALT DC9360, DE9360, DCB361 (36 Volt)
DuBuis AB18LI300, AB18LI150, AB18LI200S, AB18LI400S, AB18LI500S (18 Volt)
Facom CL3.BA1018, CL3.BA1015, CL3.BA1020 (10.8 Volt)
Facom CL3.BA1815, CL3.BA1830, CL3.BA1820, CL3.BA1840, CL3.BA1850 (18 Volt)
MAC Tools MB120, MB127, MBR127 (12 Volt Max)
MAC Tools MB200, MB201, MB203, MB204, MB205, MBR203, MBR204, MBR205 (20 Volt Max)
MAC Tools MB120-UK, MB127-UK, MBR127-UK (10.8V)
MAC Tools MB200-UK, MB201-UK, MB203-UK, MB204-UK, MB205-UK, MBR183-UK, MBR184-UK (18 Volt)
POP EBC180, EBC181, EBC182, EBC183, EBC184 (18 Volt)
Porter-Cable PC12BL, PC12BLX, PC12BLXLW (12 Volt)
Porter-Cable PC18BL, PC18BLX, PC18BLEX (18 Volt)
Porter-Cable PCC680L, PCC681L, PCC685L, PCC682L (20 Volt Max)
Sidchrome SCMT90050, SCMT90053 (10.8 Volt)
Sidchrome SCMT90051, SCMT90052, SCMT90055, SCMT90056 (18 Volt)
Stanley FatMax FMC085L (10.8 Volt)
Stanley FatMax FMC080L (12 Volt Max)
Stanley FatMax FMC585L (14.4 Volt Max)
Stanley FatMax FMC680L, FMC684L, FMC685L, FMC686L, FMC687L, FMC688L,

Integral Battery Packs (contained within products, non-removable)

7.2 Volt- DB72L+, ORB72L+, MPP72L+, EPP72L15D+, EPP72L20D+, G9L72+
8 Volt – 18650-2S
10.8 Volt – DB108L+, 315LPF+, MPP108L+, MPP108LP+, G9L108+, FL108L+
14.4 Volt – DB144L+, 415LPF+, MPP144L+
18 Volt – DB18L+, FV18L+, 515LPF+, MPP18L+
21.6 Volt – HPP6CL+
32.4 Volt – HPP9CL+

Note: + can be replaced by additional letters or numbers.

Notes: 1. A suffix following Catalog Number (i.e., "-XJ") may be used to designate end market.
2. Batteries may be shipped in kits with the products they are intended to power.

Manufacturer Name: Stanley Black & Decker

Manufacturer Address: 1000 Stanley Drive
New Britain, CT 06053

Phone Number: 1-860-225-5111

Emergency Phone Number: 1-888-698-2571

Recommended Use: To power Stanley Black & Decker products

Uses advised against: See instruction manual provided with product.

* * * Section 2 - Hazards Identification * * *

Classification

These batteries are not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). The batteries referenced in this document are considered "Articles," not "Materials," as defined by the Occupational Safety and Health Administration's Hazard Communication Standard, and as such are exempted from the requirements to publish MSDS sheets per the Code of Federal Regulations 29 CFR 1910.1200 (b)(6)(v). The hazards indicated below cover the abnormal situation where a battery ruptures.

Acute Toxicity – Oral	Category 4
Acute Toxicity – Dermal	Category 4
Acute Toxicity – Inhalation (Vapors)	Category 3
Acute Toxicity – Inhalation (Dusts/Mists)	Category 2
Skin corrosion/irritation	Category 1 Sub-category B
Serious eye damage/eye irritation	Category 1
Skin sensitization	Category 1
Carcinogenicity	Category 1A
Reproductive Toxicity	Category 1A
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 1

GHS Label elements, including precautionary statements

Emergency Overview

Signal Word **Danger**

Hazard Statements
Harmful if swallowed
Harmful in contact with skin
Fatal if inhaled
Causes severe skin burns and eye damage
May cause an allergic skin reaction
May cause cancer
May damage fertility or the unborn child
May cause respiratory irritation
Causes damage to organs through prolonged or repeated exposure

This product is an article (battery) which contains chemical substances. Intended use of the product should not result in exposure to the chemical substances. In case of rupture, the above hazards exist.

Appearance Solid **Physical state** Solid **Odor** None

* * * Section 3 - Composition / Information on Ingredients * * *

This battery is an article as defined by 29 CFR 1910.1200. Exposure to hazardous ingredients is not anticipated under normal product use.

Chemical Name	CAS No.	Weight - %	Trade Secret
Copper	7440-50-8	10-30	*
Steel Manufacture, chemicals	65997-19-5	7-13	*
Lithium hexafluorophosphate (LiPF6)	21324-40-3	1-3	*
Aluminum	7429-90-5	7-13	*
Lithium manganese oxide (LiMn2O4)	12057-17-9	5-10	*
Lithium Cobalt Oxide (LiCoO2)	12190-79-3	5-10	*
Lithium Nickel Manganese Cobalt Oxide (LiNiMnCoO2)	346417-97-8	5-10	*
Lithium nickel cobalt aluminum oxide (LiNiCoAlO2)	193214-24-3	5-10	*
Nickel	7440-02-0	3-7	*
Mixed Organic carbonates		10-14	*

* The exact percentage (concentration) of composition has been withheld as a trade secret.
Composition of organic carbonates in the electrolyte solvent varies.

* * * Section 4 – First-Aid Measures * * *

First Aid: Eyes

Flush eyes with lukewarm water for at least 30 minutes while holding the eyelids open. Seek immediate medical care.

First Aid: Skin

Remove contaminated clothing, shoes and leather goods. Flush with water for at least 30 minutes. Seek medical attention if symptoms persist.

First Aid: Ingestion

Never give anything by mouth if victim is unconscious. Rinse mouth thoroughly water. Do not induce vomiting. Seek immediate medical attention.

First Aid: Inhalation

Remove person to fresh air away from source of contamination.

* * * Section 5 – Fire-Fighting Measures * * *

General Fire Hazards

See Section 9 for Flammability Properties.
Battery cells may rupture when exposed to excessive heat. Electrolyte solution is flammable.

Hazardous Combustion Products

May release toxic fumes if burned or exposed to fire.

Extinguishing Media

Use appropriate extinguishing agent for surrounding fire. For damaged or ruptured cells, use Class D extinguisher or other appropriate agent. Class C fire extinguishers should be used to extinguish electrical fires. Do not use water to extinguish electrical or ruptured cell related fires.

Fire Fighting Equipment/Instructions

Firefighters should wear full protective gear.

NFPA Ratings: Health: 0 **Fire:** 0 **Reactivity:** 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

* * * Section 6 - Accidental Release Measures * * *

Containment Procedures

Stop the flow of material, if this is without risk.

Clean-Up Procedures

Absorb spill with inert material. Shovel material into appropriate container for disposal. Clean spill area with detergent and water; collect wash water for proper disposal.

Evacuation Procedures

Isolate area. Keep unnecessary personnel away.

Special Procedures

Avoid skin contact with the spilled material.

* * * Section 7 - Handling and Storage * * *

Handling Procedures

Avoid damaging or rupturing battery.

Storage Procedures

Store in a dry location at room temperature. Avoid extreme heat or fire. Keep out of reach of children.

* * * Section 8 - Exposure Controls / Personal Protection * * *

A: Component Exposure Limits

ACGIH, OSHA, and NIOSH have not developed exposure limits for any of this product's components.

Engineering Controls

Not necessary under normal product use conditions.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Not necessary under normal product use conditions. Wear safety glasses if handling a damaged battery.

Personal Protective Equipment: Skin

Not necessary under normal product use conditions. Wear neoprene or natural rubber gloves when handling a damaged battery.

Personal Protective Equipment: Respiratory

Not necessary under normal product use conditions.

Personal Protective Equipment: General

Eyewash fountains and emergency showers are required.

* * * Section 9 - Physical and Chemical Properties * * *

Appearance:	Various shaped battery	**Odor:**	None
Physical State:	Solid	**pH:**	NA
Vapor Pressure:	NA	**Vapor Density:**	NA
Boiling Point:	NA	**Melting Point:**	NA
Solubility (H2O):	Insoluble	**Specific Gravity:**	NA
Evaporation Rate:	NA	**VOC:**	NA
Octanol/H2O Coeff.:	NA	**Flash Point:**	NA
Flash Point Method:	NA	**Upper Flammability Limit (UFL):**	NA
Lower Flammability Limit (LFL):	NA	**Burning Rate:**	NA
Auto Ignition:	NA		

* * * Section 10 - Stability and Reactivity * * *

Chemical Stability

This is a stable material.

Chemical Stability: Conditions to Avoid

Avoid exposure to elevated temperatures and fire.

Incompatibility

Not Available.

Hazardous Decomposition

May release toxic fumes if burned or exposed to fire.

Possibility of Hazardous Reactions

Not Available.

* * * Section 11 - Toxicological Information * * *

Acute Dose Effects

A: General Product Information

If product is ruptured, material may cause irritation to the skin, eyes and respiratory tract.

B: Component Analysis - LD50/LC50

No LD50/LC50's are available for this product's components.

Carcinogenicity

A: General Product Information

No information available for the product.

B: Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

* * * Section 12 - Ecological Information * * *

Ecotoxicity

A: General Product Information

No information available for the product.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

No ecotoxicity data are available for this product's components.

* * * Section 13 - Disposal Considerations * * *

US EPA Waste Number & Descriptions

Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

Disposal Instructions

Recycle battery. Do not dispose of in water bodies or sewer system. All wastes must be handled in accordance with local, state and federal regulations.

See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

* * * Section 14 – Transport Information * * *

Lithium-ion batteries comply with all applicable shipping regulations as prescribed by industry and legal standards which include UN Recommendations on the Transport of Dangerous Goods; the 57th Edition of the IATA Dangerous Goods Regulations and US DOT requirements. Cells and Batteries have been tested to section 38.3 of the UN Recommendations on the Transport of Dangerous Goods Manual of Tests and Criteria. All of the batteries listed in this Safety Data Sheet are less than or equal to 100 Whrs; therefore, air shipment of up to 2 batteries without equipment in a package can be shipped as an "excepted" quantity and does not require being shipped as a fully regulated Class 9 Hazardous Material. If more than 2 batteries without equipment are being shipped in one package, using air transportation, then the package is considered a fully regulated shipment and must meet the more stringent documentation, marking, and labeling requirements. Effective April 1st, 2016, all air shipments of lithium ion batteries without equipment require the state of charge of the battery to be no greater than 30% of the rated design capacity and are banned from shipment on passenger aircraft (Cargo Aircraft Only).

Batteries Alone

UN3480, Lithium Ion Batteries

Air Shipments (IATA) – Packing Instruction 965 (Section IB for greater than 2 batteries per package, Section II for less than or equal to 2 batteries per package)

Sea Shipments (IMO-IMDG) – Special Provision 188

Europe Road Transportation (ADR) – Special Provision 188

US Road Transportation (DOT) – 49 CFR 173.185(c)

Batteries with or in Equipment

UN3481, Lithium Ion Batteries packed with equipment OR Lithium Ion Batteries contained in equipment.

Air Shipments (IATA) – Packing Instruction 966 or 967, Section II

Sea Shipments (IMO-IMDG) – Special Provision 188

Europe Road Transportation (ADR) – Special Provision 188

US Road Transportation (DOT) – 49 CFR 173.185(c)

* * * Section 15 - Regulatory Information * * *

US Federal Regulations

A: General Product Information

All components are on the U.S. EPA TSCA Inventory List.

B: Component Analysis

None of this products components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).

State Regulations

A: General Product Information

No additional information available.

B: Component Analysis - State

None of this product's components are listed on the state lists from CA, MA, MN, NJ, PA, or RI.

Canadian WHMIS Information

A: General Product Information

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations.

B: Component Analysis - WHMIS IDL

No components are listed in the WHMIS IDL.

Additional Regulatory Information

None

* * * Section 16 - Other Information * * *

Other Information

The information herein is presented in good faith and believed to be accurate as of the effective date given. However, no warranty, expressed or implied, is given. It is the buyer's responsibility to ensure that its activities comply with Federal, State or provincial, and local laws.

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration., NJTSR = New Jersey Trade Secret Registry, WHMIS = Workplace Hazardous Materials Information System (Canada)

Revision Number: 005.1

Issue date: 04/03/2020

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: **LOCTITE EA 3463 known as LOCTITE FM METAL MAGIC 40Z EN**

IDH number: 209681

Product type/use: Epoxy stick

Item number: 98853

Restriction of Use: None identified

Region: Canada

Company address:
Henkel Canada Corporation
Meadowpine Boulevard 2515
Mississauga, Ontario L5N 6C3

Contact information:
Telephone: +1 (905) 814-6511
MEDICAL EMERGENCY Phone: Poison Control Center
1-877-671-4608 (toll free) or 1-303-592-1711
TRANSPORT EMERGENCY Phone: CHEMTREC
1-800-424-9300 (toll free) or 1-703-527-3887
Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW	
DANGER:	CAUSES SKIN IRRITATION. MAY CAUSE AN ALLERGIC SKIN REACTION. CAUSES SERIOUS EYE DAMAGE. MAY CAUSE RESPIRATORY IRRITATION.

HAZARD CLASS	HAZARD CATEGORY
SKIN IRRITATION	2
SERIOUS EYE DAMAGE	1
SKIN SENSITIZATION	1
SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE	3

PICTOGRAM(S)

Precautionary Statements

Prevention: Avoid breathing dust or fumes. Wash affected area thoroughly after handling. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves, eye protection, and face protection.

Response: IF ON SKIN: Wash with plenty of water. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If skin irritation or rash occurs: Get medical attention. Take off contaminated clothing.

Storage: Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal: Dispose of contents and/or container according to Federal, State/Provincial and local governmental regulations.

Classification complies with Canadian Hazardous Products Regulations (WHMIS 2015) and is consistent with the provision of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Component(s)	CAS Number	Weight %*
Talc	14807-96-6	30 - 60
Epichlorohydrin-4,4'-isopropylidene diphenol resin	25068-38-6	10 - 30
Glass, oxide, chemicals	65997-17-3	10 - 30
2,4,6-tris(dimethylaminomethyl)phenol	90-72-2	1 - 5
Treated fumed silica	67762-90-7	1 - 5
Quartz (SiO2), <1% respirable	14808-60-7	0.1 - 1

* Exact percentages may vary or are trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. FIRST AID MEASURES

Inhalation: Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Skin contact: Immediately flush skin with plenty of water (using soap, if available). Remove contaminated clothing and footwear. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Ingestion: DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

Symptoms: See Section 11.

5. FIRE FIGHTING MEASURES

Extinguishing media: Water spray (fog), foam, dry chemical or carbon dioxide.

Special firefighting procedures: Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

Unusual fire or explosion hazards: In case of fire, keep containers cool with water spray. Closed containers may rupture (due to build up of pressure) when exposed to extreme heat.

Hazardous combustion products: Oxides of carbon. Oxides of sulfur. Halogenated compounds. Metal oxide fumes. Irritating vapors.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions: Do not allow product to enter sewer or waterways.

Clean-up methods: Remove all sources of ignition. Evacuate and ventilate spill area; dike spill to prevent entry into water system; wear full protective equipment during clean-up. Refer to Section 8 "Exposure Controls / Personal Protection" prior to clean up. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Scrape up as much material as possible. Store in a partly filled, closed container until disposal.

7. HANDLING AND STORAGE

Handling: Use only with adequate ventilation. Prevent contact with eyes, skin and clothing. Do not breathe vapor and mist. Wash thoroughly after handling. Keep container closed. Refer to Section 8.

Storage: For safe storage, store at or below 32 °C (89.6 °F)
Keep container tightly closed and in a cool, well-ventilated place away from incompatible materials. Store away from heat, sparks, flames, or other sources of ignition. Protect from direct sunlight.

Shelf Life Statement: Not available.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Talc	2 mg/m3 TWA Respirable fraction.	0.1 mg/m3 TWA Respirable. 2.4 MPPCF TWA Respirable. 20 MPPCF TWA	None	50 ppm
Epichlorohydrin-4,4'-isopropylidene diphenol resin	None	None	None	None
Glass, oxide, chemicals	5 mg/m3 TWA Inhalable fraction. 10 mg/m3 TWA Inhalable dust. 3 mg/m3 TWA Respirable fraction.	15 mg/m3 TWA Total dust. 5 mg/m3 TWA Respirable fraction.	None	None
2,4,6-tris(dimethylaminomethyl)phenol	None	None	None	None
Treated fumed silica	10 mg/m3 TWA Inhalable dust. 3 mg/m3 TWA Respirable fraction.	15 mg/m3 TWA Total dust. 5 mg/m3 TWA Respirable fraction.	None	None
Quartz (SiO2), <1% respirable	0.025 mg/m3 TWA Respirable fraction.	0.05 mg/m3 TWA (Respirable dust.) (Respirable dust.) 0.025 mg/m3 OSHA_ACT (Respirable dust.) 0.05 mg/m3 PEL Respirable dust. 2.4 MPPCF TWA Respirable. 0.1 mg/m3 TWA Respirable.	None	None

Engineering controls: Provide adequate local exhaust ventilation to maintain worker exposure below exposure limits.

Respiratory protection: Use a NIOSH approved air-purifying respirator if the potential to exceed established exposure limits exists.

Eye/face protection: Safety goggles or safety glasses with side shields. Full face protection should be used if the potential for splashing or spraying of product exists. Safety showers and eye wash stations should be available.

Skin protection: Use chemical resistant, impermeable clothing including gloves and either an apron or body suit to prevent skin contact. Neoprene, Butyl-rubber, or nitrile-rubber gloves.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Putty
Color:	Metallic, Black
Odor:	Mercaptan, Sulfur
Odor threshold:	Not available.
pH:	Not applicable
pH:	Not applicable
Vapor pressure:	Not determined
Boiling point/range:	Not available.
Melting point/ range:	Not applicable
Specific gravity:	2.247
Vapor density:	Not applicable
Flash point:	Not available.
Flammable/Explosive limits - lower:	Not applicable
Flammable/Explosive limits - upper:	Not applicable
Autoignition temperature:	Not applicable
Flammability:	Not applicable
Evaporation rate:	Not applicable
Solubility in water:	Insoluble
Partition coefficient (n-octanol/water):	Not available.
VOC content:	< 1 %
Viscosity:	Not available.
Decomposition temperature:	Not available.

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions of storage and use.
Hazardous reactions:	None under normal processing.
Hazardous decomposition products:	Oxides of carbon. Oxides of sulfur. Halogenated compounds. Metal oxide fumes. Irritating vapors.
Incompatible materials:	None identified.
Reactivity:	Not available.
Conditions to avoid:	Elevated temperatures. Protect from direct sunlight. Heat, flames, sparks and other sources of ignition. Store away from incompatible materials.

11. TOXICOLOGICAL INFORMATION

Relevant routes of exposure: Skin, Inhalation, Eyes, Ingestion

Potential Health Effects/Symptoms

Inhalation: May cause respiratory tract irritation. Inhalation of vapors or mists of the product may be irritating to the respiratory system. Abrasion of cured material such as by sanding or grinding could release respirable particles of silica quartz, a cancer hazard by inhalation. Normal use of this product causes no such release.

Skin contact: Causes skin irritation. May cause allergic skin reaction.

Eye contact: Causes serious eye damage.

Ingestion: May cause gastrointestinal tract irritation if swallowed.

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
Talc	None	Irritant, Lung, Some evidence of carcinogenicity
Epichlorohydrin-4,4'-isopropylidene diphenol resin	None	Allergen, Irritant
Glass, oxide, chemicals	None	Allergen, Respiratory
2,4,6-tris(dimethylaminomethyl)phenol	None	Irritant, Allergen
Treated fumed silica	None	Irritant
Quartz (SiO2), <1% respirable	None	Immune system, Lung, Some evidence of carcinogenicity

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Talc	No	Group 2B	No
Epichlorohydrin-4,4'-isopropylidene diphenol resin	No	No	No
Glass, oxide, chemicals	No	No	No
2,4,6-tris(dimethylaminomethyl)phenol	No	No	No
Treated fumed silica	No	No	No
Quartz (SiO2), <1% respirable	Known To Be Human Carcinogen.	Group 1	Yes

12. ECOLOGICAL INFORMATION

Ecological information: Not available.

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Follow all local, state, federal and provincial regulations for disposal.

14. TRANSPORT INFORMATION

The transport information provided in this section only applies to the material/formulation itself, and is not specific to any package/configuration.

Canada Transportation of Dangerous Goods - Ground

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

International Air Transportation (ICAO/IATA)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

Water Transportation (IMO/IMDG)

Proper shipping name:	Not regulated
Hazard class or division:	None
Identification number:	None
Packing group:	None

15. REGULATORY INFORMATION

Canada Regulatory Information

CEPA DSL/NDSL Status: All components are listed on or are exempt from listing on the Canadian Domestic Substances List.

United States Regulatory Information

TSCA 8 (b) Inventory Status: All components are listed as active or are exempt from listing on the Toxic Substances Control Act (TSCA) inventory.

16. OTHER INFORMATION

This safety data sheet contains changes from the previous version in sections: 3,8,11,15

Prepared by: Product Safety and Regulatory Affairs

Issue date: 04/03/2020

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MATERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: **LOCTITE SILVER GRADE ANTI-SEIZE LUBRICANT**

Proper Shipping Name: None allocated

Product code(s): 199012, 471321, 552091, 471322, 471319, 235014

Part Number(s): 76732 (236ml), 76741 (250g), 76769 (500g), 76731 (5kg), 76785 (10kg), 76779 (194kg)

Use: Anti-seize compound

Supplier: HENKEL AUSTRALIA PTY. LIMITED ABN 82 001 302 996
TECHNOLOGIES
135-141 Canterbury Road, Kilsyth, Victoria, 3137. Tel: (03) 9724 6444
24 HOUR EMERGENCY CONTACT NUMBER Tel: 1800 032 379

SECTION 2. HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE:
Hazardous according to the criteria of ASCC. This material has been classified as Irritant (Xi).
Risk phrase(s):
R36/38 Irritating to eyes and skin.

Safety phrase(s):
S24/25 Avoid contact with skin and eyes.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S28 After contact with skin, wash immediately with plenty of soap suds.
S37/39 Wear suitable gloves and eye/face protection.
S46 If swallowed, seek medical advice immediately and show this container or label.

DANGEROUS GOODS INFORMATION:
Not classified as Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code).

SUSDP POISON SCHEDULE: None allocated

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS:

CHEMICAL ENTITY	CAS NO.	PROPORTION
Petroleum hydrocarbons		30- 60% w/w
Graphite	[7782-42-5]	10-30%w/w
Calcium oxide	[1305-78-8]	10-30%w/w
Aluminium		<10%w/w

SECTION 4. FIRST AID MEASURES

Ingestion: If swallowed, **do not induce** vomiting. Seek medical attention or contact a Poisons Information Centre (Phone 13 11 26).

Skin: Remove contaminated clothing and wash affected areas with plenty of soap and water. If irritation occurs, seek medical attention.

Eyes: Hold eyes open and flush with water for at least 15 minutes. Seek medical attention or contact a Poisons Information Centre (Phone 13 11 26).

Inhalation: If inhaled, remove from contaminated area. For all but the most minor symptoms, arrange for patient to be seen by a doctor.

Advice to doctor: Treat symptomatically.

First Aid facilities: Eye wash and normal washroom facilities

SECTION 5. FIRE FIGHTING MEASURES

Suitable extinguishing media: Carbon dioxide, foam, dry chemical.

Hazards from combustion products: Combustible paste. In a fire, it will emit oxides of carbon and irritating fumes.

Precautions for fire fighters and special protective equipment: If there is a risk of exposure to products of combustion, then fire-fighters should wear full protective clothing and self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Wear impervious gloves, chemical goggles and waterproof boots. Contain and collect spillage with inert absorbent materials (e.g. sand, earth, vermiculite). Transfer to sealable containers suitable for storing spilled material. Use a non-flammable solvent or detergent and excess water to clean up areas in contact with spilled material. Do not contaminate watercourse. Dispose of residues in chemical waste disposal area in accordance with relevant State and Federal requirements.

SECTION 7. HANDLING AND STORAGE

Safe Handling: Observe recommendations made under SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION. Wear neoprene gloves and safety goggles.

Storage: Store indoors at ambient temperatures. Keep containers sealed when not in use. Protect from physical damage.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

National exposure standards: TWA : 5 mg/m^3 as aluminium (fumes)
2 mg/m^3 as calcium oxide

Engineering controls: If processing vapours or dusts are produced, use a local mechanical exhaust system.

Personal protective equipment: Use good industrial hygiene. Avoid contact with skin and eyes. Wear overalls, safety footwear, neoprene gloves and chemical splash goggles. Use in a well ventilated area. If inhalation risk exists, wear a respirator complying with the requirements of AS 1715 and AS 1716.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical data:

Appearance:	Silver coloured smooth paste
Specific gravity:	1.25
Solubility:	Insoluble in water
Flash point:	>150°C

SECTION 10. STABILITY AND REACTIVITY

Chemical stability: Stable under normal conditions of temperature and pressure.
Conditions to avoid: Avoid sources of ignitions.
Incompatible materials: Keep away from strong bases, alcohols and oxidising agents.
Hazardous decomposition products: When heated to decomposition, it will emit oxides of carbon and irritating fumes.

Hazardous reactions: No polymerisation will occur.

SECTION 11. TOXICOLOGICAL INFORMATION

HEALTH EFFECTS:

Acute:

Ingestion:	If swallowed, this product will cause irritation to the mouth, throat and digestive tract.
Skin:	Contact with the skin may cause irritation.
Eyes:	Contact with the eyes can cause irritation.
Inhalation:	Inhalation of vapour from the heated product may cause irritation to the nose and throat.
Chronic:	Repeated skin contact may lead to dermatitis. Repeated inhalation of graphite dusts may cause pulmonary disease. Exposure to free graphite dust is not anticipated during normal use of this product. However, grinding or machining of coated parts may release dust/fumes. Under such circumstances wear an approved respirator.

Toxicity information: None available.

SECTION 12. ECOLOGICAL INFORMATION

Do not contaminate waterways and soil.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal of this material should be undertaken by a registered chemical disposal company. Empty containers should be cleaned by a registered contractor and then recycled or disposed of at an approved land waste site.

SECTION 14. TRANSPORT INFORMATION

Not classified as Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code).

SECTION 15. REGULATORY INFORMATION

SUSDP POISON SCHEDULE: None allocated

SECTION 16. OTHER INFORMATION

Abbreviations/acronyms:
ASCC - Australian Safety and Compensation Council
SUSDP - Standard for the Uniform Scheduling of Drugs and Poisons
TWA – Time weighted average

DISCLAIMER:
The percentage weight (% w/w) of ingredients is not to be taken as a specification guaranteed by Henkel Australia Pty. Limited, but only as an approximate guide to the content of hazardous ingredients in the material. The information contained herein does not constitute a guarantee by Henkel Australia Pty. Limited concerning the properties of the material.

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Newell Rubbermaid Brands That Matter | Office Products Group

MATERIAL SAFETY DATA SHEET

MSDS # 06564

Section One: Identification

Sanford, L.P.
2707 Butterfield Road
Oak Brook, IL 60523 USA
800-323-0749 or 630-481-2000

EMERGENCY MEDICAL NUMBER:
888-786-0972

Product Name: Liquid Paper Correction Tape

Colors: White

Includes: Dryline, Dryline Auto Correct, Dryline Clip, Dryline Grip, Dryline Mini, Dryline Refillable and Refills, Precision Pen Tape, Wideline Tape.

Section Two: Hazard Identification

This product is considered safe under normal use conditions. Not for use on skin. Do not ingest.

Section Three: Composition

Titanium dioxide (13463-67-7), Magnesite (546-93-0), Silicon Dioxide (7631-86-9), polymers, resins, adhesive

Section Four: First Aid Measures

Skin Contact: Wash with plenty of soap and water

Eye Contact: Rinse with plenty of water.

Ingestion: Contact a physician.

Section Five: Fire Fighting Measures

Flash Point: Not Applicable

Flammability Limits (% by volume): Lower: Not available Upper: Not available

Extinguishing Media: Appropriate to surrounding materials.

Special Fire Fighting Measures: None

Unusual Fire and Explosion Hazards: None

Section Six: Accidental Release Measures

In Case of Spill or Accidental Release: Normal clean up

Section Seven: Handling and Storage

Handling: No special handling requirements.

Storage: No special storage requirements for consumer use. When stored in larger quantities (eg. Warehouse), store in a cool place and out of direct sunlight.

Section Eight: Exposure Controls and Personal Protection

Eye Protection: None under normal use conditions.

Clothing: None under normal use conditions.

Respirator: None under normal use conditions.

Ventilation: None under normal use conditions.

Section Nine: Physical and Chemical Properties

Boiling Point:	Not available
Specific Gravity:	Not determined
Vapor Pressure:	Not determined
Solubility in Water:	Not determined
Evaporation Rate:	Not determined
Appearance/Odor:	White to off white, odorless film

Section Ten: Stability and Reactivity

Stability:	Stable under normal storage and handling conditions.
Conditions to Avoid:	None known
Chemical Incompatibility:	None known
Hazardous Decomposition:	None known
Hazardous Polymerization:	Will not occur

Section Eleven: Toxicological Information

See Section Two: Hazard Identification for any hazards

Section Twelve: Ecological Information

Not available

Section Thirteen: Disposal Considerations

Dispose in accordance with Federal, State, and Local Regulations.

Section Fourteen: Transport Information

DOT:	Not regulated
IATA:	Not regulated
IMO:	Not regulated

Section Fifteen: Regulatory Information

TSCA: The product listed on this Material Safety Data Sheet is not listed on the Toxic Substances Control Act Inventory. All ingredients used to manufacture this product are listed on the TSCA .

Section Sixteen: Other Information

HMIS Code	
Health	N/A
Flammability	N/A
Reactivity	N/A
Personal Protection	N/A

0=Minimal / 4 = Severe

NewellRubbermaid, Inc (Sanford L.P) has been advised by Counsel that the OSHA Hazard Communication Standard and the Health Canada Workplace Hazardous Materials Information Standard do not apply to the product described in this Material Safety Data Sheet. The reasons for the exemptions are contained in 29 CFR 1910.1200(b)(6)(ix) as amended Sept 14, 2009 per the Code of Federal Regulations and also Canadian Hazardous Products Act part 12 section (f) as amended June 1, 2009. The information contained in this MSDS is forwarded to you for your information, but is not meant to imply that the product is covered by nor is this MSDS meant to comply with all requirements of the hazard communication standards.

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product identifier **LPS® Strong Steel Sticks**

Version # 01

Issue date 10-27-2014

CAS # Mixture

Part Number 60159, C60159

Product use A "ready-to-mix", fast curing, high strength adhesive epoxy putty for emergency repairs of cracks and rebuilding of surfaces on metal, concrete, wood, fiberglass and ceramics.

Manufacturer information

LPS Laboratories, a division of Illinois Tool Works, Inc.
4647 Hugh Howell Rd
Tucker, Georgia 30084
United States
www.lpslabs.com

1-800-241-8334/	770-243-8800
Chemtrec	1-800-424-9300

Supplier Not available.

2. Hazards Identification

Emergency overview DANGER

May cause cancer. Irritating to eyes and skin. May cause an allergic skin reaction.

Potential health effects

Routes of exposure Inhalation. Ingestion. Skin contact. Eye contact.

Eyes Contact with eyes may cause irritation. Do not get this material in contact with eyes.

Skin Do not get this material in contact with skin. May cause skin irritation. Allergic reactions are possible.

Inhalation May cause cancer by inhalation. May cause irritation of respiratory tract. Dusts of this product may cause irritation of the nose, throat, and respiratory tract. Repeated or prolonged inhalation may cause toxic effects. Do not breathe dust. For additional information on inhalation hazards, see Section 11 of this safety data sheet.

Ingestion Irritating. May cause nausea, stomach pain and vomiting. Do not ingest.

Chronic effects Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis. This product has the potential for generation of respirable dust during handling and use. Dust may contain respirable crystalline silica. Overexposure to dust may result in pneumocononiosis, a respiratory disease caused by inhalation of mineral dust, which can lead to fibrotic changes to the lung tissue, or silicosis, a respiratory disease caused by inhalation of silica dust, which can lead to inflammation and fibrosis of the lung tissue. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled.

Signs and symptoms Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Symptoms are prostration, gasping, pallor, and uncoordinated movements. Symptoms may include redness, edema, drying, defatting and cracking of the skin.

Potential environmental effects May cause long-term adverse effects in the environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Magnesium Silicate Hydrate	14807-96-6	30 - 60
FERROSILICON	8049-17-0	10 - 30
Glass, oxide, chemicals	65997-17-3	10 - 30
Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin	25068-38-6	10 - 30
Nepheline syenite	37244-96-5	1 - 5
SILICA, CRYSTALLINE, QUARTZ	14808-60-7	0.1 - 1

4. First Aid Measures

First aid procedures

Inhalation	Move to fresh air. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician or poison control center immediately.
Skin contact	Before washing use a dry brush to remove dust from skin. Remove and isolate contaminated clothing and shoes. Immediately flush skin with plenty of water. Call a physician or poison control center immediately. For minor skin contact, avoid spreading material on unaffected skin. Wash clothing separately before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. If a contact lens is present, DO NOT delay irrigation or attempt to remove the lens. Continue rinsing. Call a physician or poison control center immediately.
Ingestion	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse mouth thoroughly. Never give anything by mouth to a victim who is unconscious or is having convulsions. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
Notes to physician	In case of shortness of breath, give oxygen. Symptoms may be delayed.
General advice	In case of shortness of breath, give oxygen. Immediate medical attention is required. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Keep victim under observation. Keep victim warm.

5. Fire Fighting Measures

Flammable properties	Not flammable by WHMIS criteria.
Extinguishing media	
Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	None known.
Protection of firefighters	
Protective equipment for firefighters	Firefighters should wear full protective clothing including self contained breathing apparatus.
Fire fighting equipment/instructions	Use water spray to cool unopened containers.
Explosion data	
Sensitivity to static discharge	None known.
Sensitivity to mechanical impact	None known.
Hazardous combustion products	May include oxides of carbon.

6. Accidental Release Measures

Personal precautions	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. For personal protection, see section 8 of the MSDS.
Environmental precautions	Do not contaminate water.
Methods for containment	Stop leak if you can do so without risk. Prevent entry into waterways, sewer, basements or confined areas.
Methods for cleaning up	Should not be released into the environment. Dike far ahead of spill for later disposal. Avoid the generation of dusts during clean-up. Following product recovery, flush area with water. Clean up in accordance with all applicable regulations. For waste disposal, see section 13 of the MSDS.
Other information	Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling Do not get this material in contact with eyes. Do not get this material in contact with skin. Avoid prolonged exposure. Do not get this material on clothing. When using do not eat or drink. Wear personal protective equipment. Wash thoroughly after handling. Avoid release to the environment.

Storage Keep locked up. Store in a closed container away from incompatible materials. Store in a well-ventilated place. Keep away from food, drink and animal feedingstuffs. Keep out of the reach of children. Store away from incompatible materials (see Section 10 of the MSDS).

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Magnesium Silicate Hydrate (CAS 14807-96-6)	TWA	2 mg/m3	Respirable fraction.
SILICA, CRYSTALLINE, QUARTZ (CAS 14808-60-7)	TWA	0.025 mg/m3	Respirable fraction.

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value	Form
Magnesium Silicate Hydrate (CAS 14807-96-6)	TWA	2 mg/m3	Respirable particles.
SILICA, CRYSTALLINE, QUARTZ (CAS 14808-60-7)	TWA	0.025 mg/m3	Respirable particles.

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Magnesium Silicate Hydrate (CAS 14807-96-6)	TWA	2 mg/m3	Respirable.
SILICA, CRYSTALLINE, QUARTZ (CAS 14808-60-7)	TWA	0.025 mg/m3	Respirable fraction.

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Components	Type	Value	Form
Magnesium Silicate Hydrate (CAS 14807-96-6)	TWA	2 mg/m3	Respirable fraction.
SILICA, CRYSTALLINE, QUARTZ (CAS 14808-60-7)	TWA	0.025 mg/m3	Respirable fraction.

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Magnesium Silicate Hydrate (CAS 14807-96-6)	TWA	2 fibers/ml	
		2 mg/m3	Respirable particles.
Nepheline syenite (CAS 37244-96-5)	TWA	10 mg/m3	Total dust.
SILICA, CRYSTALLINE, QUARTZ (CAS 14808-60-7)	TWA	0.1 mg/m3	Respirable.

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value	Form
Magnesium Silicate Hydrate (CAS 14807-96-6)	TWA	3 mg/m3	Respirable dust.
SILICA, CRYSTALLINE, QUARTZ (CAS 14808-60-7)	TWA	0.1 mg/m3	Respirable dust.

US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value	Form
Magnesium Silicate Hydrate (CAS 14807-96-6)	TWA	0.3 mg/m3	Total dust.
		0.1 mg/m3	Respirable.
		20 mppcf	
		2.4 mppcf	Respirable.

US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value	Form
SILICA, CRYSTALLINE, QUARTZ (CAS 14808-60-7)	TWA	0.3 mg/m3	Total dust.
		0.1 mg/m3	Respirable.
		2.4 mppcf	Respirable.

Biological limit values No biological exposure limits noted for the ingredient(s).

Exposure guidelines Occupational exposure to nuisance dust (total and respirable) and respirable crystalline silica should be monitored and controlled.

Engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin protection Wear chemical protective equipment that is specifically recommended by the manufacturer. It may provide little or no thermal protection.

Respiratory protection Use a particulate filter respirator for particulate concentrations exceeding the Occupational Exposure Limit.

Hand protection Wear protective gloves.

9. Physical & Chemical Properties

Appearance Solid.

Physical state Solid.

Form Solid.

Color Dark grey; Black

Odor Sulphurous. Pungent.

Odor threshold Not available.

pH Not applicable

Vapor pressure Not available.

Vapor density Not available.

Boiling point Not available.

Melting point/Freezing point Not available.

Solubility (water) Not available.

Specific gravity Not available.

Relative density 2.247

Flash point > 199.9 °F (> 93.3 °C) Setaflash

Flammability limits in air, upper, % by volume Not available.

Flammability limits in air, lower, % by volume Not available.

Auto-ignition temperature Not available.

Evaporation rate Not available.

Viscosity Not applicable

Partition coefficient (n-octanol/water) Not available.

Other data

Decomposition temperature > 3632 °F (> 2000 °C)

Flammability (solid, gas) Flammable solid.

10. Chemical Stability & Reactivity Information

Reactivity The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability	Material is stable under normal conditions.
Conditions to avoid	Temperatures above 35 °C
Incompatible materials	None known.
Hazardous decomposition products	No hazardous decomposition products are known.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.

11. Toxicological Information

Toxicological data

Components	Species	Test Results
Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (CAS 25068-38-6)		
Acute		
Dermal		
LD50	Mouse	> 1600 mg/kg, 24 Hours
	Rabbit	> 2000 mg/kg, 24 Hours
		> 20 ml/kg, 24 Hours
	Rat	> 2000 mg/kg, 24 Hours
Oral		
LD50	Mouse	> 500 mg/kg
	Rabbit	19 mg/kg
	Rat	> 500 mg/kg
		11.3 ml/kg

Acute effects

Sensitization	May cause sensitization by skin contact.
Chronic effects	Hazardous by WHMIS criteria. Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.
Carcinogenicity	Hazardous by WHMIS criteria. In 1997, IARC (the International Agency for Research on Cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However in making the overall evaluation, IARC noted that "carcinogenicity was not detected in all industrial circumstances studied. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." (IARC Monographs on the evaluation of the carcinogenic risks of chemicals to humans, Silica, silicates dust and organic fibres, 1997, Vol. 68, IARC, Lyon, France.) Cancer hazard. In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits) concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. "There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore, preventing the onset of silicosis will also reduce the cancer risk..." (SCOEL SUM Doc 94-final, June 2003) According to the current state of the art, worker protection against silicosis can be consistently assured by respecting the existing regulatory occupational exposure limits. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled.

ACGIH Carcinogens

Magnesium Silicate Hydrate (CAS 14807-96-6)	A4 Not classifiable as a human carcinogen.
SILICA, CRYSTALLINE, QUARTZ (CAS 14808-60-7)	A2 Suspected human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

Magnesium Silicate Hydrate (CAS 14807-96-6)	2B Possibly carcinogenic to humans. 3 Not classifiable as to carcinogenicity to humans.
SILICA, CRYSTALLINE, QUARTZ (CAS 14808-60-7)	1 Carcinogenic to humans.

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/irritation	Causes eye irritation.
Mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Reproductive effects	This product is not expected to cause reproductive or developmental effects.
Teratogenicity	Not available.

Synergistic materials Not available.

12. Ecological Information

Ecotoxicological data No ecotoxicity data noted for the ingredient(s).

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Environmental effects An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Aquatic toxicity Not available.

Persistence and degradability Not available.

Other adverse effects None known.

13. Disposal Considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport Information

TDG

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

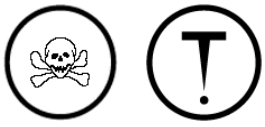
15. Regulatory Information

Canadian regulations This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS status Controlled

WHMIS classification D1B - Immediate/Serious-TOXIC
D2A - Other Toxic Effects-VERY TOXIC
D2B - Other Toxic Effects-TOXIC

WHMIS labeling



International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other Information

Recommended restrictions

Workers (and your customers or users in the case of resale) should be informed of the potential presence of respirable dust and respirable crystalline silica as well as their potential hazards. Appropriate training in the proper use and handling of this material should be provided as required under applicable regulations.

Disclaimer

LPS Laboratories cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Prepared by

Not available.

Material Safety Data Sheet

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SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: M17 Plastic Cleaner (original formulation): M1708
MANUFACTURER: Meguiar's, Inc.
DIVISION: Automotive Aftermarket

ADDRESS: Meguiar's, Inc.
17991 Mitchell South, Irvine, CA 92614

EMERGENCY PHONE: Within USA and Canada: 1-800-424-9300
Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

Issue Date: 8/20/2010
Supercedes Date: Initial Issue

Document Group: 26-8373-8

Product Use:
Intended Use: Automotive
Specific Use: Removes paint defects and sanding marks from plastic surfaces

SECTION 2: INGREDIENTS

Ingredient	C.A.S. No.	% by Wt
WATER	7732-18-5	40 - 60
HYDROTREATED LIGHT DISTILLATES	64742-47-8	10 - 30
FLUX CALCINED DIATOMACEOUS EARTH	68855-54-9	5 - 10
HYDROTREATED MIDDLE DISTILLATE	64742-46-7	5 - 10
GLYCERIN	56-81-5	5 - 10
CONDITIONERS	Trade Secret	< 5
PROCESSED CASTOR OIL	Trade Secret	1 - 5

SECTION 3: HAZARDS IDENTIFICATION

3.1 EMERGENCY OVERVIEW

Odor, Color, Grade: No appreciable odor; White, viscous lotion
General Physical Form: Liquid
Immediate health, physical, and environmental hazards: Closed containers exposed to heat from fire may build pressure and explode. Vapors may travel long distances along the ground or floor to an ignition source and flash back.
May cause target organ effects.

3.2 POTENTIAL HEALTH EFFECTS

Eye Contact:
Mild Eye Irritation: Signs/symptoms may include redness, pain, and tearing.

Skin Contact:
Mild Skin Irritation: Signs/symptoms may include localized redness, swelling, and itching.

Inhalation:
Intentional concentration and inhalation may be harmful or fatal.

Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

May be absorbed following inhalation and cause target organ effects.

Ingestion:
Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

May be absorbed following ingestion and cause target organ effects.

Target Organ Effects:
Central Nervous System (CNS) Depression: Signs/symptoms may include headache, dizziness, drowsiness, incoordination, nausea, slowed reaction time, slurred speech, giddiness, and unconsciousness.

SECTION 4: FIRST AID MEASURES

4.1 FIRST AID PROCEDURES

The following first aid recommendations are based on an assumption that appropriate personal and industrial hygiene practices are followed.

Eye Contact: Flush eyes with large amounts of water. If signs/symptoms persist, get medical attention.

Skin Contact: Wash affected area with soap and water. If signs/symptoms develop, get medical attention.

Inhalation: Remove person to fresh air. If signs/symptoms develop, get medical attention.

If Swallowed: Do not induce vomiting unless instructed to do so by medical personnel. Give victim two glasses of water. Never give anything by mouth to an unconscious person. Get medical attention.

SECTION 5: FIRE FIGHTING MEASURES

5.1 FLAMMABLE PROPERTIES

Autoignition temperature	*No Data Available*
Flash Point	> 200 °F [*Test Method:* Pensky-Martens Closed Cup]

[*Details:* D93-90]

Flammable Limits - LEL	*No Data Available*
Flammable Limits - UEL	*No Data Available*

5.2 EXTINGUISHING MEDIA

Use fire extinguishers with class B extinguishing agents (e.g., dry chemical, carbon dioxide).

5.3 PROTECTION OF FIRE FIGHTERS

Special Fire Fighting Procedures: Water may not effectively extinguish fire; however, it should be used to keep fire-exposed containers and surfaces cool and prevent explosive rupture. Wear full protective equipment (Bunker Gear) and a self-contained breathing apparatus (SCBA).

Unusual Fire and Explosion Hazards: Closed containers exposed to heat from fire may build pressure and explode. Vapors may travel long distances along the ground or floor to an ignition source and flash back.

Note: See STABILITY AND REACTIVITY (SECTION 10) for hazardous combustion and thermal decomposition information.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions

Evacuate unprotected and untrained personnel from hazard area. The spill should be cleaned up by qualified personnel. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. Warning! A motor could be an ignition source and could cause flammable gases or vapors in the spill area to burn or explode. Remember, adding an absorbent material does not remove a toxic, corrosivity or flammability hazard.

Environmental procedures

For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water. Place in a metal container approved for transportation by appropriate authorities. Dispose of collected material as soon as possible.

Clean-up methods

Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. Contain spill. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Collect as much of the spilled material as possible. Clean up residue with detergent and water.

In the event of a release of this material, the user should determine if the release qualifies as reportable according to local, state, and federal regulations.

SECTION 7: HANDLING AND STORAGE

7.1 HANDLING

For industrial or professional use only. Avoid breathing of vapors, mists or spray. Avoid prolonged or repeated skin contact. Avoid eye contact with vapors, mists, or spray. Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. Avoid contact with oxidizing agents.

7.2 STORAGE

Store away from acids. Store away from oxidizing agents.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 ENGINEERING CONTROLS

Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below Occupational Exposure Limits and/or control mist, vapor, or spray. If ventilation is not adequate, use respiratory protection equipment.

8.2 PERSONAL PROTECTIVE EQUIPMENT (PPE)

8.2.1 Eye/Face Protection

Avoid eye contact with vapors, mists, or spray.
The following eye protection(s) are recommended: Safety Glasses with side shields

.

8.2.2 Skin Protection

Avoid prolonged or repeated skin contact. Gloves not normally required.

Select and use gloves and/or protective clothing to prevent skin contact based on the results of an exposure assessment. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible materials.
Gloves made from the following material(s) are recommended: Nitrile Rubber

.

8.2.3 Respiratory Protection

Avoid breathing of vapors, mists or spray.
Select one of the following NIOSH approved respirators based on airborne concentration of contaminants and in accordance with OSHA regulations: Half facepiece or fullface air-purifying respirator with organic vapor cartridges.

8.2.4 Prevention of Swallowing

Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

8.3 EXPOSURE GUIDELINES

Ingredient	Authority	Type	Limit	Additional Information
GLYCERIN	ACGIH	TWA, as mist	10 mg/m3	
GLYCERIN	OSHA	TWA, respirable fraction	5 mg/m3	
GLYCERIN	OSHA	TWA, as total dust	15 mg/m3	
HYDROTREATED LIGHT DISTILLATES	CMRG	TWA	300 ppm	
Kerosine (petroleum)	ACGIH	TWA, as total hydrocarbon vapor, non-aerosol	200 mg/m3	Skin Notation*
PETROLEUM DISTILLATES	OSHA	TWA	2000 mg/m3	
HYDROTREATED MIDDLE DISTILLATE	CMRG	TWA	300 ppm	

SOURCE OF EXPOSURE LIMIT DATA:

ACGIH: American Conference of Governmental Industrial Hygienists
CMRG: Chemical Manufacturer Recommended Guideline
OSHA: Occupational Safety and Health Administration
AIHA: American Industrial Hygiene Association Workplace Environmental Exposure Level (WEEL)

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Odor, Color, Grade:	No appreciable odor; White, viscous lotion
General Physical Form:	Liquid
Autoignition temperature	*No Data Available*
Flash Point	> 200 °F [*Test Method:* Pensky-Martens Closed Cup] [*Details:* D93-90]
Flammable Limits - LEL	*No Data Available*
Flammable Limits - UEL	*No Data Available*
Boiling point	390 °F
Density	0.975 - 1.015 g/cm3
Vapor Density	*No Data Available*
Vapor Pressure	*No Data Available*
Specific Gravity	0.975 - 1.015 [*Ref Std:* WATER=1]
pH	5 - 6.5
Melting point	*Not Applicable*
Solubility in Water	Moderate
Evaporation rate	*No Data Available*
Volatile Organic Compounds	17.28 % weight
Kow - Oct/Water partition coef	*No Data Available*
Viscosity	1200 - 1400 centipoise

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable.

Materials and Conditions to Avoid:
10.1 Conditions to avoid
Temperatures above the boiling point

10.2 Materials to avoid
Strong acids
Strong bases
Strong oxidizing agents

Hazardous Polymerization: Hazardous polymerization will not occur.

Hazardous Decomposition or By-Products

Substance	Condition
Hydrocarbons	During Combustion
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Irritant Vapors or Gases	During Combustion

SECTION 11: TOXICOLOGICAL INFORMATION

Please contact the address listed on the first page of the MSDS for Toxicological Information on this material and/or its components.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION

Not determined.

CHEMICAL FATE INFORMATION

Not determined.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Method: Since regulations vary, consult applicable regulations or authorities before disposal.

Since regulations vary, consult applicable regulations or authorities before disposal.

SECTION 14:TRANSPORT INFORMATION

General Transportation Statement This product does not require classification by DOT, IATA, ICAO or IMDG.

ID Number(s):
14-1000-1188-2

SECTION 15: REGULATORY INFORMATION

US FEDERAL REGULATIONS

Contact Meguiar's for more information.

311/312 Hazard Categories:
Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No Immediate Hazard - Yes Delayed Hazard - No

STATE REGULATIONS

Contact Meguiar's for more information.

CHEMICAL INVENTORIES

The components of this product are in compliance with the chemical notification requirements of TSCA.

Contact Meguiar's for more information.

INTERNATIONAL REGULATIONS

Contact Meguiar's for more information.

This MSDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: OTHER INFORMATION

NFPA Hazard Classification

Health: 1 **Flammability:** 1 **Reactivity:** 0 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

No revision information is available.

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Meguiars MSDSs are available at www.Meguiars.com

SAFETY DATA SHEET

MAGNAFLOC® 1011

Section 1. Identification

Product identifier : MAGNAFLOC® 1011

Product code : Q10306

Relevant identified uses of the substance or mixture

Identified uses
Industrial applications.

Supplier's details : QUADRA CHEMICALS LTD.
3901 F.X Tessier
Vaudreuil-Dorion, QC
CANADA J7V 5V5
1-800-665-6553

Emergency telephone number (with hours of operation) : **TRANSPORTATION EMERGENCY - 24HRS/DAY - 7 DAYS/WEEK IN CANADA - CALL 1-888-922-3330**

Section 2. Hazard identification

Classification of the substance or mixture : COMBUSTIBLE DUSTS - Category 1

GHS label elements

Signal word : Warning

Hazard statements : May form combustible dust concentrations in air.

Precautionary statements

Prevention : Not applicable.

Response : Not applicable.

Storage : Not applicable.

Disposal : Not applicable.

Supplemental label elements : Keep container tightly closed. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Prevent dust accumulation.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

There are no ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.

Inhalation : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
irritation
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical powder.

Unsuitable extinguishing media : Avoid high pressure media which could cause the formation of a potentially explosible dust-air mixture.

Specific hazards arising from the chemical : May form explosible dust-air mixture if dispersed.

Hazardous thermal decomposition products : carbon oxides
nitrogen oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill : Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing dust. Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Prevent dust accumulation. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Electrical equipment and lighting should be protected to appropriate standards to prevent dust coming into contact with hot surfaces, sparks or other ignition sources. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Do not store above the following temperature: 60°C (140°F). Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

Appropriate engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 8. Exposure controls/personal protection

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields. If operating conditions cause high dust concentrations to be produced, use dust goggles.

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state : Solid. [Powder.]

Color : Off-white.

Odor : Odorless.

Odor threshold : Not available.

pH : 6 to 8 [Conc. (% w/w): 1%]

Melting point/freezing point : Decomposes

Boiling point, initial boiling point, and boiling range : Not available.

Flash point : Not applicable.

Evaporation rate : Not available.

Flammability : Not available.

Lower and upper explosion limit/flammability limit : Not applicable.

Vapor pressure : Not available.

Relative vapor density : Not applicable.

Relative density : Not available.

Solubility : Soluble in the following materials: cold water.

Solubility in water : Not available.

Partition coefficient: n-octanol/water : Not applicable.

Section 9. Physical and chemical properties and safety characteristics

Auto-ignition temperature : Not applicable.

Decomposition temperature : Not available.

Viscosity : Not applicable.

Flow time (ISO 2431) : Not available.

Particle characteristics

Median particle size : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Prevent dust accumulation.

Incompatible materials : oxidizing materials
acids
alkalis
moisture

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
MAGNAFLOC® 1011	LD50 Oral	Rat	>5000 mg/kg	-

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Section 11. Toxicological information

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Eye contact : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.

Inhalation : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
irritation
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
MAGNAFLOC® 1011	LC50 >100 mg/l LC50 >100 mg/l	Daphnia - Daphnia magna Fish - Oncorhynchus mykiss	48 hours 96 hours

Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
MAGNAFLOC® 1011	-	-	Not readily

Bioaccumulative potential

Not available.

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	TDG Classification
UN number	Not regulated.
UN proper shipping name	-
Transport hazard class(es)	-
Packing group	-
Additional information	Not available.

Section 14. Transport information

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

Canada inventory : All components are listed or exempted.

Canadian NPRI : None of the components are listed.

CEPA Toxic substances : None of the components are listed.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Section 16. Other information

History

Date of issue/Date of revision : 9 February 2023

Prepared by : Regulatory Affairs

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
LogPow = logarithm of the octanol/water partition coefficient
UN = United Nations
HPR = Hazardous Products Regulations
N/A = Not available

Procedure used to derive the classification

Classification	Justification
COMBUSTIBLE DUSTS - Category 1	On basis of test data

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

MATERIAL SAFETY DATA SHEET

Section 1: Product & Company Identification

Product Name: **Marine QD® Electronic Cleaner** (aerosol)

Product Number (s): **06102**

Product Use: Electronic cleaner

Manufacturer / Supplier Contact Information:

In United States:
CRC Industries, Inc.
885 Louis Drive
Warminster, PA 18974
www.crcindustries.com
1-215-674-4300 (General)
(800) 521-3168 (Technical)
(800) 272-4620 (Customer Service)

In Canada:
CRC Canada Co.
2-1246 Lorimar Drive
Mississauga, Ontario L5S 1R2
www.crc-canada.ca
1-905-670-2291

In Mexico:
CRC Industries Mexico
Av. Benito Juárez 4055 G
Colonia Orquídea
San Luís Potosí, SLP CP 78394
www.crc-mexico.com
52-444-824-1666

24-Hr Emergency – CHEMTREC: (800) 424-9300 or (703) 527-3887

Section 2: Hazards Identification

Emergency Overview

DANGER: Extremely Flammable. Harmful or Fatal if Swallowed. Contents Under Pressure.
Appearance & Odor: Clear, colorless liquid with alcohol odor

Potential Health Effects:

ACUTE EFFECTS:

EYE: May cause mild irritation including stinging and redness, but does not injure eye.

SKIN: Single, brief exposures may cause mild irritation. Frequent or prolonged contact may cause more severe irritation, defatting of the skin, and dermatitis.

INHALATION: High vapor concentrations are irritating to the respiratory tract and may cause headaches, dizziness, anesthesia, drowsiness, unconsciousness and other central nervous system effects, including death. May cause peripheral nervous system disorder and/or damage.

INGESTION: Low order of toxicity by ingestion. Main hazard is aspiration into the lungs during swallowing or vomiting. Small amounts aspirated into the respiratory system may cause bronchopneumonia or pulmonary adema, possibly progressing to death.

CHRONIC EFFECTS: Overexposure to n-hexane may cause progressive and potentially irreversible damage to the peripheral nervous system, particularly in the arms and legs.

TARGET ORGANS: Central nervous system, peripheral nervous system, respiratory system

Medical Conditions Aggravated by Exposure: skin and respiratory conditions

See Section 11 for toxicology and carcinogenicity information on product ingredients.

Section 3: Composition/Information on Ingredients

COMPONENT	CAS NUMBER	% by Wt.
Hexane isomers	64742-49-0 / 107-83-5	65 – 75
n-Hexane	110-54-3	5.2
Ethanol	64-17-5	< 1
1,1-Difluoroethane (HFC-152a)	75-37-6	20 - 30

Section 4: First Aid Measures

Eye Contact: Immediately flush with plenty of water for 15 minutes. Call a physician if irritation persists.

Skin Contact: Remove contaminated clothing and wash affected area with soap and water. Call a physician if irritation persists. Wash contaminated clothing prior to re-use.

Inhalation: Remove person to fresh air. Keep person calm. If not breathing, give artificial respiration. If breathing is difficult give oxygen. Call a physician.

Ingestion: Do NOT induce vomiting. Contact a physician immediately.

Note to Physicians: Treat symptomatically. Gastric lavage using a cuffed endotracheal tube may be performed at your discretion.

Section 5: Fire-Fighting Measures

Flammable Properties: This product is extremely flammable in accordance with aerosol flammability definitions. (See 16 CFR 1500.3©(6)).

Flash Point: < 0°F / < -17°C (TCC) Upper Explosive Limit: 9.0
Autoignition Temperature: 489°F / 254°C Lower Explosive Limit: 1.7

Fire and Explosion Data:

Suitable Extinguishing Media: Class B fire extinguishers, dry chemical, foam or CO_2

Products of Combustion: Fumes, smoke and carbon monoxide

Explosion Hazards: Aerosol containers, when exposed to heat from fire, may build pressure and explode. Vapors may accumulate in a confined space and create a flammable atmosphere.

Protection of Fire-Fighters: Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against suffocation and possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool and to knock down vapors which may result from product decomposition. Do not spray water directly on fire; product will float and could be reignited on surface of water.

Section 6: Accidental Release Measures

Personal Precautions: Use personal protection recommended in Section 8.

Environmental Precautions: Take precautions to prevent contamination of ground and surface waters. Do not flush into sewers or storm drains.

Methods for Containment & Clean-up: Dike area to contain spill. Remove all sources of ignition. Ventilate the area with fresh air. If in confined space or limited air circulation area, clean-up workers

should wear appropriate respiratory protection. Recover or absorb spilled material using an absorbent designed for chemical spills. Place used absorbents into proper waste containers.

Section 7: Handling and Storage

Handling Procedures: Use proper grounding and bonding procedures for transferring materials. Do not use product near any source of ignition. Avoid contact with eyes and skin. Avoid breathing vapors. Use caution around energized equipment. The metal container will conduct electricity if it contacts a live source. This may result in injury to the user from electrical shock and/or flash fire. For product use instructions, please see the product label.

Storage Procedures: Store in a cool dry area out of direct sunlight. Aerosol cans must be maintained below 120°F / 49°C to prevent cans from rupturing.

Aerosol Storage Level: III

Section 8: Exposure Controls/Personal Protection

Exposure Guidelines:

	OSHA		ACGIH		OTHER		
COMPONENT	TWA	STEL	TWA	STEL	TWA	SOURCE	UNIT
Hexane isomers	500(v)	1000(v)	500	1000	NE		ppm
n-Hexane	500	NE	50(s)	NE	NE		ppm
Ethanol	1000	NE	1000	NE	NE		ppm
1,1-Difluoroethane (HFC-152a)	NE	NE	NE	NE	1000	AIHA	ppm
N.E. – Not Established (c) – ceiling (s) – skin (v) – vacated							

Controls and Protection:

Engineering Controls: Area should have ventilation to provide fresh air. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at the source, preventing dispersion into the general work area. Use mechanical means if necessary to maintain vapor levels below the exposure guidelines. If working in a confined space, follow applicable OSHA regulations.

Respiratory Protection: None required for normal work where adequate ventilation is provided. If engineering controls are not feasible or if exposure exceeds the applicable exposure limits, use a NIOSH-approved cartridge respirator with organic vapor cartridge. Air monitoring is needed to determine actual employee exposure levels. Use a self-contained breathing apparatus in confined spaces and for emergencies.

Eye/face Protection: For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear splash-proof goggles.

Skin Protection: Use protective gloves such as nitrile, PVC, Viton. Also, use full protective clothing if there is prolonged or repeated contact of liquid with skin.

Section 9: Physical and Chemical Properties

Physical State: liquid
Color: clear, colorless
Odor: alcohol
Odor Threshold: ND
Specific Gravity: 0.66
Initial Boiling Point: 140°F / 60°C
Freezing Point: < -76°F / < -60°C
Vapor Pressure: 175 mmHg @ 68°F / 20°C
Vapor Density: > 1 (air = 1)
Evaporation Rate: very fast
Solubility: negligible in water
Coefficient of water/oil distribution: ND
pH: NA
Volatile Organic Compounds: wt %: 75 g/L: 495 lbs./gal: 4.1

Section 10: Stability and Reactivity

Stability: Stable

Conditions to Avoid: Sources of ignition, temperature extremes

Incompatible Materials: Strong oxidizers

Hazardous Decomposition Products: Oxides of carbon

Possibility of Hazardous Reactions: No

Section 11: Toxicological Information

Long-term toxicological studies have not been conducted for this product. The following information is available for components of this product.

Acute Toxicity:

Component	Oral LD50 (rat)	Dermal LD50 (rabbit)	Inhalation LC50 (rat)
Hexane isomers	> 15,000 mg/kg	> 2000 mg/kg	No data
n-Hexane	28,710 mg/kg	3000 mg/kg	48,000 ppm/4H
Ethanol	760 mg/kg	No data	20,000 ppm/10H
1,1-Difluoroethane (HFC-152a)	No data	No data	25 ppm/30M

Chronic Toxicity:

Component	OSHA Carcinogen	IARC Carcinogen	NTP Carcinogen	Irritant	Sensitizer
Hexane isomers	No	No	No	No	Unknown
n-Hexane	No	No	No	E, S & R (moderate)	Unknown
Ethanol	No	No	No	E (mild) / S (moderate)	Unknown
1,1-Difluoroethane (HFC-152a)	No	No	No	No	Unknown

E – Eye S – Skin R - Respiratory

Reproductive Toxicity: No information available
Teratogenicity: No information available
Mutagenicity: No information available
Synergistic Effects: No information available

Section 12: Ecological Information

Ecological studies have not been conducted for this product. The following information is available for components of this product.

Ecotoxicity: n-hexane - 48 Hr EC50 water flea: 3.87 mg/L
96 Hr LC50 Lepomis macrochirus: 4.12 mg/L
Persistence / Degradability: No information available
Bioaccumulation / Accumulation: No information available
Mobility in Environment: No information available

Section 13: Disposal Considerations

Waste Classification: The dispensed liquid product is a RCRA hazardous waste for the characteristic of ignitability with a waste code of D001. (See 40 CFR Part 261.20 – 261.33)
Any liquid product should be managed as a hazardous waste. Empty aerosol containers may be recycled.

All disposal activities must comply with federal, state, provincial and local regulations. Local regulations may be more stringent than state, provincial or national requirements.

Section 14: Transport Information

US DOT (ground): Consumer Commodity, ORM-D

ICAO/IATA (air): Consumer Commodity, ID8000, 9

IMO/IMDG (water): Aerosols, UN1950, 2.1, Limited Quantity

Special Provisions: None

Section 15: Regulatory Information

U.S. Federal Regulations:

Toxic Substances Control Act (TSCA):
All ingredients are either listed on the TSCA inventory or are exempt.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA):
Reportable Quantities (RQ's) exist for the following ingredients: n-hexane (5000 lbs)

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center (800-424-8802) and to your Local Emergency Planning Committee.

Superfund Amendments Reauthorization Act (SARA) Title III:
Section 302 Extremely Hazardous Substances (EHS): None

Section 311/312 Hazard Categories:

Fire Hazard	Yes
Reactive Hazard	No
Release of Pressure	Yes
Acute Health Hazard	Yes
Chronic Health Hazard	No

Section 313 Toxic Chemicals: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:
n-hexane (5.2%)

Clean Air Act:
Section 112 Hazardous Air Pollutants (HAPs): n-hexane

Occupational Safety and Health Administration:
This product is regulated by the Hazard Communications Standard.

U.S. State Regulations:

California Safe Drinking Water and Toxic Enforcement Act (Prop 65):
This product may contain the following chemicals known to the state of California to cause cancer, birth defects or other reproductive harm: None

Consumer Products VOC Regulations: This product complies with Consumer Product VOC regulations as an electronic cleaner.

State Right to Know:

New Jersey:	75-83-2, 110-54-3, 79-29-8, 64-17-5, 75-37-6
Pennsylvania:	107-83-5, 75-83-2, 110-54-3, 79-29-8, 64-17-5, 75-37-6
Massachusetts:	107-83-5, 75-83-2, 110-54-3, 79-29-8, 64-17-5, 75-37-6
Rhode Island :	110-54-3, 64-17-5, 75-37-6

Canadian Regulations:

Controlled Products Regulations:
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

WHMIS Hazard Class: A, B5, D2B

Canadian DSL Inventory: All ingredients are either listed on the DSL Inventory or are exempt.

European Union Regulations:

RoHS Compliance: This product is compliant with Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003. This product does not contain any of the restricted substances as listed in Article 4(1) of the RoHS Directive.

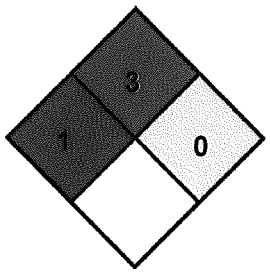
Additional Regulatory Information: None

Section 16: Other Information

HMIS® (II)	
Health:	1
Flammability:	3
Reactivity:	0
PPE:	B

Ratings range from 0 (no hazard) to 4 (severe hazard)

NFPA



Prepared By: Michelle Rudnick
CRC #: 985
Revision Date: 08/02/2011

Changes since last revision: Formula change

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. This information is accurate to the best of CRC Industries' knowledge or obtained from sources believed by CRC to be accurate. Before using any product, read all warnings and directions on the label. For further clarification of any information contained on this MSDS consult your supervisor, a health & safety professional, or CRC Industries.

ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstract Service
CFR: Code of Federal Regulations
DOT: Department of Transportation
DSL: Domestic Substance List
g/L: grams per Liter
HMIS: Hazardous Materials Identification System
IARC: International Agency for Research on Cancer
IATA: International Air Transport Association
ICAO: International Civil Aviation Organization
IMDG: International Maritime Dangerous Goods
IMO: International Maritime Organization
lbs./gal: pounds per gallon
LC: Lethal Concentration
LD: Lethal Dose
NA: Not Applicable
ND: Not Determined
NIOSH: National Institute of Occupational Safety & Health
NFPA: National Fire Protection Association
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
PMCC: Pensky-Martens Closed Cup
PPE: Personal Protection Equipment
ppm: Parts per Million
RoHS: Restriction of Hazardous Substances
STEL: Short Term Exposure Limit
TCC: Tag Closed Cup
TWA: Time Weighted Average
WHMIS: Workplace Hazardous Materials Information System

01. Identification of substance, preparation and company

Trade name
MASTINOX 6856 K JAUNE BMS 3-27

Manufacturer/Supplier
Courtaulds Aerospace Deutschland

Street/P.O.box
Postfach 80 04 49

Nationality code/Postcode/Town/City
21004 Hamburg

Telephone/Telefax
Telefon : 040/ 72 00 3-174/175
Telefax : 040/ 720 89 53

Emergency information
Telefon : 040/ 72 00 3-161 (Frau Tücksen)

02. Composition/Information on components

Chemical characterization
Beschichtungsstoff auf Polyesterharzbasis.

Hazardous components

STRONTIUM CHROMATE
Concentration : 10 - 15 % CAS number : 7789-06-2
Symbol : T R : 45-22

BARIUM SALTS
Concentration : 5 - 10 %
Symbol : XN R : 20/22

XYLENE, MIXTURE OF ISOMERS
Concentration : 5 - 10 % CAS number : 1330-20-7
Symbol : XN R : 10-20/21-38

TOLUENE
Concentration : < 5 % CAS number : 108-88-3
Symbol : F XN R : 11-20

03. Hazards identification

Hazard designation
Highly flammable
Toxic

04. First aid measures

General
immediately remove all contaminated clothing
In all cases of doubt, or when symptoms persist, seek medical attention.
unconsciousness: lateral position - call a physician

Inhalation
Take the casualty into the fresh air and keep warm
irregular breathing/no breathing: artificial respiration
call a physician

Skin contact
wash away with soap and water and rinse
Do NOT use solvents or thinners.
Eye contact
Flush with plenty of water (10 - 15 min.)
call a physician
Ingestion
Call a doctor
Keep at rest.
do not induce vomiting

05. Fire-fighting measures

Extinguishing media - suitable
alcohol resistant foam, CO2, powders, water spray
Extinguishing media - NOT suitable
waterjet
Special risk posed by the substance or by the actual preparation, its combustion products or gases discharged
Fire will produce dense black smoke. Exposure to decomposition products may cause a health hazard.
Protective equipment
Appropriate breathing apparatus may be required.
Additional information
cool endangered containers with water in case of fire

06. Accidental release measures

Personal precautions
remove ignition sources
provide for sufficient ventilation
Refer to protective measures listed in sections 7 and 8.
Environmental precautions
do not empty into drains
If the product contaminates lakes, rivers or sewages, inform appropriate authorities in accordance with local regulations.
Methods for cleaning up/collecting
Contain and collect spillage with non-combustible absorbent materials, e.g. sand, earth, vermiculite, diatomaceous earth and place in container for disposal according to local regulations (see section 13).
Clean preferabily with a detergent; avoid use of solvents.

07. Handling and storage

Information for safe handling
Prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentration higher than the occupational exposure limits.
Additionally, the product should only be used in areas from which all naked lights and other sources of ignition have been excluded.
Comply with the health and safety at work laws.

Information about protection against explosions and fires

Vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air.
Preparation may charge electrostatically: always use earthing leads when transferring from one container to another.
Operators should wear antistatic footwear and clothing. No sparking tools should be used.

Requirements to be met by storerooms and containers

Electrical equipment should be protected to the appropriate standard.
Floors should be of the conducting type.
Keep container tightly closed. Never use pressure to empty: container is not a pressure vessel. No smoking. Prevent unauthorized access.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Information about separation of incompatible products

Keep away from oxidizing agents, from strongly alkaline and strongly acid materials.

Further information about storage conditions

Always keep in containers of same material as the original one. Avoid heating and direct sunlight.
Keep containers dry and cool

08. Exposure controls and personal protection

Additional information about engineering measures

Provide adequate ventilation. Where reasonably practicable this shoud be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and solvent vapour below the OEL, suitable respiratory protection must be worn.

Components with critical values that require monitoring at the workplace (exposure limits)

STRONTIUM CHROMATE CAS :7789-06-2

Specification	:	TRK			
Value	:	0,10	mg/m3		
Mutagen group	:	A2			
Valid as per (mm/yy)	:	10 / 93			
Specification	:	TRK			
Value	:	0,20	mg/m3		
Valid as per (mm/yy)	:	10 / 93			

BARIUM SALTS

Specification	:	MAK			
Value	:	0,50	mg/m3		
Short-term exposure limit:		II.1			
Valid as per (mm/yy)	:	10 / 93			

XYLENE, MIXTURE OF ISOMERS CAS :1330-20-7

Specification	:	MAK				
Value	:	100,00	ppm	/	440.00	mg/m3
Short-term exposure limit:		II,1				
Pregnancy group	:	D				
Valid as per (mm/yy)	:	10 / 93				

Specification : BAT
Value : 0,15 mg/dl
Analysis material : Vollblut
Parameter : Xylol
Time of taking the trial : Expositionsende,bzw. Schichtende
Valid as per (mm/yy) : 10 / 93
Specification : BAT
Value : 2,00 g/l
Analysis material : Harn
Parameter : Toluraeaure
Time of taking the trial : Expositionsende,bzw. Schichtende
Valid as per (mm/yy) : 10 / 93

TOLUENE CAS :108-88-3

Specification : MAK
Value : 50,00 ppm / 190,00 mg/m3
Short-term exposure limit: II,2
Pregnancy group : C
Valid as per (mm/yy) : 10 / 93
Specification : BAT
Value : 0,17 mg/dl
Analysis material : Vollblut
Parameter : Toluol
Time of taking the trial : Expositionsende,bzw. Schichtende
Valid as per (mm/yy) : 10 / 93

Personal protective equipment

Respiratory equipment

take breathing protection measures(see also instruct.to avoid accidents)

Skin protection

use protective gloves
after washing hands replace lost skin fat by fat containing skin creams.

Eye protection

use safety glasses

Body protection

Personal should wear antistatic clothings made of natural fiber or of high temperature resistant synthetic fiber. All parts of the body should be washed after contact.

09. Physical and chemical properties

Image

Form : liquid
Colour : yellow
Odour : characteristic

Relevant safety data

Change in condition
Boiling point: (1013 hPa) 110 °C literature
Flashpoint : 5 °C
Explosive limits :
Lower / Upper : 1 Vol% / 7,6 Vol%

Vapor pressure :	(50 °C) <	1000 hPa		literature
Density :	(20 °C)	1,392 g/cm3		
Viscosity :				
leak time :	(20 °C) >	150	sec	DIN-cup 4 mm
Solvent-separation test	(20 °C) <	3 %		literature

10. Stability and reactivity

Conditions to avoid
decomposition at the melting temperature

Materials to avoid
Keep away from oxidizing agents, strongly alkaline and strongly acid materials in order to avoid exothermic reactions.

Dangerous decomposition products
When exposed to high temperatures may produce hazardous decomposition products such as carbon monoxide and dioxide, smoke, oxides of nitrogen.

11. Toxicological information

Experience on practice:
There are no data available on the preparation itself.
inhalation/eye contact: in high concentrations irritating to the mucous membranes, narcotic effect and influence on power of reaction and loss of coordination possible.
prolonged inhalation of vapours in high concentrations may lead to headache, giddiness and nausea.
in case of contact with the product: danger of resorption through the skin, irritation of skin/mucous membranes.
eye contact: irritation

Additional toxicological information
The product was classified in toxicological terms on the basis of the results of the calculation procedure outlined within General Directive on Preparations (88/37/EEC).

12. Ecological information

Details on elimination (persistance / degradibility)

There are no data available on the preparation itself.

Additional ecological information

Do not empty into waters or drains

13. Disposal considerations

Product
Recommendation
do not empty into waters or drains
Waste key acc. "TA-Abfall"
55503 / Lack- und Farbschlamm

14. Transport information

Land transport ADR/RID and GGVS/GGVE

Classification

GGVS/GGVE : Class 3 Number 5 Letter c
RID/ADR : Class 3 Number 5 Letter c
Kemlercode : 33

Substance releasing the danger
TOLUENE
XYLENE, MIXTURE OF ISOMERS

Packaging
Tremcard
3

Inland waterways ADN/ADNR

Classification

ADN/ADNR : Class 3
Category : II

Maritime transport IMDG/GGVSea

Classification

IMDG-Code : 3.2 IMDG-Page : 3268
UN-number : 1263 MARPOL : --
MFAG-Table : 310 / 313 EmS number : 3-05

Substance releasing the danger
TOLUENE
XYLENE, MIXTURE OF ISOMERS

Packaging
Packaging group II

Air transport ICAO-TI and IATA-DGR

Classification

ICAO/IATA Class 3
UN-number : 1263

Substance releasing the danger
TOLUENE
XYLENE, MIXTURE OF ISOMERS

Packaging
Packaging group II
Tremcard
3

15. Regulatory information

Classification according to EEC directives

Danger symbol and danger designation

F Highly flammable
T Toxic

Hazard-determining components of labelling

STRONTIUM CHROMATE
BARIUM SALTS

Risk-phrases

11	Highly flammable
45	May cause cancer
20/21/22	Harmful by inhalation, in contact with skin and if swallowed

Safety-phrases

53	Avoid exposure - obtain special instructions before use
51	Use only in well-ventilated areas.
44	If you feel unwell, seek medical advice (show the label where possible)
16	Keep away from sources of ignition - No smoking
23	Do not breathe gas/fumes/vapour/spray (appropriate wording to be specified by the manufacturer)
38	In case of insufficient ventilation, wear suitable respiratory equipment
29	Do not empty into drains
33	Take precautionary measures against static discharges
9	Keep container in a well-ventilated place

National regulations

Gefahrstoffverordnung

Special designation for certain preparations

10 Gefahrstoffverordnung - Sonderbestimmungen beachten

Störfallverordnung

Enthält folgende in der StörfallV gelistete Stoffe

STRONTIUM CHROMATE CAS :7789-06-2

Verordnung über brennbare Flüssigkeiten

VbF-Klasse AI

Emission control act ("TA-Luft")

Class	sum organic	sum anorganic	sum cancerogen
II	12,00 %		13,70 %
III	1,00 %		

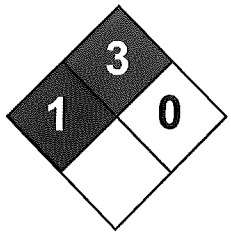
Water pollution classification

WGK 2 classification according to the VCI

16. Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

ScienceLab.com
Chemicals & Laboratory Equipment



Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Methyl ethyl ketone MSDS

Section 1: Chemical Product and Company Identification

Product Name: Methyl ethyl ketone

Catalog Codes: SLM2626, SLM3232

CAS#: 78-93-3

RTECS: EL6475000

TSCA: TSCA 8(b) inventory: Methyl ethyl ketone

CI#: Not applicable.

Synonym: 2-Butanone

Chemical Name: Methyl Ethyl Ketone

Chemical Formula: C4H8O

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Methyl ethyl ketone	78-93-3	100

Toxicological Data on Ingredients: Methyl ethyl ketone: ORAL (LD50): Acute: 2737 mg/kg [Rat]. 4050 mg/kg [Mouse]. DERMAL (LD50): Acute: 6480 mg/kg [Rabbit]. VAPOR (LC50): Acute: 23500 mg/m 8 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of ingestion, of inhalation (lung irritant).

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Classified POSSIBLE for human. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to gastrointestinal tract, upper respiratory tract, skin, eyes, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 404°C (759.2°F)

Flash Points: CLOSED CUP: -9°C (15.8°F). OPEN CUP: -5.5556°C (22°F) (Tag).

Flammable Limits: LOWER: 1.8% UPPER: 10%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances: Highly flammable in presence of open flames and sparks, of heat.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Explosive in presence of oxidizing materials, of acids.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards:
Ignition on contact with potassium t-butoxide. Vapor may cause a flash fire

Special Remarks on Explosion Hazards:
Reaction with Hydrogen Peroxide + nitric acid forms heat and shock-sensitive explosive product. Mixture with 2-propanol will produce explosive peroxides during storage.

Section 6: Accidental Release Measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined

areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, metals, acids, alkalis.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 200 STEL: 300 (ppm) from ACGIH (TLV) [United States] [1999] TWA: 150 STEL: 300 (ppm) [Australia] TWA: 590 STEL: 885 (mg/m3) from NIOSH TWA: 200 STEL: 300 (ppm) from NIOSH TWA: 590 STEL: 885 (mg/m3) [Canada] TWA: 200 STEL: 300 (ppm) from OSHA (PEL) [United States] TWA: 590 STEL: 885 (mg/m3) from OSHA (PEL) [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor:
Acetone-like Pleasant. Pungent. Sweetish. (Strong.)

Taste: Not available.

Molecular Weight: 72.12g/mole

Color: Clear Colorless.

pH (1% soln/water): Not available.

Boiling Point: 79.6 (175.3°F)

Melting Point: -86°C (-122.8°F)

Critical Temperature: 262.5°C (504.5°F)

Specific Gravity: 0.805(Water = 1)

Vapor Pressure: 10.3 kPa (@ 20°C)

Vapor Density: 2.41 (Air = 1)

Volatility: Not available.

Odor Threshold: 0.25 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 0.3

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether, acetone.

Solubility: Soluble in cold water, diethyl ether, acetone.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, mechanical shock, incompatible materials.

Incompatibility with various substances: Reactive with oxidizing agents, metals, acids, alkalis.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Incompatible with chloroform, copper, hydrogen peroxide, nitric acid, potassium t-butoxide, 2-propanol, chlorosulfonic acid, strong oxidizers, amines, ammonia, inorganic acids, isocyanates, caustics, pyrindines. Vigorous reaction with chloroform +alkali.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 2737 mg/kg [Rat]. Acute dermal toxicity (LD50): 6480 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 32000 mg/m3 4 hours [Mouse].

Chronic Effects on Humans:
MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Classified POSSIBLE for human. May cause damage to the following organs: gastrointestinal tract, upper respiratory tract, skin, eyes, central nervous system (CNS).

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation (lung irritant).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: May cause birth defects based on animal dats. Embryotoxic and/or foetotoxic in animal.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation. May be absorbed through the skin. Eyes: Causes eye irritation. Inhalation: Inhalation of high concentrations may cause central nervous effects characterized by headache, dizziness, unconsciousness, and coma. Causes respiratory tract irritation and affects the sense organs. May affect the liver and urinary system. Ingestion: Causes gastrointestinal tract irritation with nausea, vomiting and diarrhea. May affect the liver. Chronic Potential Health Effects: Chronic inhalation may cause effects similar to those of acute inhalation. Prolonged or repeated skin contact may cause defatting and dermatitis.

Section 12: Ecological Information

Ecotoxicity: Ecotoxicity in water (LC50): 3220 mg/l 96 hours [Fathead Minnow]. 1690 mg/l 96 hours [Bluegill].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Ethyl methyl ketone UNNA: 1193 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
New York release reporting list: Methyl ethyl ketone Rhode Island RTK hazardous substances: Methyl ethyl ketone Pennsylvania RTK: Methyl ethyl ketone Minnesota: Methyl ethyl ketone Massachusetts RTK: Methyl ethyl ketone New Jersey: Methyl ethyl ketone California Director's list of Hazardous Substances: Methyl ethyl ketone TSCA 8(b) inventory: Methyl ethyl ketone TSCA 8(d) H and S data reporting: Methyl ethyl ketone: Effective: 10/4/82; Sunset: 10/4/92 SARA 313 toxic chemical notification and release reporting: Methyl ethyl ketone CERCLA: Hazardous substances.: Methyl ethyl ketone: 5000 lbs. (2268 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R11- Highly flammable. R36/37- Irritating to eyes and respiratory system. S9- Keep container in a well-ventilated place. S16- Keep away from sources of ignition - No smoking. S25- Avoid contact with eyes. S33- Take precautionary measures against static discharges.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 1

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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mineARC SYSTEMS

MineARC® AUSTRALIA
Unit 2, 274 Welshpool Road
Welshpool, Perth,
Western Australia 6106
ph: +61 (8) 9333 4966
fax: +61 (8) 9333 4900
info@minearc.com.au
ABN 47 865 313 252

MineARC® NORTH AMERICA
4850 Ledbetter Drive
Dallas, Texas 75236 USA
ph: +1 (214) 337 5100
fax: +1 (214) 337 5103
info@minearc.com

MineARC® SOUTH AMERICA
Avda. El Salto N°4001 oficina
142 A, Piso 14 Comuna de
Huechuraba, Santiago, Chile
ph: +56 2 964 4290
fax: +56 2 964 4291
info@minearc.com

MineARC® CHINA
R 209, Tower C, Fangheng
Int Center, 6 Wangjing Futong St,
Chaoyang District Beijing, PR China
100102
ph: +86 10 8472 6488 / 8472 6508
fax: +86 10 8478 5769
email: info@minearc.com.au

MineARC® AFRICA
Stand 205, Flaming Rock Rd,
Northlands Business Park, 29
Newmarket Street, North Riding,
Johannesburg, South Africa
ph: +27 (0) 11 796 5162
fax: +27 (0) 86 504 1750
info@minearc.co.za

SAFETY DATA SHEET (SDS)

VALVE REGULATED LEAD-ACID BATTERY BATTERIES MAINTENANCE-FREE NON-SPILLABLE

SECTION 1: PRODUCT IDENTIFICATION

Product Name: Maintenance Free Valve Regulated Lead-Acid Batteries

COMMON SYNONYMS:	SEALED LEAD ACID BATTERY, DEEP CYCLE AGM BATTERY, VRLA BATTERY
DOT DESCRIPTION:	WET BATTERY, NON-SPILLABLE
CHEMICAL FAMILY:	ELECTRICAL BATTERY STANDBY
MANUFACTURER'S NAME:	GUANGDONG ZHICHENG CHAMPION GROUP CO., LTD.
ADDRESS:	TIANXIN INDUSTRIAL ZONE, TANGXIA TOWN, DONGGUAN CITY GUANGDONG P.R.CHINA
EMERGENCY TEL NO:	+86 769 87927258
DATE ISSUED:	JANUARY 02, 2014

SECTION 2: HAZARDOUS INGREDIENTS/ IDENTITY INFORMATION

COMPONENTS	Approx % by Wt.	CAS Number	Air Exposure Limits (µg/m^3)			LD50 ORAL (mg/kg)
			ACGIH TLV	OSHA	NIOSH	
Inorganic Lead/Lead Compounds	65%-75%	7439-92-1	150	50	10	500
Tin	<0.5%	7440-31-5	2000	2000	--	--
Calcium	<0.1%	7440-70-2	--	--	--	--
Dilute Sulfuric Acid	~20%	7664-93-9	1000	1000	1000	2.14
Fiberglass Separator	~ 5%	--	--	--	--	--
Case Material: Acrylonitrile Butadiene Styrene (ABS) or Polypropylene(PP)	~5%	9003-56-9 9003-07-0	--	--	--	--

SECTION 3: PHYSICAL DATA

COMPONENTS	DENSITY	MELTING/BOILING (M/B) POINT	SOLUBILITY (H_2O)	ODOR	APPEARANCE
Lead	11.34	327.46 °C, 621.43 °F (M)	None	None	Sliver-Gray Metal
Lead Sulfate	6.20	1170 °C, 2138 °F (B)	40 mg/l (15 °C, 59 °F)	None	White crystals or powder
Lead Dioxide	9.40	290 °C, 554 °F (M)	None	None	Dark brown Powder
Sulfuric Acid	~1.3	95°C -115°C , 203°F - 240°F (B)	100%	Sharp, penetrating, pungent odor	Clear Colorless Liquid
Fiberglass Separator	--	--	Slight	None	White Fibrous
Case Material: Acrylonitrile Butadiene Styrene (ABS) or Polypropylene	--	--	None	None	Solid

MineARC® AUSTRALIA
Unit 2, 274 Welshpool Road
Welshpool, Perth,
Western Australia 6106
ph: +61 (8) 9333 4966
fax: +61 (8) 9333 4900
info@minearc.com.au
ABN 47 865 313 252

MineARC® NORTH AMERICA
4850 Ledbetter Drive
Dallas, Texas 75236 USA
ph: +1 (214) 337 5100
fax: +1 (214) 337 5103
info@minearc.com

MineARC® SOUTH AMERICA
Avda. El Salto N°4001 oficina
142 A, Piso 14 Comuna de
Huechuraba, Santiago, Chile
ph: +56 2 964 4290
fax: +56 2 964 4291
info@minearc.com

MineARC® CHINA
R 209, Tower C, Fangheng
Int Center, 6 Wangjing Futong St,
Chaoyang District Beijing, PR China
100102
ph: +86 10 8472 6488 / 8472 6508
fax: +86 10 8478 5769
email: info@minearc.com.au

MineARC® AFRICA
Stand 205, Flaming Rock Rd,
Northlands Business Park, 29
Newmarket Street, North Riding,
Johannesburg, South Africa
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fax: +27 (0) 86 504 1750
info@minearc.co.za

SECTION 4: FLAMMABILITY DATA

COMPONENTS	FLASHPOINT	EXPLOSIVE LIMITS	COMMENTS
Lead	None	None	None
Sulfuric Acid	None	None	None
Hydrogen	--	LEL=4.1%	Sealed batteries can emit hydrogen only if over charged (float voltage> 2.4 VPC). The gas enters the air through the vent caps. To avoid the chance of a fire or explosion, keep sparks and other sources of ignition away from the battery. Extinguishing Media: Dry chemical, foam, CO_2
Fiberglass Separator	--	--	Toxic vapors may be released. In case of fire: wear self-contained breathing apparatus.
Acrylonitrile Butadiene Styrene (ABS) or Polypropylene(PP)	None	--	Temperatures over 300～380 °C (572～653°F) may release combustible gases. In case of fire: wear positive pressure self-contained breathing apparatus.

SECTION 5: REACTIVITY DATA

COMPONENT	Lead/lead compounds
Stability	Stable
Incompatibility	Potassium, carbides, sulfides, peroxides, phosphorus, sulfurs, ketone, ester, petrolatum
Decomposition products	Oxides of lead and sulfur.
Condition to avoid	High temperature, sparks and other sources of ignition.
COMPONENT	**Sulfuric Acid**
Stability	Stable
Incompatibility	Reactive metals, strong bases, most organic compounds
Decomposition products	Sulfuric dioxide, trioxide, hydrogen sulfide, hydrogen
Condition to avoid	Prohibit smoking, sparks, etc. from battery charging area. Avoid mixing acid with other chemicals.
POLYMERIZTION	Sulfuric acid will not polymerize

SECTION 6: HEALTH HAZARD DATA

Battery is considered as sealed non-spillable one. Under normal operating conditions, the materials sealed inside should not be hazardous to people's health. Only when these materials exposed during production or under case broken condition or being extremely heated (fired), they may be hazardous to people's health.

Routes of Entry:
Sulfuric Acid: Harmful by all routes of entry.
Lead Compounds: Hazardous Exposure can occur only when product is heated, oxidized, or otherwise processed or damaged to create dust, vapor or fume.

Inhalation:
Sulfuric Acid: Breathing sulfuric acid vapors and mists may cause severe respiratory problems. Lead Compounds: Dust or fumes may cause irritation of upper respiratory tract or lungs.
Fiberglass Separator: Fiberglass is an irritant to the upper respiratory tract, skin and eyes.
For exposure up to 10F°/ use MSA
Comfoll with type H filters. Above 10F use Ultra Twin with type H filter. This product is not considered carcinogenic by NTP or OSHA.

Skin Contact:
Sulfuric Acid: Severe irritation, burns and ulceration.
Lead Compounds: Not absorbed through the skin. **Ingestion:**
Sulfuric Acid: May cause severe irritation of the mouth, throat, esophagus, and stomach.
Lead Compounds: May cause abdominal pain, nausea, vomiting, diarrhea, and severe cramping. Acute ingestion should be treated by a physician.

Acute Health Hazards:
Sulfuric Acid: Severe skin irritation, burns, damage to cornea may cause blindness, upper respiratory irritation.
Lead Compounds: May cause abdominal pain, nausea, headaches, vomiting, loss of appetite, severe cramping, muscular aches and weakness, and difficulty sleeping. The toxic effects of lead are cumulative and slow to appear. It affects the kidneys, reproductive and central nervous systems. The symptoms of lead overexposure are listed above. Exposure to lead from a battery most often occurs during lead reclamation operations through the breathing or ingestion of lead dust or fumes.

SECTION 7: ACCIDENTAL RELEASE MEASURES

Chronic Health Hazards:
Sulfuric acid: Possible scarring of the cornea, inflammation of the nose, throat and bronchial tubes, possible erosion of tooth enamel.
Lead Compounds: May cause anemia, damage to kidneys and nervous system, and damage to reproductive system in both males and females.

Medical Conditions Generally Aggravated by Exposure:
Inorganic lead and its compounds can aggravate chronic forms of kidney, liver, and neurological diseases. Contact of battery electrolyte (acid) with the skin may aggravate skin diseases such as eczema and contact dermatitis. Overexposure to sulfuric acid mist may case lung damage and aggravate pulmonary conditions.

Emergency and First Aid Procedures:
Inhalation
Sulfuric Acid: Remove to fresh air immediately. If breathing is difficult, give oxygen
Lead Compounds: Remove from exposure, gargle, wash nose and lips, consult physician

Ingestion
Sulfuric Acid: Do not induce vomiting, consult a physician immediately. Lead Compounds: Consult a physician immediately

Eyes
Sulfuric Acid: Flush immediately with water for 15 minutes, consult a physician. Lead Compounds: Flush immediately with water for 15 minutes, consult a physician

Skin
Sulfuric Acid: Flush with large amounts of water for at least 15 minutes, remove any contaminated clothing. If irritation develops seek medical attention.
Lead Compounds: Wash with soap and water.

SECTION 8: CARCINOGENICITY

Carcinogenicity:
Sulfuric Acid: The National Toxicological Program (NTP) and The International Agency for Research on Cancer (IARC) have classified strong inorganic acid mist containing sulfuric acid as a Category 1 carcinogen, a substance that is carcinogenic to humans. The ACGIH has classified strong inorganic acid mist containing sulfuric acid as an A2 carcinogen (suspected human carcinogen). These classifications do not apply to liquid forms of sulfuric acid or sulfuric acid solutions contained within a battery. Inorganic acid mist (sulfuric acid mist) is not generated under normal use of this product. Misuse of the product, such as overcharging, may result in the generation of sulfuric acid mist.
Lead Compounds: Human studies are inconclusive regarding lead exposure and an increased cancer risk. The EPA and the International Agency for Research on Cancer (IARC) have categorized lead and inorganic lead compounds as a B2 classification (probable/possible human carcinogen) based on sufficient animal evidence and inadequate human evidence.

SECTION 9: PRECAUTIONS FOR SAFE HANDLING AND USE

Spill or Leak Procedures
In case the release occurs, stop flow of material: contain/absorb small spills with dry sand, earth, and vermiculite. If possible, carefully neutralize spilled electrolyte with soda ash, sodium bicarbonate, lime, etc. Wear acid-resistant clothing, boots, gloves, and face shield. Do not allow discharge of unneutralized acid to sewer.

Waste Disposal Method
Spent Batteries - send to secondary lead smelter for recycling. Follow applicable federal, state and local regulations
Neutralize as in preceding step. Collect neutralized material in sealed container and handle as hazardous waste as applicable. A copy of this MSDS must be supplied to any scrap dealer or secondary lead smelter with the battery. Or, consult state environment agency and/ or federal EPA.

Handling and Storing
Store batteries in a cool, dry, well ventilated area that are separated from incompatible materials and any activities which may generate flames, sparks, or heat. Keep all metallic articles that could contact the negative and positive terminals on a battery and create a short circuit condition. Battery should be stored under roof for protection against adverse weather conditions. Store and handle only in areas with adequate water supply and spill control. Avoid damage to battery case.

Electrical Safety
Due to the battery's low internal resistance and high power density, high levels of short circuit current can be developed across the battery terminals. Do not rest tools or cables on the battery. Use insulated tools only. Follow all installation instructions and diagrams when installing or maintaining battery systems.

Fiberglass Separator
Fiberglass is an irritant to the upper respiratory tract, skin and eyes. For exposure up to 10F°/ use MSA Comfoll with type H filters. Above 10F use Ultra Twin with type H filter. This product is not considered carcinogenic by NTP or OSHA.

SECTION 10: ECOLOGICAL INFORMATION

Lead and its compounds can pose a threat if released to the environment. See Waste Disposal Method in Section 8.

SECTION 11: CONTROL MEASURES

Engineering Controls:
Store and handle in well-ventilated area. If mechanical ventilation is used, components must be acid resistant

Work Practices:
Handle batteries cautiously to avoid damaging the case. Avoid contact with internal components. Do not allow metallic articles to contact the battery terminals during handling.

Respiratory Protection:
None required under normal conditions. When concentrations of sulfuric acid mist are known to exceed PEL, use NIOSH or MSHA-approved respiratory protection.

Personal Protection and Equipment: None needed under normal conditions. If battery case is damaged,

- Protective gloves: use rubber or plastic acid-resistant gloves with elbow-length gauntlet.
- Eye protection: use chemical goggles or face shield.
- Other protection: Acid-resistant apron. Under severe exposure or emergency conditions, wear acid resistant clothing and boots.
- In areas where sulfuric acid is handled in concentrations greater than 1%, emergency eyewash stations and showers should be provided, with unlimited water supply.

MineARC® AUSTRALIA
Unit 2, 274 Welshpool Road
Welshpool, Perth,
Western Australia 6106
ph: +61 (8) 9333 4966
fax: +61 (8) 9333 4900
info@minearc.com.au
ABN 47 865 313 252

MineARC® NORTH AMERICA
4850 Ledbetter Drive
Dallas, Texas 75236 USA
ph: +1 (214) 337 5100
fax: +1 (214) 337 5103
info@minearc.com

MineARC® SOUTH AMERICA
Avda. El Salto N°4001 oficina
142 A, Piso 14 Comuna de
Huechuraba, Santiago, Chile
ph: +56 2 964 4290
fax: +56 2 964 4291
info@minearc.com

MineARC® CHINA
R 209, Tower C, Fangheng
Int Center, 6 Wangjing Futong St,
Chaoyang District Beijing, PR China
100102
ph: +86 10 8472 6488 / 8472 6508
fax: +86 10 8478 5769
email: info@minearc.com.au

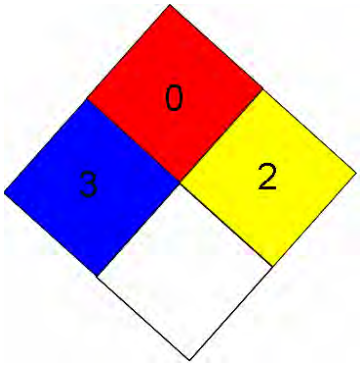
MineARC® AFRICA
Stand 205, Flaming Rock Rd,
Northlands Business Park, 29
Newmarket Street, North Riding,
Johannesburg, South Africa
ph: +27 (0) 11 796 5162
fax: +27 (0) 86 504 1750
info@minearc.co.za

SECTION 12: NFPA HAZARD RATING FOR SULFURIC ACID

A. Not applicable under normal conditions.
B. In case of damage resulting in breakage of the battery container, see section10, personal protection and equipment.

SECTION 13: NFPA HAZARD RATING FOR SULFURIC ACID

Flammability (Red)	**0**
Health (Blue)	**3**
Reactivity (Yellow)	**2**



SECTION 14: TRANSPORTATION REGULATIONS (*Non-Restricted Status*)

Proper Shipping Name:
UN2800 — Batteries, wet non-spillable, and electric storage batteries, dry non-spillable, and dry storage

North America Ground and Air Shipment
Our non-spillable lead acid batteries are under the U.S. Department of Transportation's (DOT) hazardous materials regulations but are excepted from these regulations since they meet all of the following requirements found at 49 CFR 173.159(d) – NMFC # 60680 Class 65.

When offered for transport, the batteries are protected against short circuits and securely packaged as required by 49 CFR 173.159(d) (1);

The batteries and outer packaging are marked with the words NONSPILLABLE BATTERY as required by 49 CFR 173.159(d) (2);

The batteries comply with the vibration and pressure differential tests found in 49 CFR 173.159(d) (3) and "crack test" found at 49 CFR 173.159(d) (4).

International Shipments
Our non-spillable lead acid batteries also are ***excepted*** from the international hazardous materials (also known as "dangerous goods") regulations since they comply with the following requirements:

The vibration and pressure differential tests found in Packing Instruction 806 and Special Provision A67 of the **International Air Transport Association (IATA) Dangerous Goods Regulations**;

The vibration and pressure differential tests found in Packing Instruction 806 and Special Provision A67 of the **International Civil Aviation Organization (ICAO)** Technical Instructions for the Safe Transport of Dangerous Goods by Air;

The vibration, pressure differential, and "crack" tests found in Special Provision 238.1 and 238.2 of the **International Maritime Dangerous Goods (IMDG) Code.**

SECTION 15: REGULATORY INFORMATION

RCRA
Spent lead acid batteries are not regulated as hazardous waste by the EPA when recycled, however state and international regulations may vary.

CERCLA (superfund) and EPCRA
(a) Reportable Quantity (RQ) for spilled 100% sulfuric acid under CERCLA (superfund) and EPCRA (Emergency Planning Community Right to Know Act is 1,000lbs. State and local reportable quantities for spilled sulfuric acid may vary.
(b) Sulfuric acid is a listed "Extremely Hazardous Substance" under EPCRA with a Threshold Planning Quantity (TPQ) of 1,000lbs.
(c) EPCRA Section 302 Notification is required if 1,000lbs. or more of sulfuric acid is present at one site. The quantity of sulfuric acid will vary by battery type. Contact Power-Sonic Corporation for additional information.
(d) EPCRA Section 312 Tier 2 reporting is required for batteries if sulfuric acid is present in quantities of 500lbs. or more and/or lead is present in quantities of 10,00lbs. or more.
(e) Supplier Notification: This product contains toxic chemicals which may be reportable under EPCRA Section 313 Toxic Chemical Release Inventory (Form R) requirements. If you are a manufacturing facility under SIC codes 20 through 39 the following information is provided to enable you to complete the required reports:

Toxic Chemical	CAS Number	Approximate % by weight
Lead	7439-92-1	60
Sulfuric Acid	7664-93-9	10 - 30
Arsenic	7440-38-2	<0.01

If you distribute this product to other manufacturers in SIC codes 20 through 39, this information must be provided with the first shipment in a calendar year. The Section 313 supplier notification requirement does not apply to batteries which are "consumer products". Not present in all battery types. Contact Power-Sonic Corporation for further information.

TSCA

Components	CAS Number	TSCA Status
Electrolyte Sulfuric Acid (H_2SO_4)	7664-93-9	Listed
Inorganic Lead Compound: Lead (Pb)	7439-92-1	Listed
Lead Oxide (PbO)	1917-36-8	Listed
Lead Sulfate ($PbSO_4$)	7446-14-2	Listed
Calcium (Ca)	7440-70-2	Listed
Tin (Sn)	7440-31-5	Listed
Arsenic (As)	7440-38-2	Listed

SECTION 16: OTHER INFORMATION

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: MOBILGREASE 28
Product Description: Synthetic Base Stocks and Additives
Product Code: 970934
Intended Use: Grease

COMPANY IDENTIFICATION

Supplier: **EXXON MOBIL CORPORATION**
3225 GALLOWS RD.
FAIRFAX, VA. 22037 USA

24 Hour Health Emergency	609-737-4411
Transportation Emergency Phone	800-424-9300
ExxonMobil Transportation No.	281-834-3296
MSDS Requests	713-613-3661
Product Technical Information	800-662-4525, 800-947-9147
MSDS Internet Address	http://www.exxon.com, http://www.mobil.com

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

Reportable Hazardous Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*
PENTAERYTHRITOL	115-77-5	1 - 5%
SODIUM NITRITE	7632-00-0	0.1 - 1%

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL HEALTH EFFECTS

Low order of toxicity. Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

ENVIRONMENTAL HAZARDS

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

NFPA Hazard ID:	Health:	0	Flammability:	1	Reactivity: 0
HMIS Hazard ID:	Health:	0	Flammability:	1	Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES

INHALATION
Under normal conditions of intended use, this material is not expected to be an inhalation hazard.

SKIN CONTACT
Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT
Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION
First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA
Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING
Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Sulfur oxides, Aldehydes, Smoke, Fume, Incomplete combustion products, Oxides of carbon

FLAMMABILITY PROPERTIES
Flash Point [Method]: 232C (450F) [EST. FOR OIL, ASTM D-92 (COC)]
Flammable Limits (Approximate volume % in air): LEL: N/D UEL: N/D
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES
In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. U.S. regulations require reporting releases of this material to the environment which exceed the reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

SPILL MANAGEMENT

Land Spill: Allow spilled material to solidify and scrape up with shovels into a suitable container for recycle or disposal. Scrape up spilled material with shovels into a suitable container for recycle or disposal.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Skim from surface.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard.

Static Accumulator: This material is not a static accumulator.

STORAGE

Do not store in open or unlabelled containers.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

Source	Form	Limit / Standard			Note	Source
PENTAERYTHRITOL	Respirable fraction.	TWA	5 mg/m3		N/A	OSHA Z1
PENTAERYTHRITOL	Total dust.	TWA	15 mg/m3		N/A	OSHA Z1
PENTAERYTHRITOL		TWA	10 mg/m3		N/A	ACGIH

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No protection is ordinarily required under normal conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Work conditions can greatly effect glove durability; inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION

Physical State: Solid
Form: Semi-fluid
Color: Red
Odor: Characteristic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 C): 0.946
Flash Point [Method]: 232C (450F) [EST. FOR OIL, ASTM D-92 (COC)]

Flammable Limits (Approximate volume % in air): LEL: N/D UEL: N/D
Autoignition Temperature: N/D
Boiling Point / Range: > 316C (600F)
Vapor Density (Air = 1): N/D
Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 C
Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
Solubility in Water: Negligible
Viscosity: 28 cSt (28 mm2/sec) at 40 C | 5.2 cSt (5.2 mm2/sec) at 100C
Oxidizing Properties: See Sections 3, 15, 16.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/D

NOTE: Most physical properties above are for the oil component in the material.

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Route of Exposure	Conclusion / Remarks
Inhalation	
Toxicity (Rat): LC50 > 5000 mg/m3	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data.	Negligible hazard at ambient/normal handling temperatures. Based on assessment of the components.
Ingestion	
Toxicity (Rat): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity (Rabbit): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation (Rabbit): Data available.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
Eye	
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.

CHRONIC/OTHER EFFECTS

Contains:

Synthetic base oils: Not expected to cause significant health effects under conditions of normal use, based on laboratory studies with the same or similar materials. Not mutagenic or genotoxic. Not sensitizing in test animals and humans.

Phenyl-alpha-naphthylamine (PAN): Undiluted PAN is a skin sensitizer. Human testing with lubricants containing 1.0% PAN caused no reactions indicative of sensitization.

Additional information is available by request.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC	3 = IARC 1	5 = IARC 2B
2 = NTP SUS	4 = IARC 2A	6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Expected to be harmful to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Suitable routes of disposal are supervised incineration, preferentially with energy recovery, or appropriate recycling methods in accordance with applicable regulations and material characteristics at the time of disposal.

REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrositivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning PRECAUTIONARY LABEL TEXT: Empty containers may retain residue and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to refill or clean container since residue is difficult to remove. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT) : Not Regulated for Land Transport

LAND (TDG) : Not Regulated for Land Transport

SEA (IMDG) : Not Regulated for Sea Transport according to IMDG-Code

AIR (IATA) : Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: When used for its intended purposes, this material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

NATIONAL CHEMICAL INVENTORY LISTING: AICS, IECSC, DSL, EINECS, TSCA

EPCRA: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

The Following Ingredients are Cited on the Lists Below:*

Chemical Name	CAS Number	List Citations
DIPHENYLAMINE	122-39-4	5, 9
PENTAERYTHRITOL	115-77-5	1, 4, 13, 16, 19

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL 6 = TSCA 5a2 11 = CA P65 REPRO 16 = MN RTK

2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

* EPA recently added new chemical substances to its TSCA Section 4 test rules. Please contact the supplier to confirm whether the ingredients in this product currently appear on a TSCA 4 or TSCA 12b list.

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Revision Changes:
Section 13: Disposal Considerations - Disposal Recommendations was modified.
Section 13: Regulatory Disposal Information was modified.
Section 09: Boiling Point C(F) was modified.
Section 09: Vapor Pressure was modified.
Section 11: Inhalation Lethality Test Data was modified.
Section 05: Hazardous Combustion Products was modified.
Section 06: Accidental Release - Spill Management - Land was modified.
Section 06: Accidental Release - Spill Management - Water was modified.
Section 09: Relative Density - Header was modified.
Section 09: Flash Point C(F) was modified.
Section 09: Viscosity was modified.
Section 09: Viscosity was modified.
Section 02: Component table was modified.
Section 15: National Chemical Inventory Listing was modified.
Section 08: Exposure Limits Table was modified.
Section 08: Exposure Limit Values - Header was modified.
Section 16: Global Disclaimer was added.
Section 16: Disclaimer was deleted.
Section 13: RCRA Information Header was deleted.
Section 13: RCRA TCLP was deleted.
Section 13: RCRA TCLP was deleted.

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MHC: 0, 0, 0, 0, 0, 0 PPEC: A

DGN: 2006172XUS (553106)

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430306-00 MOBIL JET OIL 254
MATERIAL SAFETY DATA BULLETIN

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: MOBIL JET OIL 254
SUPPLIER: MOBIL OIL CORP.
NORTH AMERICA MARKETING AND REFINING
3225 GALLOWS RD.
FAIRFAX, VA 22037

24 - Hour Emergency (call collect):	609-737-4411	
Product and MSDS Information:	800-662-4525	609-224-4644
CHEMTREC:	800-424-9300	202-483-7616

2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAMES AND SYNONYMS: SYN. HYDROCARBONS AND ADDITIVES
INGREDIENTS CONSIDERED HAZARDOUS TO HEALTH:

Substance Name	Wt%
TRICRESYL PHOSPHATE (1330-78-5)	1-5

See Section 15 for European Label Information.
See Section 8 for exposure limits (if applicable).

3. HAZARDS IDENTIFICATION

US OSHA HAZARD COMMUNICATION STANDARD: Product assessed in accordance with OSHA 29 CFR 1910.1200 and determined to be hazardous.
EFFECTS OF OVEREXPOSURE: This product is not expected to produce neurotoxic effects under normal conditions of use and with appropriate personal hygiene practices. This product contains tricresyl phosphate (TCP). Overexposure to TCP by swallowing, prolonged or repeated breathing of oil mist, or prolonged or repeated skin contact may produce nervous system disorders including gastrointestinal disturbances, numbness, muscular cramps, weakness and paralysis. Paralysis may be delayed. Refer to emergency and first aid procedures for additional information.
EMERGENCY RESPONSE DATA: Brown Liquid. DOT ERG No. - NA. SEC: 0

4. FIRST AID MEASURES

EYE CONTACT: Flush thoroughly with water. If irritation occurs, call a physician.
SKIN CONTACT: Wash contact areas with soap and water. Do not wear ordinary clothing wet with this product. Remove contaminated clothing. Launder contaminated clothing before reuse.
INHALATION: Remove from further exposure. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with bag-valve-mask device or use mouth-to-mouth resuscitation.
INGESTION: Seek immediate medical attention. If medical attention will be delayed, contact a Regional Poison Center or emergency medical professional regarding the induction of vomiting or use of activated charcoal. Do not induce vomiting or give anything

by mouth to a groggy or unconscious person.
NOTE TO PHYSICIANS: This product is not expected to produce adverse effects under normal conditions of use and appropriate personal hygiene. This product contains TCP which can cause symptoms associated with cholinesterase inhibition. TCP may also produce neurotoxicity associated with inhibition of neuropathy target esterase (NTE). Effects of cholinesterase inhibition are expected to occur within hours of exposure, but neurotoxicity related to NTE inhibition may not become evident for several days. Treat appropriately.

5. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA: Carbon dioxide, foam, dry chemical and water fog.
SPECIAL FIRE FIGHTING PROCEDURES: Water or foam may cause frothing. Use water to keep fire exposed containers cool. Water spray may be used to flush spills away from exposure. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.
SPECIAL PROTECTIVE EQUIPMENT: For fires in enclosed areas, fire fighters must use self-contained breathing apparatus.
UNUSUAL FIRE AND EXPLOSION HAZARDS: None. Flash Point C(F): > 246(475) (ASTM D-92). Flammable limits - LEL: NA, UEL: NA.
NFPA HAZARD ID: Health: 1, Flammability: 1, Reactivity: 0
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES: Report spills as required to appropriate authorities. U. S. Coast Guard regulations require immediate reporting of spills that could reach any waterway including intermittent dry creeks. Report spill to Coast Guard toll free number (800) 424-8802. In case of accident or road spill notify CHEMTREC (800) 424-9300.
PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: Adsorb on fire retardant treated sawdust, diatomaceous earth, etc. Shovel up and dispose of at an appropriate waste disposal facility in accordance with current applicable laws and regulations, and product characteristics at time of disposal.
ENVIRONMENTAL PRECAUTIONS: Prevent spills from entering storm sewers or drains and contact with soil.
PERSONAL PRECAUTIONS: See Section 8

7. HANDLING AND STORAGE

HANDLING: Avoid ingestion. Avoid inhalation of mists. Avoid prolonged repeated skin contact. Wash thoroughly before eating or smoking. Keep away from feed or food products. Do not use on food processing machinery.
STORAGE: Store in a cool, dry, well ventilated area away from heat.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

VENTILATION: Use in well ventilated area with local exhaust ventilation.
RESPIRATORY PROTECTION: Approved respiratory protective equipment

should be used if ventilation is inadequate and breathing of mists or vapors is likely.
EYE PROTECTION: If eye contact is likely, safety glasses with side shields or chemical type goggles should be worn.
SKIN PROTECTION: If prolonged or repeated skin contact is likely, oil impervious gloves should be worn. Good personal hygiene practices should always be followed.
EXPOSURE LIMITS: This product does not contain any components which have recognized exposure limits. However, a exposure limit of 5.00 mg/m3 is suggested for oil mist.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Typical physical properties are given below. Consult Product Data Sheet for specific details.
APPEARANCE: Liquid
COLOR: Brown
ODOR: Mild
ODOR THRESHOLD-ppm: NE
pH: NA
BOILING POINT C(F): > 316(600)
MELTING POINT C(F): NA
FLASH POINT C(F): > 246(475) (ASTM D-92)
FLAMMABILITY: NE
AUTO FLAMMABILITY: NE
EXPLOSIVE PROPERTIES: NA
OXIDIZING PROPERTIES: NA
VAPOR PRESSURE-mmHg 20 C: < 0.1
VAPOR DENSITY: NE
EVAPORATION RATE: NE
RELATIVE DENSITY, 15/4 C: 0.99
SOLUBILITY IN WATER: Negligible
PARTITION COEFFICIENT: NE
VISCOSITY AT 40 C, cSt: 26.4
VISCOSITY AT 100 C, cSt: 5.3
POUR POINT C(F): -62(-80)
FREEZING POINT C(F): NE
VOLATILE ORGANIC COMPOUND: NA
NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES
FOR FURTHER TECHNICAL INFORMATION, CONTACT YOUR MARKETING REPRESENTATIVE

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10. STABILITY AND REACTIVITY

STABILITY (THERMAL, LIGHT, ETC.): Stable.
CONDITIONS TO AVOID: Extreme heat.
INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizers.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide.
HAZARDOUS POLYMERIZATION: Will not occur.

---

11. TOXICOLOGICAL DATA

---ACUTE TOXICOLOGY---
ORAL TOXICITY (RATS): Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.
DERMAL TOXICITY (RABBITS): Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.
INHALATION TOXICITY (RATS): Practically non-toxic (LC50: greater

than 5 mg/l). ---Based on testing of similar products and/or the components.
EYE IRRITATION (RABBITS): Practically non-irritating. (Draize score: 0 or greater but 6 or less). ---Based on testing of similar products and/or the components.
SKIN IRRITATION (RABBITS): Practically non-irritating. (Primary Irritation Index: greater than 0.5 but less than 3). ---Based on testing of similar products and/or the components.
OTHER ACUTE TOXICITY DATA: ****This mixture or a similar mixture did not result in any fatalities to rats at concentrations (see inhalation toxicity above) substantially higher than the 5 mg/m3 TLV suggested for oil mists.

---REPRODUCTIVE TOXICOLOGY (SUMMARY)---

This product is unlikely to produce reproductive effects by any route of exposure. In Mobil laboratory studies, no adverse effects were seen on male reproductive systems of rats exposed to a generic jet engine oil containing 3% TCP for 14 days oral or 13 weeks dermal exposure. In addition, no adverse effects were seen in ovaries of female rats after 13 weeks dermal exposure.

---OTHER TOXICOLOGY DATA---

Under normal conditions of use this product is unlikely to produce neurotoxic effects by dermal or inhalation exposure but may produce such effects if orally ingested. While not acutely toxic, repeated applications of 2 g/kg of a generic engine oil containing 3% tricresyl phosphate (TCP), (one dermal application/day, 5 days/week for 90 days), to male and female Sprague-Dawley rats decreased the activities of both serum and red blood cell cholinesterases. TCP was found to be responsible for the observed effects. Acute oral studies with the TCP additive showed inhibition of brain neuropathy target esterase which is indicative of a potential to produce delayed neurotoxicity. Repeated oral administration of 2 g/kg of a generic jet engine oil containing 3% tricresyl phosphate (TCP) (once/day, 5 days/week for 10 weeks) to hens (60mg/kg/day TCP) inhibited brain neuropathy target esterase (NTE) by 70% and caused ataxia or paralysis in 22 of 30 hens in this treatment group.

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12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE AND EFFECTS: Not established.

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13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Product is suitable for burning in an enclosed, controlled burner for fuel value or disposal by supervised incineration. Such burning may be limited pursuant to the Resource Conservation and Recovery Act. In addition, the product is suitable for processing by an approved recycling facility or can be disposed of at an appropriate government waste disposal facility. Use of these methods is subject to user compliance with applicable laws and regulations and consideration of product characteristics at time of disposal.
RCRA INFORMATION: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity, or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

14. TRANSPORT INFORMATION

USA DOT: NOT REGULATED BY USA DOT.
RID/ADR: NOT REGULATED BY RID/ADR.
IMO: NOT REGULATED BY IMO.
IATA: NOT REGULATED BY IATA.

15. REGULATORY INFORMATION

Governmental Inventory Status: All components comply with TSCA, EINECS/ELINCS and AICS.
EU Labeling: EU labeling not required.
U.S. Superfund Amendments and Reauthorization Act (SARA) Title III:
This product contains no "EXTREMELY HAZARDOUS SUBSTANCES".
SARA (311/312) REPORTABLE HAZARD CATEGORIES:
CHRONIC
This product contains no chemicals reportable under SARA (313) toxic release program.
The following product ingredients are cited on the lists below:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
TRICRESYL PHOSPHATE (3.00%)	1330-78-5	22

--- REGULATORY LISTS SEARCHED ---

1=ACGIH ALL	6=IARC 1	11=TSCA 4	16=CA P65 CARC	21=LA RTK
2=ACGIH A1	7=IARC 2A	12=TSCA 5a2	17=CA P65 REPRO	22=MI 293
3=ACGIH A2	8=IARC 2B	13=TSCA 5e	18=CA RTK	23=MN RTK
4=NTP CARC	9=OSHA CARC	14=TSCA 6	19=FL RTK	24=NJ RTK
5=NTP SUS	10=OSHA Z	15=TSCA 12b	20=IL RTK	25=PA RTK
				26=RI RTK

Code key: CARC=Carcinogen; SUS=Suspected Carcinogen; REPRO=Reproductive

16. OTHER INFORMATION

Precautionary Label Text:
CONTAINS TRICRESYL PHOSPHATE
WARNING!
Swallowing this product can cause nervous system disorders including paralysis. Prolonged or repeated breathing of oil mist, or prolonged or repeated skin contact can cause nervous system effects.
Never swallow. Wash hands after handling and before eating. Never use in or around food. Avoid prolonged or repeated overexposure to skin or lungs.
FIRST AID: If swallowed, seek immediate medical attention. If medical attention will be delayed, induce vomiting. In case of contact, wash skin with soap and water. Remove contaminated clothing.
For industrial use only. Not intended or suitable for use in or around a household or dwelling.
Never use empty container to carry water or food. Do not cut, puncture, or weld on or near container.

USE: JET TURBINE LUBRICANT
NOTE: MOBIL PRODUCTS ARE NOT FORMULATED TO CONTAIN PCBS.

Please call the Customer Response Center on 800-662-4525 for formulation disclosure.

****

For Internal Use Only: MHC: 0* 0* 1* 0* 1*, MPPEC: C, TRN: 430306-00, GLIS: 400326, CMCS97: 970833, REQ: MIAMI, SAFE USE: L

EHS Approval Date: 18MAR1998
****

****
Legally required information is given in accordance with applicable
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Safety Data Sheet

Product name:
Moleculite

Safety Data Ref: 6
Initial issue date:
Revision date: 05/06/2013
Version number: 10

molecular

1	IDENTIFICATION OF SUBSTANCE / PREPARATION AND OF THE COMPANY	
1.1	Product identifier	Moleculite
1.2	Relevant use(s)/misuse(s)	As a remover of contaminates from breathable gases by catalytic oxidation
1.3	SDS supplier	Molecular Products Ltd, Parkway, Harlow Business Park, Harlow, Essex, CM19 5FR, UK
1.4	Emergency contact	+44 (0) 1279 445111 (office hours) / +44 (0)1270 502891 (out of hours) trevor@rising-hsande.co.uk (competent person email)

2	HAZARDS IDENTIFICATION				
2.1	Classification of the substance or mixture				
2.1.1	Classification according to Regulation (EC) No 1272/2008 (CLP/GHS)		2.1.2	Classification according to EC 67/548/EEC and 1999/45/EC	
	Acute Tox. 4	H332		Xn	R20/22
	Acute Tox. 4	H302			
2.2	Labelling elements				
2.2.1	Physicochemical	According to experience, the product is considered to have no adverse physicochemical properties if handled in the correct manner			
	Health	Harmful by inhalation and if swallowed			
	Environmental	According to experience, the product is considered to have no adverse affect on the environment if handled in the correct manner			
2.2.2	Labelling in accordance with EC Regulation No 1272/2008 (CLP/GHS)				
	Pictogram		Signal word	WARNING	
	Hazard statements				
	H332	Harmful if inhaled.			
	H302	Harmful if swallowed			
	Precautionary statements				
	P261	Avoid breathing dust/fume/gas/mist/vapours/spray			
	P264	Wash hands and skin thoroughly after handling			
	P312	Call a POISON CENTER or doctor/physician if you feel unwell			
	P304/340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing			
	P501	Dispose of contents/container to authorised disposal site			
2.3	Other hazards				
	The preparation contains a substance that has a workplace exposure limit (WEL)				

3	COMPOSITION / INFORMATION ON INGREDIENTS				
	Chemical characterisation	Transition metal oxides			
	Chemical name	CAS-No	EINECS/ELINCS	Classification	Concentration
	Manganese dioxide	1313-13-9	215-202-6	CHIP: Xn: R20/22 CLP: Acute Tox 4 H332; Acute Tox 4 H302	60-80%
	Copper oxide	1317-38-0	215-269-1	CHIP: Not classified CLP: Aquatic Acute 1 H400 ; Aquatic Chronic 2 H411 (see section 12)	<40%

4	FIRST AID MEASURES	
4.1	Description of measures	
	Inhalation	Remove casualty to fresh air and provide warmth and rest
	Skin contact	Clean areas of skin affected with soap and plenty of water. If necessary, seek medical advice
	Eye contact	Wash out eye thoroughly with plenty of water until irritation subsides; if necessary consult an eye specialist/ophthalmologist
	Ingestion	If product is swallowed, do NOT induce vomiting. Drink plenty of water; if necessary, seek medical advice
4.2	Most important effects/symptoms	None known
4.3	Immediate/special treatment	Treatment as described above

5	FIRE FIGHTING MEASURES	
5.1	Extinguishing media	To suit local surroundings (e.g. chemical powder, carbon dioxide, dry sand, water)
5.2	Special hazards	None known
5.3	Advice for fire fighters	Self-contained breathing apparatus may be required

6	ACCIDENTAL RELEASE MEASURES	
6.1	Personal precautions	Adhere to personal protective measures. Avoid inhalation of dust
6.2	Environmental precautions	Do not allow to get into waste water or waterways; if this occurs, inform the relevant water authority at once
6.3	Methods and materials for cleaning up	In the event of spillage, take up mechanically (e.g. sweep or vacuum up) into tightly closed containers. Adhere to personal protective measures. Label container and dispose of as prescribed
6.4	Reference to other sections	See section 8 for personal protective equipment

7	HANDLING AND STORAGE	
7.1	Precautions for safe handling	Handle in accordance with good hygiene and safety practice. Avoid the raising and deposition of dust
7.2	Conditions for safe storage	Ensure adequate ventilation of the storage area. Keep containers tightly closed, cool and dry, avoiding direct sunlight
7.3	Specific end use(s)	As a remover of contaminates from breathable gases

8	EXPOSURE CONTROLS / PERSONAL PROTECTION				
8.1	Workplace Exposure Limits (WELs) have been assigned by the HSE (EH40/2005)				
	LTEL (8 hour TWA)	ppm	0.5	mg/m^3	Data for manganese and its inorganic compounds (EH40/2011)
8.2	Exposure controls				
	Engineering controls	Provide adequate ventilation (e.g. local exhaust ventilation)			
	Personal protection	Observe normal standards for handling chemicals Wash hands before breaks and after work Avoid inhalation of dust if raised Wear personal protective equipment appropriate to the task (see below)			
	Eye protection	Safety goggles if risk of eye contamination			
	Skin protection	Rubber gloves (consider your won risk assessment; e.g. breakthrough times, rates of diffusion and degradation, tasks undertaken)			
	Respiratory protection	Approved dust mask or respirator (e.g. EN 149:2001 FFP3) for dust if ventilation is insufficient			
	Other protection	Protective overalls			

9	PHYSICAL AND CHEMICAL PROPERTIES			
9.1	Basic physical and chemical properties			
	Physical form	Solid (mesh: 4-8; 8-14); 12-20)	Colour	Black
	Odour	Odourless	pH	12-14
	Boiling pt/range	Not determined	Melting pt/range	Not determined
	Flash point	Not applicable	Relative density	2.0-3.0g/cm^3
	Water solubility	Slight	Other	Strongly oxidising

10	STABILITY AND REACTIVITY	
10.1	Reactivity	Can react violently with hydrogen peroxide, inorganic chlorates and aluminium powder
10.2	Chemical stability	Stable under normal conditions of handling
10.3	Hazardous reactions	Hazardous polymerisation will not occur
10.4	Conditions to avoid	Moisture
10.5	Incompatible material	As above
10.6	Hazardous decomposition products	None

11	TOXICOLOGICAL INFORMATION			
11.1	Information on toxicological effects			
	Acute toxicity	LD (lo) rabbit (i.v.)	45 mg/kg	Data for manganese dioxide
		LD_{50} rat (oral)	>3000 mg/kg	Data for manganese dioxide
		LD_{50} rat (oral)	278 mg/kg	Data for copper oxide
	Dermal compatibility	No data available		
	Mucous membrane	No data available		
	Further information	Neither ingredient has been found to have carcinogenic, mutagenic or reprotoxic properties		

12	ECOLOGICAL INFORMATION					
12.1	Toxicity	ErC_{50}	Algae (Pseudokirchneriella subcapitata)		9.2 mg/l	Data for whole product (Chemex 2013) **
12.2	Degradability	Not determined	12.3	Bioaccumulative potential	Not determined	
12.4	Mobility in soil	Not determined	12.5	PBT/vPvB assessment	Not applicable	
12.6	Other adverse effects	None known	** Environmental classification based on copper oxide data will not apply			

13	DISPOSAL CONSIDERATIONS	
	Advice on disposal	If possible, recycle to supplier or approved recycling company. If not (e.g. designated as waste), dispose of in accordance with national and local authority regulations, e.g. The Hazardous Waste (England & Wales) Regulations 2005
	Contaminated packaging	Treat empty containers in the same way as the product. If possible wash out thoroughly and recycle

14	TRANSPORT INFORMATION				
14.1	United Nations number (ADR, IMDG, IATA)	Not classified	14.2	Proper shipping name (ADR, IMDG, IATA)	Not classified
14.3	Transport class(s) (ADR, IMDG, IATA)	Not classified	14.4	Packing group (ADR, IMDG, IATA)	Not classified
14.5	Environmental hazards (ADR, IMDG, IATA)	The product should not be marked as a marine pollutant	14.6	Special procedures (ADR, IMDG, IATA)	Not applicable
14.7	Transport in bulk	Not applicable			

15	REGULATORY INFORMATION	
15.1	Safety, health and environmental regulations	The product is classified in accordance with the Chemicals (Hazard Information and Packaging for Supply) Regulations (CHIP 4) and EC Regulation 1272/2008 (CLP). Other regulatory information and provisions are not applicable for this product
15.2	Chemical safety assessment	Not applicable

16	OTHER INFORMATION	
	Further information	The SDS has been revised in accordance with EC Regulation 1272/2008 (CLP)
		Comply with COSHH Regulations
	Sources of data	Other suppliers' safety data sheets, Annex VI of the CPL Regulation (EC) No 1272/2008, EH40 (2011)
	Date of issue	05/06/2013
	This information is based on our present state of knowledge and is intended to describe our products from the point of view of the safety requirements. It should not be construed as guaranteeing specific problems	

610-001

STRIKE FIRST CORPORATION

SAFETY DATA SHEET

Prepared to US OSHA Hazard Communication Standard and Globally Harmonized System of Classification and Labeling of Chemicals

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

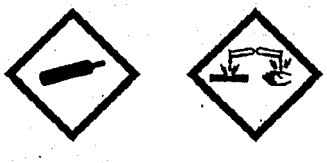
TRADE NAME (AS LABELED):	**WET CHEMICAL SOLUTION (SF-6LK/6LKR). Fire Extinguishing Agent, Pressurized and Non-pressurized**
PRODUCT USE:	**Fire Extinguishing Agent**
RESTRICTION OF USE:	**Do not use on electrically energized equipment. Consult applicable fire protection codes**
MANUFACTURER'S NAME:	**STRIKE FIRST CORPORATION**
ADDRESS:	**777 Tapscott Road Scarborough, ON M1X 1A2**
BUSINESS PHONE:	**416.299.7767**
EMERGENCY CONTACT NO:	**CHEMTREC 1-800-424-9300 or (703) 527-3887**
DATE OF PREPARATION:	**May 5, 2012**
DATE OF REVISION:	**February 08, 2018**

2. HAZARDS IDENTIFICATION

GHS – Classification

Health	Environmental	Physical
Acute Toxicity: Category 5	None	None
Skin Corrosion/Irritation: YES	None	None
Skin Sensitization: NO	None	None
Eye: Category 2B	None	Warning
STOT – Category 3	None	Warning
Carcinogen: Category None	None	None

GHS – Label Symbol(s):



GHS – Signal Word(s): **None**

Other Hazards Not Resulting In Classification: **None**

GHS – Hazard Phrases

GHS Hazard	GHS Code(s)	Code Phrase(s)
Physical	None	
Health	H303	Maybe Harmful if Swallowed
	320	Causes eye irritation
	335	May cause respiratory irritation
Environmental	None	

Precautionary:		
General	P101	If medical advice is needed, have product container or label at hand
Prevention	261	Avoid breathing mist
	264	Wash hands and face thoroughly after handling
Response	P304+340	If inhaled, remove person to fresh air and keep comfortable for breathing.
	305+351+313	If in eyes, rinse cautiously with water for several minutes. Get immediate medical advice/attention (as appropriate).
	337+38	If eye irritation persists: remove contact lenses, if present and easy to do. Continue rinsing.
	312	Call a POISON CENTER/doctor if you feel unwell (as appropriate).
Storage	None	

3. COMPOSITION, INFORMATION ON INGREDIENTS

This product is a mixture.

Components:

Chemical Name	Concentration	EC Number	CAS Number
Potassium Citrate	1 – 10%	212-755-5	866-84-2
Potassium Acetate	20 – 30%	204-822-2	127-08-2
Water	50 – 60%	N/A	7732-18-5

Emergency Overview: Clear to opaque liquid solution

Adverse health effects and symptoms: This product is an irritant to the respiratory system, eyes and skin. Symptoms may include coughing, sore throat, difficulty breathing, eye pain, and skin redness and irritation. Ingestion, although unlikely, may cause cramps, nausea and diarrhea.

Components:

Chemical Name	Reproductive Toxicity	Carcinogenicity	Mutagenicity	Other Hazard Classes
Potassium Citrate	N/A	N/A	N/A	N/A
Potassium Acetate	N/A	N/A	N/A	N/A
Water	N/A	N/A	N/A	N/A

Note: Pressurized product uses nitrogen or compressed air as expellant.

4. FIRST AID MEASURES

Prompt medical attention is mandatory in all cases of overexposure to this solution.

Eye contact: Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation persists after washing.

Skin Contact: Wash off with warm water and soap. Get medical attention if irritation develops and persists.

Inhalation: Move to fresh air. For breathing difficulties, oxygen may be necessary. Get medical attention, if needed.

Ingestion: Rinse mouth. Do not induce vomiting without advice from poison control center. IF SWALLOWED:
Immediately call a POISON CENTER or doctor/physician. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Notes to physician: Treat symptomatically. Symptoms may be delayed.

5. FIRE FIGHTING MEASURES

Flammability of the product: Non-flammable.

Extinguishing media:

Suitable extinguishing media: Use an extinguishing agent suitable for the surrounding fire. This preparation is used as an extinguishing agent and therefore is not a problem when trying to control a blaze. Use extinguishing agent appropriate to other materials involved. Keep pressurized extinguishers and surroundings cool with water spray as they may rupture or burst in the heat of a fire.

Special protective equipment for fire-fighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with full face-piece operated in positive pressure mode.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: EVACUATE ALL PERSONNEL FROM AFFECTED AREA
Local authorities should be advised if significant spillages cannot be contained. Surfaces may become slippery after spillage. Keep upwind.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

Methods and materials for containment and cleaning up: Should not be released into the environment.
Large Spills: Dike far ahead of spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.
Small Spills: Wipe up with absorbent material (e.g. cloth, fleece).

Never return spills in original containers for re-use. Following product recovery, flush the area with water. Clean surface thoroughly to remove residual contamination.

7. HANDLING AND STORAGE

Pressurized extinguishers should be properly stored and secured to prevent from falling or being knocked over. Do not drag, slide or roll extinguishers. Do not drop extinguishers or permit them to strike against each other. Never apply flame or localized heat directly to any part of the extinguisher or plastic container. Store pressurized extinguishers and plastic containers away from high heat sources. Storage area should be: - cool - dry - well ventilated - under cover - out of direct sunlight.

Handling: Do not get this material in contact with eyes. Avoid contact with skin. Avoid prolonged exposure. Handle and open container with care.

Storage: Store in cool place. Store in a well-ventilated place. Keep container tightly closed. Keep out of the reach of children. Use care in handling/storage.

Section 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

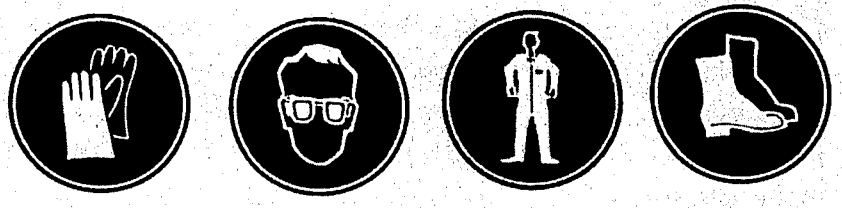
Chemical Name	OSHA PEL	ACGIH TLV	DFG MAK*	EU BLV
Potassium Citrate	N/R	N/R	N/R	N/R
Potassium Acetate	N/R	N/R	N/R	N/R
Water	N/R	N/R	N/R	N/R

*German regulatory limits ** PNOC = Particulates not otherwise classified (ACGIH) also known as particulates not otherwise regulated (OSHA) *** NR = Not Regulated. All values are 8 hour time weighted average concentrations

Engineering controls: Showers
Eyewash station
Ventilation system

Personal protection

Respiratory: Use supplied air respiratory protection if required. If respiratory protection is required, follow the requirements of the Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), or equivalent State standard.
Hands: Wear glove protection appropriate to the specific operation for which this gas is used.
Eyes: Safety glasses with side shields.
Skin/Body: Use body protection appropriate for task. Pressurized product may require use of fire retardant clothing. Metal cap safety shoes, are recommended when handling cylinders.



Some applications of this product may require additional or other specific protective clothing. Please consult your supervisor.

Personal protection: Safety glasses with side shields, goggles or face shield. Impervious gloves. Protective clothing. Metal cap safety shoes.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Clear to opaque liquid, water based
Molecular Weight:	C2H3KO2: 98.14
Odor:	Mild Odor
Odor Threshold:	No information available
Decomposition Temperature ^{O}C:	100 - 120
Freezing Point ^{O}C:	No information available
Initial Boiling Point ^{O}C:	Approximately 149
Physical State:	Liquid
pH:	8 - 9
Flash Point ^{O}C:	None
Auto-ignition Temperature ^{O}C:	None
Boiling Point/Range ^{O}C:	145/140-155
Melting Point/Range ^{O}C:	Not Applicable
Flammability:	Not flammable
Flammability Limits in Air ^{O}C:	Upper – Not Flammable; Lower-Not Flammable
Explosive Properties:	None
Oxidizing Properties:	None
Volatile Component (%vol)	Not Applicable
Evaporation Rate:	Not Applicable
Vapor Density:	Not Applicable (Air = 1)
Vapor Pressure:	Not Applicable
Specific gravity:	1.1 – 1.2 at 25 °C
Solubility (@20^{O}C):	Soluble in the following material: water
Partition Coefficient:	No Information Available
Viscosity:	Not Applicable

10. STABILITY AND REACTIVITY

Stability and reactivity: This product is stable.
Incompatibility: Strong oxidizing agents.
Hazardous:
decomposition products: Not known.
Hazardous polymerization: Carbon oxides, potassium oxides

11. TOXICOLOGICAL INFORMATION

Acute Effects
Inhalation: None expected.
Skin: Prolonged contact may cause dryness to skin.
Eyes: May cause temporary eye irritation.
Ingestion: No harmful effects expected in amounts likely to be ingested by accident.
Potential chronic health effects: Carcinogenic effects: Not classified or listed by IARC, NTP, OSHA, EU, ACGIH.
Mutagenic effects: Not available
Teratogenic effects: Not available

Chemical Name	LD50		LC50 (Inhalation)
	Oral	Dermal	
Potassium Citrate	N/A	N/A	N/A
Potassium Acetate	3,250mg/kg (rat)	N/A	N/A
Water	N/A	N/A	N/A

Reproductive Toxicity: This product's ingredients are not know to have reproductive or teratogenic effects.

Target organs and effects (TOST): This product is a mild irritant to epithelial tissue, (eyes, mucous membranes , skin) and may aggravate injury. No information was found indicating the product causes sensitization.

Other Toxicity Categories

Chemical Name	Germ Cell Mutagenicity	Carcinogenicity	Reproductive	TOST Single Experiment	Aspiration
Potassium Citrate	None	None	None	None	None
Potassium Acetate	None	None	None	None	None
Water	None	None	None	None	None

12. ECOLOGICAL INFORMATION

Ecotoxicity: A weak environmental toxin. Specific negative impacts are unknown
Persistence/Degradability: Soluble in water; moderate degradation in soil. Rapid photolytic degradation in air
Probability of rapid biodegradation: C2H3KO2 Est: 0.792 (Rapid)
Anaerobic biodegradation probability: C2H3KO2 Est: - 0.943 (Rapid)
Bioaccummulation potential: Low
Bioconcentration factor: C2H3KO2 Est: 3.16 L/kg (wet weight)
Bioaccummulation: Extent unknown but unlikely

Mobility in soil: Slow evaporation rate; water soluble, may leach to groundwater

NOTE: C2H3KO2 – Potassium Acetate

Other adverse effects: No other known effects

Aquatic Toxicity Values – Environment - Research

Chemical Name	Acute (LC50)	Chronic (LC50)
Potassium Citrate	Not Acutely Toxic	Not Acutely Toxic
Potassium Acetate	298mg/L Fish 96 hr (Phimepales Promelas; 313mg/L Crustaceans 48 hr	N/A
Water	N/A	N/A

Aquatic Toxicity Values – Environment – Calculated Estimates

Chemical Name	Acute (LC50)	EC50
Potassium Citrate	3.14e+06 mg/L Fish 96 hr; 1.27e+05 mg/L Daphnid 43 hr	2.33e+05 mg/L Gr. Algae 96 hr
Potassium Acetate	N/A	4403 mg/L Gr. Algae 96 hr
Water	N/A	N/A

13. DISPOSAL CONSIDERATION

Disposal: This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.

Waste from residues: Dispose of in accordance with local regulations.

14. TRANSPORTATION INFORMATION

DOT/TC: Not regulated
IATA: Not Regulated
UN Proper Shipping Name: Not regulated
UN Class: None
UN Number: None
UN Packaging Group: None
Marine Pollutant: No

NOTES:

This product is not defined as a hazardous material under U.S. Department of Transportation (DOT) 49 CFR 172, or by Transport Canada "Transportation of Dangerous Goods" regulations.
Special Precautions for Shipping:
If shipped in a stored pressure-type fire extinguisher, and pressurized with a non-flammable, non-toxic inert expellant gas, the fire extinguisher is considered a hazardous material by the US Department of Transportation and Transport Canada. The proper shipping name shall be FIRE EXTINGUISHER and the UN designation is UN 1044. The DOT hazard class is Limited Quantity when shipped via highway or rail. Use a non- flammable gas label (class 2.2) when shipping by air.

15. REGULATORY INFORMATION

International Inventory Status: All ingredients are on the following inventories

Countries	Agency	Status
United States of America	TSCA	Yes
Canada	DSL	Yes
Europe	EINECS/ELINCS	Yes
Australia	AICS	Yes
Japan	MITI	Yes
South Korea	KECL	Yes

REACH Title VII Restrictions: No information available

Chemical Name	Dangerous Substance	Organic Solvents	Harmful Substances Whose Names Are to be Indicated on Label	Pollution Release and Transfer Registry (Class II)	Pollution Release and Transfer Registry (Class I)	Poison and Deleterious Substances Control Law
Potassium Citrate	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Potassium Acetate	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Water	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

Component	ISHA - Harmful Substances Prohibited for Manufacturing, Importing, Transferring, or Supplying	ISHA – Harmful Substances Requiring Permission	Toxic Classification Listing (TCCL) – Toxic Chemicals	Toxic Release Inventory (TRI) – Group I	Toxic Release Inventory (TRI) – Group II
Potassium Citrate	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Potassium Acetate	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Water	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

European Risk and Safety Phrases:

EU Classification:	XN	Irritant
R Phrases:	20	Harmful by inhalation
	36/37/38	Irritating to eyes, respiratory system, skin
S Phrases:	24/25	Avoid contact with skin and eyes
	26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
	36	Wear suitable protective clothing
	38	Eye/face protection

US Federal Regulatory Information:

SARA 313:

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) - This product does not contain and chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372. None of the chemicals in this product are under SARA reporting requirements or have SARA threshold planning quantities (TPQs) or CERCLA reportable quantities (RQs), or are regulated under TSCA 8(d).

SARA 311/312 **Hazard Categories**

Acute Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure-*	Yes
Reactive Hazard	No

-* Only applicable if material is in a pressurized extinguisher.

Clean Water/ Clean Air Act:
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42) or Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61) and Section 112 of the Clean Air Act Amendments of 1990.

U.S. State Regulatory Information:

Chemicals in this product are covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: None
California – Permissible Exposure Limits for Chemical Contaminants: None
Florida – Substance List: None
Illinois – Toxic Substance List: None
Kansas – Section 302/303 List: None
Massachusetts – Substance List: None
Minnesota – List of Hazardous Substances: None
Missouri – Employer Information/Toxic Substance List: None
New Jersey – Right to Know Hazardous Substance List: None
North Dakota – List of Hazardous Chemicals, Reportable Quantities: None
Pennsylvania – Hazardous Substance List: None
Rhode Island – Hazardous Substance List: None
Texas – Hazardous Substance List: None
West Virginia – Hazardous Substance List: None
Wisconsin – Toxic and Hazardous Substances: None

California Proposition 65: No component is listed on the California Proposition 65 list.

Other:
Mexico – Grade No component listed
Canada – WHMIS Hazard Class No component listed

16. OTHER INFORMATION

Revision Date: February 8, 2018
Replaces: November 27, 2017
Changes made: Added GHS information

Notice to reader
This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200, and Globally Harmonized System of Classification and Labeling of Chemicals. Other government regulations must be reviewed for applicability to this mixture. To the best of Strike First Corporation's knowledge,

the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this mixture is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.

The Procter & Gamble Company
P&G Household Care
Fabric & Home Care Innovation Center
5299 Spring Grove Avenue
Cincinnati, OH 45217-1087

MATERIAL SAFETY DATA SHEET

MSDS #: RQ0700408 Issue Date: 6/14/2007
Supersedes: RQ0700080 Issue Date: 5/14/2007

SECTION I - PRODUCT IDENTIFICATION

Identity: **Fabric Softener Dryer Sheets** **Finished Product**

Brands: **Bounce, All Varieties Except Free**

(Outdoor Fresh [95319218], Fresh Linen [95074792], Spring Awakening [60058042], Winter Solution [95427873], w/ Febreze Spring & Renewal [95366291], w/ Febreze Meadows & Rain [95366293], w/ Febreze Citrus & Light [95530066], w/Aloe and White Lilac Scent [95794052], w/Chamomile and Lemon Verbena Scent [95794059], Fresh Lavender [95882242])

P&G Telephone Number: 1-800-682-1523

or call Local Poison Control Center or your physician.

SECTION II - HAZARDS IDENTIFICATION

Potential Health Hazards (Acute and Chronic): (See Section 11 for more information)

Ingestion: Ingestion of used or unused sheet by a young child or household pet may lead to impaction of the gastrointestinal tract. A physician or veterinarian should be consulted.

Eye Contact: Eye contact possible.

Skin Contact: Skin contact possible.

Inhalation: N/A

Signs and Symptoms of Exposure:

Ingestion: Oral ingestion may result in mild gastrointestinal irritation with nausea, vomiting or diarrhea.

Eye Contact: Prolonged instillation into the eye may result in transient superficial effects similar to those produced by mild toilet soap.

Skin Contact: Prolonged skin contact may result in transient superficial effects similar to those produced by mild toilet soap.

Inhalation: N/A

Medical Conditions Generally Known to be Aggravated by Exposure: N/K

Potential Environmental Effects: (See Section 12 for more information)

SECTION III - COMPOSITION AND INGREDIENTS

Ingredients listed on the product label are: biodegradable cationic softeners and perfume.

Hazardous Ingredients as defined by OSHA, 29 CFR 1910.1200. and/or WHMIS under the HPA:

Chemical Name	Common Name	CAS No.	Composition Range	LD50/LC50

While the finished product(s) is not considered hazardous as defined by OSHA in 29 CFR 1910.1200 (d), this MSDS contains valuable information critical to the safe handling and proper use of the product

SECTION IV – FIRST AID INFORMATION

First Aid Procedures:

Ingestion: Consult physician if ingestion of sheet is suspected to ensure the sheet passes through.

Eye Contact: Flush eyes with water.

Skin Contact: N/A

Inhalation: N/A

Note to Physician: Treat symptomatically

Other: Consumer product packages have a caution statement: "Not for use on children's sleepwear or other garments labeled as flame resistant as it may reduce flame resistance. Keep out of the reach of toddlers and pets to avoid accidental ingestion."

SECTION V - FIRE FIGHTING INFORMATION

Flash Point (Method Used): N/A

Flammable Properties:

Upper Flammable Limit: N/A

Lower Flammable Limit: N/A

Explosive Limits: UEL: N/A LEL: N/A

Auto-ignition Temperature: N/A

Hazardous Combustion Products: N/A

Explosion Data (Sensitivity to Mechanical Impact): N/A

Explosion Data (Sensitivity to Static Discharge): N/A

Extinguishing Media:

Suitable: CO_2, water or dry chemical may be used.

Unsuitable:

Protection of Firefighters:

Specific Hazards Arising from the Material: Burning can produce carbon monoxide and/or carbon dioxide.

Protective Equipment and Precautions for Firefighters:

SECTION VI - ACCIDENTAL RELEASE MEASURES

Personal Precautions - Occupational: Minimize dust levels while collecting product (see "Inhalation" health effects). Prevent exposure to dust with NIOSH approved respirators with HEPA filters. Use gloves to minimize skin contact.

Environmental Precautions: : DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH ALL FEDERAL, STATE/PROVINCIAL AND LOCAL REGULATIONS. Household solutions may be disposed of in sewer. Dry product may be landfilled if permitted by local regulations. Discard empty container in trash.

Methods for Containment: N/A

Methods for Cleanup: N/A

SECTION VII – HANDLING AND STORAGE

Precautions To Be Taken in Handling: No special precautions for casual exposure.

Precautions To B e Taken in Storage: None required.

SECTION VIII - EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines: No special precautions for casual exposure.

Engineering Controls: N/A

Personal Protective Equipment (PPE): N/A

Eye/Face Protection: None required.

Skin Protection: None required.

Respiratory Protection: No special precautions for casual exposure.

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

Appearance (color, physical form, shape): Opaque white sheets. Product is perfumed.

Flash Point (Method Used): N/A

Odor: Perfumed

Reserve Alkalinity: N/A

Odor Threshold: N/A

Solubility in Water: N/A

Physical State: Solid

Decomposition Temperature: N/A

Vapor Pressure (mm Hg): N/A

Evaporation Rate (nBuOAc=1): N/A

Vapor Density (Air=1): N/A

Specific Gravity/Density: N/A

Boiling Point: N/A

Melting/Freezing Point: N/A

Partition Coefficient (n-octanol/water): N/A

pH : N/A

Volatile Organic Compound (VOC): Not applicable - Product not regulated for VOC Content at State or Federal level

SECTION X - STABILITY AND REACTIVITY

Chemical Stability: Stable

Conditions to Avoid: Open flame

Incompatible Materials: None

Hazardous Decomposition Products: Burning can produce carbon monoxide and/or carbon dioxide.

Possibility of Hazardous Reactions: None known

SECTION XI - TOXICOLOGICAL INFORMATION

LD50 (rats oral): The estimated LD50 of the material with which the sheet is coated is >10.0 gm/kg.
ED50: >1.5 gm/kg (coating mixture)

If ingested, mild gastrointestinal irritation with nausea, vomiting, and diarrhea may be observed. Intestinal tract blockage is also possible following ingestion. Eye contact with the product may produce transient, superficial irritation.

Chronic Effects: No chronic health effects reported.

Target Organs: No target organs reported.

Carcinogenicity: NTP: No **IARC:** No **OSHA:** No

SECTION XII - ECOLOGICAL INFORMATION

Containers as well as used and unused sheets are compatible with municipal solid waste systems and they will not pose a hazard to the environment when the waste is properly handled. Ingredients delivered to fabric during use are compatible with down the drain disposal during subsequent laundering of the treated fabric. The ingredients do not pose a significant hazard to aquatic organism and will not cause any long-term adverse effects in the environment at environmentally relevant concentrations. The softening agents used in the product are biodegradable.

SECTION XIII - DISPOSAL CONSIDERATIONS

Waste Disposal Method: **DISPOSAL SHOULD BE IN ACCORDANCE WITH FEDERAL, STATE/PROVINCIAL AND LOCAL REGULATIONS**

Non-Household Setting: Products covered by this MSDS, in their original form, when disposed as waste, are considered non hazardous waste according to Federal RCRA regulations (40 CFR 261). Disposal should be in accordance with local, state and federal regulations.

California Hazardous Waste: Not hazardous, in accordance with 22 CCR 66261.20 through 22 CCR 66261.24

Household Use: Consumer may discard sheets or empty container in trash, or recycle container where facilities exist.

SECTION XIV - TRANSPORT INFORMATION

Products covered by this MSDS, in their original form, are not regulated for transportation.

Ground Transport (US DOT): Not regulated

Air Transport (IATA): Not regulated

Marine/Water Transport (IMDG): Not regulated

SECTION XV - REGULATORY INFORMATION

While the finished products are not considered hazardous as defined by OSHA in 29 CFR 1910.1200 (d), this MSDS contains valuable information critical to the safe handling and proper use of the product

United States

All intentionally-added components of this product are listed on the US TSCA Inventory.

This product is not subject to warning labeling under California Proposition 65.

EPA Reg. No.: Not Applicable

State Right-to-Know and CERCLA:
The following ingredients present in the finished product are listed on state right-to-know lists or state worker exposure lists

Ingredient	CAS #	Level	CERCLA RQ	State				
				IL	MA	NJ	PA	RI

Perfumes contained within the products covered by this MSDS comply with appropriate IFRA guidance

Canada

All ingredients are CEPA approved for import to Canada by Procter & Gamble. This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and this MSDS contains all information required by the Controlled Products Regulations.

SECTION XVI - OTHER INFORMATION

Perfumes contained within the products covered by this MSDS comply with appropriate IFRA guidance.

P&G Hazard Rating:	Health:	1	4=EXTREME
	Flammability:	1	3=HIGH
	Reactivity:	0	2=MODERATE
			1=SLIGHT
			0=NOT SIGNIFICANT

*N/A. - Not Applicable *N/K. - Not Known

Data supplied is for use only in connection with occupational safety and health.

DISCLAIMER: This MSDS is intended to provide a brief summary of our knowledge and guidance regarding the use of this material. The information contained here has been compiled from sources considered by Procter & Gamble to be dependable and is accurate to the best of the Company's knowledge. It is not meant to be an all-inclusive document on worldwide hazard communication regulations.

This information is offered in good faith. Each user of this material needs to evaluate the conditions of use and design the appropriate protective mechanisms to prevent employee exposures, property damage or release to the environment. Procter & Gamble assumed no responsibility for injury to the recipient or third persons, or for any damage to any property resulting from misuse of the product.

The Procter & Gamble Company
P&G Household Care
Fabric & Home Care Innovation Center
5299 Spring Grove Avenue
Cincinnati, OH 45217-1087

MATERIAL SAFETY DATA SHEET

MSDS #: RQ0701772 Issue Date: November, 2007
Supersedes: N/A Issue Date: N/A

SECTION I - CHEMICAL PRODUCT

Identity: **Liquid Surface Sanitizing Cleaner**

Brands: **Comet Disinfecting Bathroom Cleaner (Professional Line)**

P&G Telephone Number: 1-800-332-7787or call Local Poison Control Center or your physician.

Emergency (24 hour) Telephone Number: CHEMTREC 1-800-424-9300

SECTION II - HAZARDS IDENTIFICATION

Potential Health Hazards (Acute and Chronic): (See Section 11 for more information)

Ingestions: Mild mucous membrane irritant. May result in gastrointestinal irritation with nausea, vomiting and diarrhea.

Eye Contact: Mild eye irritant.

Inhalation: Mild respiratory irritant.

Skin: Mild skin irritant. Use on irritated or extremely dry skin may aggravate the existing condition.

Signs and Symptoms of Exposure:

Ingestion: May cause transient gastrointestinal irriation including nausea, vomiting and diarrea. When diluted according to label directions, these signs and symptoms may still be present but to a lesser extent.

Eye Contact: May cause stinging, tearing, burning, swelling and/or redness. When diluted according to label directions, these signs and symptoms may still be present but to a lesser extent.

Skin Contact: Prolonged contact may be drying or transiently irritating to skin. When diluted according to label directions, these signs and symptoms may still be present but to a lesser extent.

Inhalation: N/A

Medical Conditions Generally Known to be Aggravated by Exposure: N/K

Potential Environmental Effects: (See Section 12 for more information)

SECTION III - COMPOSITION AND INGREDIENTS

Ingredients/Chemical Name: Cleaning agents (dipropylene glycol butyl ether, citric acid), quality control agents, perfume and water.

The concentrated mixture, when tested as a whole, is considered an eye irritant within the meaning of the OSHA Hazard Communication Standard.

Hazardous Ingredients as defined by OSHA, 29 CFR 1910.1200. and/or WHMIS under the HPA:

Chemical Name	Common Name	CAS No.	Composition Range	LD50/LC50

None				

SECTION IV – FIRST AID INFORMATION

First Aid Procedures:

Ingestion: Drink 1-2 glasses of water and call a Poison Control Center or doctor (product contains an alcohol ethoxylate). Do not induce vomiting unless told to do so by a Poison Control Center or doctor. Have the product container or label with you when calling or going for treatment

Eye Contact: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a Poison Control Center or doctor for treatment advice.

Skin: Thoroughly wash exposed area with soap and water and discontinue use. Remove contaminated clothing.

Inhalation:

Note to Physician: (if applicable)

Other: Product package has a precautionary statement: CAUTION: KEEP OUT OF REACH OF CHILDREN. Causes eye irritation. Avoid contact with eyes. May be harmful if swallowed. Do not mix with bleach or mildew stain removers as irritating fumes may result.

SECTION V - FIRE FIGHTING INFORMATION

Flash Point (Method Used): >200°F CC (>93.33c)

Flammable Properties: N/A

Upper Flammable Limit: N/A

Lower Flammable Limit: N/A

Explosive Limits: UEL: N/A LEL: N/A

Auto-ignition Temperature: N/A

Hazardous Combustion Products: N/K

Explosion Data (Sensitivity to Mechanical Impact): N/A

Explosion Data (Sensitivity to Static Discharge): N/A

Extinguishing Media:

Suitable: Use CO_2, water, dry chemical or 'alcohol' foam.

Unsuitable: None known

Protection of Firefighters:

Specific Hazards Arising from the Material: None known

Protective Equipment and Precautions for Firefighters: Normal firefighting gear. Use water to keep fire exposed container cool.

SECTION VI - ACCIDENTAL RELEASE MEASURES

Personal Precautions: None

Environmental Precautions: DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS. Do not landfill. Small quantities may be disposed of via sewer.

Methods for Containment: Prevent spills from reaching waterways.

Methods for Cleanup: Use water spray to dilute and/or wash away spills to avoid exposure and to protect persons working to stop/repair leak.

Other Information: (if applicable)

SECTION VII – HANDLING AND STORAGE

Precautions To Be Taken in Handling: Handling and storage must be well ventilated, cool and dry. Materials must be isolated from potential sources of ignition. Fire fighting equipment must be available at all times

Precautions To B e Taken in Storage: Store in a cool place. Keep away from heat/sparks and open flame. Discard empty bottle in trash.

SECTION VIII - EXPOSURE CONTROLS, PERSONAL PROTECTION

Exposure Guidelines: N/A

Engineering Controls: N/A

Personal Protective Equipment (PPE):

Eye/Face Protection: None required with normal use.

Manufacturing: For splash protection, use chemical goggles. Eye wash fountain is desirable.

Skin Protection: None required with normal use.

Respiratory Protection: None required with normal use.

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

Appearance (color, physical form, shape): clear liquid

Odor: Perfumed

Odor Threshold: N/A

Physical State: Liquid

Vapor Pressure (mm Hg): N/A

Vapor Density (Air=1): N/A

Boiling Point: N/A

Partition Coefficient (n-octanol/water): N/A

Flash Point (Method Used): >200F CC (>93.33c)

Reserve Alkalinity: N/A

Solubility in Water: Completely

Decomposition Temperature: N/A

Evaporation Rate (nBuOAc=1): N/A

Specific Gravity/Density: 1.030-1.045

Melting/Freezing Point: ~30°F

pH (neat solution): 2.8-3.2

Volatile Organic Compound (VOC): Product complies with State and Federal regulations for VOC content.

SECTION X - STABILITY AND REACTIVITY

Chemical Stability: Stable

Conditions to Avoid: None

Incompatible Materials: Do not mix with bleach or mildew stain removers as irritating fumes may result.

Hazardous Decomposition Products: None known

Possibility of Hazardous Reactions: None known

SECTION XI - TOXICOLOGICAL INFORMATION

Chronic Effects: No chronic health effects reported.

Target Organs: No target organs reported.

Carcinogenicity: NTP: No

IARC: No

SECTION XII - ECOLOGICAL INFORMATION

Based on ecotoxicity and fate data for the individual ingredients in this specific formulation this product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment at relevant environmental concentrations. The surfactant(s) used in the formulation biodegrade rapidly and do not accumulate in the environment. This product is intended for dispersive use and should not be disposed of directly into the environment.

SECTION XIII - DISPOSAL CONSIDERATIONS

Waste Disposal Method: DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH FEDERAL, STATE/PROVINCIAL AND LOCAL REGULATIONS. DO NOT LANDFILL. Prevent spills from reaching waterways.

Non-Household Setting (US Federal): Industrial disposal of product in finished, consumer-ready packaging must be disposed of as an organic pesticide. Records must be kept of the disposal that documents the method of disposal, the date of disposal, the location of the disposal site, the type of pesticide disposed of (organic pesticide), and the amount of pesticide disposed of. Disposal records must be retained for 20 years. Incineration is preferred where permitted. Product removed from finished, consumer-ready packaging may be disposed of as non-pesticidal, liquid waste which is non-hazardous waste according to Federal RCRA regulations (40 CFR 261).

Non-Household Setting (California): Hazardous, in accordance with 22 CCR 66261.20 through 22 CCR 66261.24

SECTION XIV - TRANSPORT INFORMATION

Products covered by this MSDS, in their original form, are regulated for transportation.

Ground Transport (US DOT): Consumer Commodity ORM-D

Air Transport (IATA): DO NOT SHIP. Finished product packaging does not meet air transport requirements.

Marine/Water Transport (IMDG): UN1760, Corrosive liquid, n.o.s. (citric acid), 8, PGIII, Ltd. Qty.

SECTION XV - REGULATORY INFORMATION

United States

All intentionally-added components of this product are listed on the US TSCA Inventory.

EPA Registration Number: 3573-54

SARA 313/302/304/311/312 chemicals: None

California: This product has been evaluated and does not require warning labeling under California Proposition 65.

California Registration Number: 3573- 54-ZF

State Right-to-Know and CERCLA:

The following ingredients present in the finished product are listed on state right-to-know lists or state worker exposure lists

Ingredient	CAS #	Level	CERCLA RQ	State
Citric Acid	77-92-9	3-7%	N/A	TX

Canada

All ingredients are CEPA approved for import to Canada by Procter & Gamble. This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and this MSDS contains all information required by the Controlled Products Regulations.

SECTION XVI - OTHER INFORMATION

Perfumes contained within the products covered by this MSDS comply with appropriate IFRA guidance.

P&G Hazard Rating:	Health:	1	4=EXTREME
	Flammability:	0	3=HIGH
	Reactivity:	0	2=MODERATE
			1=SLIGHT
			0=NOT SIGNIFICANT

*N/A. - Not Applicable *N/K. - Not Known

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Procter & Gamble
CPG TN 6
2 Procter & Gamble Plaza
Cincinnati, OH 45202

MATERIAL SAFETY DATA SHEET

Issue Date: 8/01
Supersedes: 2/1/00 Issue Date: N/A

SECTION I - CHEMICAL PRODUCT

Identity: **Liquid Cleaner**

Brands: **COMET Cleaner with Bleach (Professional Line)**

Hazard Rating: 1

Health: 1
Flammability: 0
Reactivity: 0

4=EXTREME
3=HIGH
2= MODERATE
1=SLIGHT

Emergency Telephone Number: 1-800-332-7787 or call Local Poison Control Center

SECTION II - COMPOSITION AND INGREDIENTS

Ingredients/Chemical Name: Cleaning agents, bleach (sodium hypochlorite), surface safety agent, perfume and water.

This mixture, when tested as a whole, is considered an eye irritant within the meaning of the OSHA Communication Standard

Hazardous Ingredients as defined by OSHA, 29 CFR 1910.1200.

Chemical Name	Common Name	CAS No.	Recommended Limits	Composition Range	LD50/LC50
Sodium hypochlorite	Bleach	7681- 52-9	ACGIH STEL: 2mg/m^3	0. 5-1 5%	
Sodium hydroxide	Caustic soda	1310-73-2	ACGIH STEL: 2 mg/m^3 OSHA PEL: 2 mg/m^3	0.1-1%	

SECTION III - HAZARDS IDENTIFICATION

Health Hazards (Acute and Chronic):

Ingestion: May cause mild , transient gastrointestinal irritation with nausea, vomiting or diarrhea

Eye Contact: May cause mild, transient irritation with stinging and tearing similar to that caused by other detergents.

Skin: May be irritating to skin. May further irritate already irritated or extremely dry skin.

Inhalation: Mild mucous membrane irritant.

SECTION IV - FIRST AID INFORMATION

Emergency and First Aid Procedures:

Ingestion: Drink 1 or 2 large glasses of water.. If large amounts are ingested, call a physician.

Eye Contact: Flush with large amounts of water for at least 15 minutes.

Skin: Wash exposed area thoroughly area with soap and water and discontinue use. Remove contaminated clothing.

Inhalation: Leave the area

Other: Product package has a caution statement: CAUTION: KEEP OUT OF REACH OF CHILDREN. May cause eye irritation. EYE IRRITANT: Avoid contact with eyes. May be irritating to skin. For sensitive skin or prolonged use, wear gloves. Do not mix with other cleaning products as irritating fumes may be released. In case of eye contact, flush thoroughly with water. If swallowed, drink a glass of water to dilute. Call a physician immediately.

SECTION V - FIRE FIGHTING INFORMATION

Flash Point (Method Used): over 200°F (cc) **Explosive Limits**: *LEL:* N/A *UEL*: N/A

Extinguishing Media: CO_2, water, dry chemical or "alcohol" foam

Special Fire Fighting Procedures: Use water to keep fire exposed container cool.

Unusual Fire Hazards: None known.

SECTION VI - ACCIDENTAL RELEASE MEASURES

Personal Precautions: None

Environmental Precautions: DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS. Do not landfill. Small quantities may be disposed of via sewer.

Steps To Be Taken in Case Large Quantities of Material are Released or Spilled: Use water spray or dilute and/or wash away spills to avoid exposure and to protect persons working to stop/repair leak.

SECTION VII - HANDLING AND STORAGE

Precautions To Be Taken in Handling and Storing: Handling and storage must be well ventilated, cool, and dry. Store product away from potential sources of ignition. Fire fighting equipment must be available at all times.

Other Precautions: Keep away from heat/sparks and open flame..

SECTION VIII - EXPOSURE CONTROLS, PERSONAL PROTECTION

Respiratory Protection (Specify Type): None required with normal use.

Ventilation General

Eye Protection: None required with normal use.

Manufacturing Setting: For splash protection, use chemical goggles. Eye wash fountain is desirable.

Protective Gloves: None required with normal use.

Other Protective Equipment: None required with normal use.

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point °F: N/A

Vapor Pressure (mm Hg): N/A

Vapor Density (Air=1): N/A

Coefficient of Water/Oil Distribution: N/A

Appearance and Odor: Clear liquid

Product is perfumed.

Specific Gravity (H_2O=1): 1.030-1.045

Percent Volatile by Volume (%): N/A

Evaporation Rate (nBuOAc=1): N/A

Freezing Point: N/A

pH (100%): 13

Solubility in Water: Completely

Reserve Alkalinity: N/A

SECTION X - STABILITY AND REACTIVITY

Possible Hazardous Reactions/Conditions/By Products: None known

Conditions to Avoid: None

Materials to Avoid: Do not mix with other products, especially toilet bowl cleaners, acidic cleaners or products that contain ammonia.

Hazardous Decomposition Products: None known

Other Recommendations: None

Stability: Stable

Hazardous Polymerization: Will not occur

SECTION XI - TOXICOLOGICAL INFORMATION

LD50 (rats oral): >6.5 g/kg

Comet Cleaner with Bleach has a relatively low order of toxicity. It may be irritating, but it is not expected to be corrosive. It is expected to be emetic.

SECTION XII - ECOLOGICAL INFORMATION

No environmental concerns.

SECTION XIII - DISPOSAL CONSIDERATIONS

Waste Disposal Method: Do not landfill. Small quantities may be disposed of via sewer. DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.

SECTION XIV - TRANSPORT INFORMATION

DOT Classification: Comet Cleaner with Bleach is not DOT hazardous in packages as sold. Bulk product shipments are classified as Class 9 Hazardous Substance with a shipping name of Environmentally hazardous substance, liquid n.o.s.

SECTION XV - ADDITIONAL REGULATORY INFORMATION

All components are listed on the US TSCA Inventory.

No components of Comet Cleaner with Bleach are subject to California Proposition 65.

EPA CERCLA TITLE III

Chemical Name	CERCLA304 RQ (LBS)	311/312	313
Sodium hypochlorite	100	no	no
Sodium hydroxide	1000	no	no

All ingredients are CEPA approved for import to Canada by Procter & Gamble. This product has been classified with Hazard Criteria of the Canadian Control Products Regulation (CPR) and this MSDS contains all information required by the Canadian Products Regulation.

SECTION XVI - OTHER INFORMATION

*N/A. - Not Applicable *N/K. - Not Known

The submission of this MSDS may be required by law, but this is not an assertion that the substance is hazardous when used in accordance with proper safety practices and normal handling procedures. Data supplied is for use only in connection with occupational safety and health.

The information contained herein has been compiled from sources considered by Procter & Gamble to be dependable and is accurate to the best of the Company's knowledge. The information relates to the specific material designated herein, and does not relate to the use in combination with any other material or any other process. Procter & Gamble assumed no responsibility for injury to the recipient or third persons, for any damage to any property resulting from misuse of the controlled product.

The Procter & Gamble Company
P&G Household Care
Fabric & Home Care Innovation Center
5299 Spring Grove Avenue
Cincinnati, OH 45217-1087

MATERIAL SAFETY DATA SHEET

MSDS #: RQ0812427 Issue Date: 10/6/08
Supersedes: RQ0704530 Issue Date: 2/10/08

SECTION I - PRODUCT IDENTIFICATION

Identity: **Liquid Hand Dishwashing Detergents and Antibacterial Hand Soaps** **Finished Product**

Brands: **ULTRA DAWN**

(Ultra Dawn Original Blue [95405836], Ultra Dawn Honeysuckle & Rain [95363123], Ultra Dawn Jasmine & Lavender [95363124], Ultra Dawn Advanced Power [95506228], Ultra Dawn Orange Dishwashing Liquid/Antibacterial Hand Soap [64031624], Ultra Dawn Apple Blossom Dishwashing Liquid/Antibacterial Hand Soap [64031623] , Ultar Dawn Pink Ribbon [98678590], Ultra Dawn Pure Essentials Sparkling Mist [98822283], Ultra Dawn Pure Essentials Citrus Infusion [98827118])

P&G Telephone Number: 1-800-725-3296

or call Local Poison Control Center or your physician.

SECTION II - HAZARDS IDENTIFICATION

Potential Health Hazards (Acute and Chronic): (See Section 11 for more information)

Ingestion: Ingestion may cause transient gastrointestinal irritation.

Eye Contact: May cause mild, transient irritation.

Skin: Transient irritation with prolonged exposure to concentrated material.

Inhalation: N/A

Signs and Symptoms of Exposure:

Ingestion: May result in nausea, vomiting, and/or diarrhea.

Eye Contact: May cause stinging, tearing, itching, swelling, and/or redness.

Skin: Prolonged contact with concentrated material may be drying or transiently irritating to skin.

Inhalation: N/A

Potential Environmental Effects: (See Section 12 for more information)

SECTION III - COMPOSITION AND INGREDIENTS

Ingredients listed on the product label are: biodegradable anionic surfactants and **no phosphate**. For Ultra Dawn Advanced Power, ingredients listed on the product label are: biodegradable anionic surfactants, enzymes, and **no phosphate.** For antibacterial hand soaps, active ingredient is triclosan at 0.1%. Inactive ingredients for antibacterial hand soaps are listed in the Drug Facts box on back label.

Hazardous Ingredients as defined by OSHA, 29 CFR 1910.1200. and/or WHMIS under the HPA:

Chemical Name	Common Name	CAS No.	Composition Range	LD50/LC50
Ethyl alcohol	Ethanol	64-17-5	1-5%	LD50 (rabbit, oral)= 6300 mg/kg

These substances are listed because in their pure bulk form they meet the OSHA definition of hazardous. Any hazards associated with this finished product are listed in Section II of this MSDS.

SECTION IV – FIRST AID INFORMATION

First Aid Procedures:

Ingestion: Drink 1 or 2 glasses of water.

Eye Contact: Flush thoroughly with water for 15 minutes.

Skin: If prolonged contact occurs, rinse thoroughly with water. If spilled on clothing, change clothes. If symptoms persist or recur, seek medical attention.

Inhalation: N/A

Other: Consumer product package has the following precautionary statement on the back label: "For external use only. Keep out of the reach of children. If Dawn gets in eyes, rinse thoroughly with water. If swallowed, drink a glass of water to dilute."

SECTION V - FIRE FIGHTING INFORMATION

Flammable Properties: The liquid hand dishwashing detergents have a flashpoint of 115-135°F (46.1-57.2˚C) Pensky-Martens (Closed cup). However, the detergents do **not** sustain combustion according to ASTM D4206.

Flammable Properties:

Upper Flammable Limit: N/A

Lower Flammable Limit: N/A

Explosive Limits: UEL: N/A LEL: N/A

Auto-ignition Temperature: N/A

Hazardous Combustion Products: N/A

Explosion Data (Sensitivity to Mechanical Impact): N/A

Explosion Data (Sensitivity to Static Discharge): N/A

Extinguishing Media:

Suitable: CO_2, water or dry chemical may be used.

Unsuitable: N/K

Protection of Firefighters:

Specific Hazards Arising from the Material: None.

SECTION VI - ACCIDENTAL RELEASE MEASURES

Personal Precautions: None

Environmental Precautions: DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS. Solutions of the detergents may be allowed to be flushed down sewer - First check with your local water treatment plant. Recycling is recommended for undiluted scrap product. Do not landfill.

Steps To Be Taken in Case Material is Released or Spilled: Prevent spills from reaching a waterway. Sorbents may be used. Read "Waste Disposal Method" below for further information.

SECTION VII – HANDLING AND STORAGE

Precautions To Be Taken in Handling: No special precautions necessary.

Precautions To B e Taken in Storage: No special precautions necessary.

SECTION VIII - EXPOSURE CONTROLS / PERSONAL PROTECTION

Recommended Exposure Guidelines: Ethanol (CAS# 64-17-5) ACGIH-TLV 1000 ppm
OSHA Z-1 PEL 1000 ppm

Engineering Controls: N/A

Personal Protective Equipment (PPE): N/A

Eye/Face Protection: None required with normal household use.

Industrial Setting: For splash protection, use chemical goggles. Eye wash fountain is recommended.

Skin Protection: None required with normal household use.

Industrial Setting: Protective gloves (rubber, neoprene) should be used for prolonged direct contact.

Respiratory Protection: No special precautions for casual exposure.

Ventilation *Local Exhaust*: None required with normal consumer use. *Special*: None
Industrial (General): Normal/general dilution ventilation is acceptable. *Other*: None

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

Appearance (color, physical form, shape): Clear, opaque or colored liquids.

Flash Point (Method Used): 115-135°F (46.1-57.2˚C) Pensky-Martens (Closed cup) but do **not** sustain combustion according to ASTM D4206.

Odor: Perfumed

Reserve Alkalinity: N/A

Odor Threshold: N/A

Solubility in Water: Complete

Physical State: Liquid hand dishwashing solution

Decomposition Temperature: N/K

Vapor Pressure (mm Hg): N/K

Evaporation Rate (nBuOAc=1): N/K

Vapor Density (Air=1): N/K

Specific Gravity/Density: ca. 1

Boiling Point: N/K

Melting/Freezing Point: ~ 30 ˚F (-1.1˚C)

Partition Coefficient (n-octanol/water): N/K

pH (10% solution): 9

Volatile Organic Compound (VOC): Not applicable - Product not regulated for VOC Content at State or Federal level

SECTION X - STABILITY AND REACTIVITY

Chemical Stability: Stable

Conditions to Avoid: None known

Incompatible Materials: None

Hazardous Decomposition Products: None known

Possibility of Hazardous Reactions: None known

SECTION XI - TOXICOLOGICAL INFORMATION

Liquid hand dishwashing detergents have a relatively low order of toxicity, may cause transient irritation and are expected to be emetic.

Chronic Effects: No chronic health effects reported.

Target Organs: No target organs reported.

Carcinogenicity: This finished product is not carcinogenic. **NTP:** No **IARC:** No **OSHA:** No

SECTION XII - ECOLOGICAL INFORMATION

All surfactants are readily biodegradable.

SECTION XIII - DISPOSAL CONSIDERATIONS

Waste Disposal Method: **DISPOSAL SHOULD BE IN ACCORDANCE WITH FEDERAL, STATE/PROVINCIAL AND LOCAL REGULATIONS**

Non Household Setting: Products covered by this MSDS, in their original form, when disposed as waste, are considered **non hazardous waste** according to Federal RCRA regulations (40 CFR 261). Disposal should be in accordance with local, state and federal regulations. Solutions of diluted detergent in the course of use, may be allowed to be flushed down sewer. First check with your local water treatment plant. Recycling is recommended for undiluted scrap product. Do not landfill.

California Hazardous Waste: Not hazardous, in accordance with 22 CCR 66261.20 through 22 CCR 66261.24

Household Use: Household product is safe for disposal down the drain during detergent use or in the trash. Dispose of empty bottle in the trash or recyle where facilities exist.

SECTION XIV - TRANSPORT INFORMATION

Products covered by this MSDS, in their original form, are not regulated for transportation.

Ground Transport (US DOT): Not regulated

Air Transport (IATA): Not regulated

Marine/Water Transport (IMDG): Not regulated

SECTION XV - REGULATORY INFORMATION

United States

All intentionally-added components of this product are listed on the US TSCA Inventory.

This product is not subject to warning labeling under California Proposition 65.

EPA Reg. No.: Not Applicable

This product contains the following SARA 313/302/304/311/312 chemicals:
None

This product contains the following CERCLA chemicals:

Chemical Name	CAS Number	Max Range in Product (%)
Ethanol	64-17-5	5.0%

State Right-to-Know:
The following ingredients present in the finished product are listed on state right-to-know lists or state worker exposure lists:

Ingredient	CAS #	Max Level	State				
			IL	MA	NJ	PA	RI
Ethanol	64-17-5	5.0 %	X	X	X	X	X

Perfumes contained within the products covered by this MSDS comply with appropriate IFRA guidance

Canada

All ingredients are CEPA approved for import to Canada by Procter & Gamble. This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and this MSDS contains all information required by the Controlled Products Regulations.

SECTION XVI - OTHER INFORMATION

Perfumes contained within the products covered by this MSDS comply with appropriate IFRA guidance.

P&G Hazard Rating:	Health:	1	4=EXTREME
	Flammability:	1	3=HIGH
	Reactivity:	0	2=MODERATE
			1=SLIGHT
			0=NOT SIGNIFICANT

*N/A. - Not Applicable *N/K. - Not Known

Data supplied is for use only in connection with occupational safety and health.

DISCLAIMER: This MSDS is intended to provide a brief summary of our knowledge and guidance regarding the use of this material. The information contained here has been compiled from sources considered by Procter & Gamble to be dependable and is accurate to the best of the Company's knowledge. It is not meant to be an all-inclusive document on worldwide hazard communication regulations.

This information is offered in good faith. Each user of this material needs to evaluate the conditions of use and design the appropriate protective mechanisms to prevent employee exposures, property damage or release to the environment. Procter & Gamble assumed no responsibility for injury to the recipient or third persons, or for any damage to any property resulting from misuse of the product.

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product Name **EASY-OFF® Oven Cleaner - Heavy Duty**

UPC CODES Refer to section 16

CAS # Mixture

Product use Oven cleaner

Manufacturer Reckitt Benckiser
Morris Corporate Center IV
399 Interpace Parkway
P.O. Box 225
Parsippany, NJ 07054-0225
In Case of Emergency: 1-800-228-4722
Transportation Emergencies: 24 Hour Number:
North America: CHEMTREC: 1-800-424-9300
Outside North America: 1-703-527-3887

LEGEND HMIS/NFPA	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

2. Hazards Identification

Emergency overview DANGER -- CORROSIVE
CONTAINS SODIUM HYDROXIDE (LYE).
CAUSES BURNS TO SKIN AND EYES ON CONTACT.
HARMFUL IF SWALLOWED.
Contents under pressure.
Avoid contact with eyes, skin, mucous membranes and clothing.
DO NOT ingest. Use only with adequate ventilation. Avoid breathing spray mist.
Wear long rubber gloves when using.

KEEP OUT OF REACH OF CHILDREN.

Potential short term health effects

Routes of exposure Eye, Skin contact, Inhalation, Ingestion.

Eyes Causes burns.

Skin Causes burns.

Inhalation None expected during normal conditions of use.
However intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

Ingestion Harmful if swallowed.

Target organs Eyes. Respiratory system. Skin. Gastrointestinal tract.

Chronic effects The finished product is not expected to have chronic health effects.

Signs and symptoms The product causes burns of eyes, skin and mucous membranes.

3. Composition / Information on Ingredients

Ingredient(s)	CAS #	Percent
Ethanol, 2-(2-butoxyethoxy)-	112-34-5	2.5 - 10
Petroleum gases, liquefied, sweetened	68476-86-8	2.5 - 10
Sodium hydroxide	1310-73-2	2.5 - 10
Ethanol, 2-amino-	141-43-5	1 - 2.5

4. First Aid Measures

First aid procedures

Eye contact IMMEDIATELY flush eyes with water. Remove any contact lenses and continue to flush eyes for at least 15 minutes. If irritation persists, seek medical attention immediately.

Skin contact Rinse immediately and remove contaminated clothing. Wash thoroughly with soap and water and continue flushing for at least 10 minutes. If discomfort persists, seek medical attention immediately.

Inhalation Move to fresh air. If symptoms develop or persist, seek medical advice.

Ingestion Do not induce vomiting. Rinse mouth thoroughly and seek medical attention immediately.

Notes to physician Treat patient symptomatically.

General advice Keep away from sources of ignition. No smoking. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

5. Fire Fighting Measures

Flammable properties Aerosol flame extension less than 18 inches (45 cm).

Extinguishing media

Suitable extinguishing media Dry chemical. Alcohol foam. Water spray.

Unsuitable extinguishing media Not available

Protection of firefighters

Specific hazards arising from the chemical Contents under pressure. Pressurized container may explode when exposed to heat or flame. Cool containers with flooding quantities of water until well after fire is out.

Protective equipment for firefighters Firefighters should wear full protective clothing including self contained breathing apparatus.

Hazardous combustion products May include and are not limited to: Oxides of carbon. Oxides of nitrogen.

Explosion data

Sensitivity to mechanical impact Not available

Sensitivity to static discharge Not available

6. Accidental Release Measures

Personal precautions Keep unnecessary personnel away. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak.

Methods for containment Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas.

Methods for cleaning up Before attempting clean up, refer to hazard data given above. Remove sources of ignition. Although the chance of a significant spill or leak is unlikely in aerosol containers, in the event of such an occurrence, absorb spilled material with a non-flammable absorbent such as sand or vermiculite.

7. Handling and Storage

Handling

Use good industrial hygiene practices in handling this material. Do not get this material in your eyes, on your skin, or on your clothing. Do not ingest. Do not breathe vapours or spray mist.

Storage

Keep out of reach of children. Do not store at temperatures above 49 °C (120.2°F). Keep away from heat, open flames or other sources of ignition.
Keep from freezing.

NOTE TO PARENTS: Intentional misuse by deliberately concentrating and inhaling aerosol products may be harmful or fatal. Help stop inhalation abuse; for information visit www.inhalant.org.

8. Exposure Controls / Personal Protection

Exposure limits

Ingredient(s)	Exposure Limits
Ethanol, 2-(2-butoxyethoxy)-	**ACGIH-TLV** Not established **OSHA-PEL** Not established
Ethanol, 2-amino-	**ACGIH-TLV** TWA: 3 ppm STEL: 6 ppm **OSHA-PEL** TWA: 3 ppm
Petroleum gases, liquefied, sweetened	**ACGIH-TLV** Not established **OSHA-PEL** Not established
Sodium hydroxide	**ACGIH-TLV** Ceiling: 2 mg/m3 **OSHA-PEL** TWA: 2 mg/m3

Engineering controls Provide adequate ventilation.

Personal protective equipment

Eye / face protection tightly fitting safety goggles

Hand protection Rubber gloves. Confirm with a reputable supplier first.

Skin and body protection As required by employer code. long sleeved clothing
Follow label directions carefully.

Respiratory protection Not normally required under normal use conditions.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. Wash hands before breaks and immediately after handling the product.

9. Physical and Chemical Properties

Appearance Aerosol.

Color White.

Form compressed liquefied gas

Odor Characteristic

Odor threshold Not available

Physical state Gas

pH 13.3

Freezing point Not available

Pour point Not available

Boiling point	Not available
Flash point	> 200 °F (> 93.33 °C) (Liquid)
Evaporation rate	Not available
Flammability limits in air, lower, % by volume	Not available
Flammability limits in air, upper, % by volume	Not available
Vapor pressure	Not available
Vapor density	Not available
Specific gravity	1.052 @ 25°C
Octanol/water coefficient	Not available
Solubility (H2O)	> 95 % @ 70°F
Auto-ignition temperature	Not available
VOC (Weight %)	Not available
Viscosity	Not available

10. Stability and Reactivity

Chemical stability	Stable under recommended storage conditions.
Conditions to avoid	Aerosol containers are unstable at temperatures above 49°C (120.2°F). Do not spray on pilot light, electrical connections, switch, heating elements, or thermostats. Do not spray onto aluminum or painted surfaces as damage to these surfaces may occur. Do not use on grill exterior, interior or components.
Incompatible materials	Acids. Oxidizing agents. Aluminum.
Hazardous decomposition products	May include and are not limited to: Oxides of carbon. Oxides of nitrogen.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Component analysis - LC50

Ingredient(s)	LC50
Ethanol, 2-(2-butoxyethoxy)-	Not available
Ethanol, 2-amino-	1210 mg/m3 mouse
Petroleum gases, liquefied, sweetened	Not available
Sodium hydroxide	Not available

Component analysis - Oral LD50

Ingredient(s)	LD50
Ethanol, 2-(2-butoxyethoxy)-	2000 mg/kg guinea pig; 3384 mg/kg rat; 2200 mg/kg rabbit
Ethanol, 2-amino-	1720 mg/kg rat; 700 mg/kg mouse
Petroleum gases, liquefied, sweetened	Not available
Sodium hydroxide	Not available

Effects of acute exposure

Eye	Causes burns.
Skin	Causes burns.
Inhalation	None expected during normal conditions of use. However intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.
Ingestion	Harmful if swallowed.
Sensitization	The finished product is not expected to have chronic health effects.
Chronic effects	The finished product is not expected to have chronic health effects.
Carcinogenicity	The finished product is not expected to have chronic health effects.
Mutagenicity	The finished product is not expected to have chronic health effects.

Reproductive effects	The finished product is not expected to have chronic health effects.
Teratogenicity	The finished product is not expected to have chronic health effects.
Synergistic Materials	Not available

12. Ecological Information

Ecotoxicity Components of this product have been identified as having potential environmental concerns.

Ecotoxicity - Freshwater Algae Data

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	96 Hr EC50 Desmodesmus subspicatus: >100 mg/L
Ethanol, 2-amino-	141-43-5	72 Hr EC50 Desmodesmus subspicatus: 15 mg/L

Ecotoxicity - Freshwater Fish Species Data

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	96 Hr LC50 Lepomis macrochirus: 1300 mg/L [static]
Ethanol, 2-amino-	141-43-5	96 Hr LC50 Pimephales promelas: 227 mg/L [flow-through]; 96 Hr LC50 Brachydanio rerio: 3684 mg/L [static]; 96 Hr LC50 Lepomis macrochirus: 300-1000 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: 114-196 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: >200 mg/L [flow-through]
Sodium hydroxide	1310-73-2	96 Hr LC50 Oncorhynchus mykiss: 45.4 mg/L [static]

Ecotoxicity - Microtox Data

Ethanol, 2-amino-	141-43-5	30 Min EC50 Photobacterium phosphoreum: 13.7 mg/L; 17 Hr EC50 Pseudomonas putida: 110 mg/L; 2 Hr EC50 Nitrosomonas: 12200 mg/L

Ecotoxicity - Water Flea Data

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	24 Hr EC50 Daphnia magna: 2850 mg/L; 48 Hr EC50 Daphnia magna: >100 mg/L
Ethanol, 2-amino-	141-43-5	48 Hr EC50 Daphnia magna: 65 mg/L

Environmental effects	Not available
Aquatic toxicity	Not available
Persistence / degradability	Not available
Bioaccumulation / accumulation	Not available
Partition coefficient	Not available
Mobility in environmental media	Not available
Chemical fate information	Not available

13. Disposal Considerations

Waste codes	Not available
Disposal instructions	Dispose in accordance with all applicable regulations.
Waste from residues / unused products	Not available
Contaminated packaging	Not available

14. Transport Information

U.S. Department of Transportation (DOT)

UN1950, Aerosols, Class 2.2 (8), Re-classed as Consumer Commodity ORM-D, FORBIDDEN FROM AIR TRANSPORT

Transportation of Dangerous Goods (TDG - Canada)

UN1950, Aerosols, Class 2.2 (8), Re-classed as Consumer Commodity/ Limited Quantity, FORBIDDEN FROM AIR TRANSPORT

IMDG (Marine Transport)

UN1950, Aerosols, Class 2.2 (8), Limited Quantity

IATA/ICAO (Air)

UN 1950, Aerosols, non-flammable, containing substances in Class 8, Packing Group II, 2.2 (8),
FORBIDDEN FROM AIR TRANSPORT

15. Regulatory Information

US Federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	1 Lb statutory RQ (no final RQ is being assigned to the generic or broad class. Includes mono- and di- ethers of ethylene glycol, diethylene glycol and triethylene glycol R-(OCH2CH2)n-OR" where n = 1, 2 or 3, R = alkyl or aryl groups, R" = R h or groups which when removed yield glycol ethers with the structure R-(OCH2CH2)n-OH. Polymers are excluded from glycol category); 0.454 k
Sodium hydroxide	1310-73-2	1000 Lb final RQ; 454 kg final RQ

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	1.0 Percent de minimis concentration (applies to R-(OCH2CH2)n-OR' ethers, where n = 1,2, or 3, R=alkyl C7 or less or R = phenyl or alkyl subst. phenyl, R' = H or alkyl C7 or less, or OR' consisting of carboxylic acid ester, sulfate, phosphate, nitrate, or sulfonate, Chemical Category N230)

U.S. - CWA (Clean Water Act) - Hazardous Substances

Sodium hydroxide	1310-73-2	Present

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical Yes

CERCLA (Superfund) reportable quantity

Sodium hydroxide: 1000.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - Yes
Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes

Clean Air Act (CAA) Not available

Clean Water Act (CWA) Not available

State regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

U.S. - California - 8 CCR Section 339 - Director's List of Hazardous Substances

Ethanol, 2-amino-	141-43-5	Present
Sodium hydroxide	1310-73-2	Present

U.S. - Illinois - Toxic Air Contaminants

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	Present
Ethanol, 2-amino-	141-43-5	Present

U.S. - Louisiana - Reportable Quantity List for Pollutants

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	100 Lb RQ
Sodium hydroxide	1310-73-2	1000 Lb final RQ; 454 kg final RQ

U.S. - Massachusetts - Right To Know List

Ethanol, 2-amino-	141-43-5	Present
Sodium hydroxide	1310-73-2	Present

U.S. - Minnesota - Hazardous Substance List

Ethanol, 2-amino-	141-43-5	Present
Sodium hydroxide	1310-73-2	Present

U.S. - New Jersey - Right to Know Hazardous Substance List

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	sn 2265
Ethanol, 2-amino-	141-43-5	sn 0835
Sodium hydroxide	1310-73-2	sn 1706

U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

Sodium hydroxide	1310-73-2	1000 Lb RQ (air); 100 lb RQ (land/water)

U.S. - Pennsylvania - RTK (Right to Know) List

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	environmental hazard
Ethanol, 2-amino-	141-43-5	Present
Sodium hydroxide	1310-73-2	Environmental hazard

U.S. - Rhode Island - Hazardous Substance List

Ethanol, 2-amino-	141-43-5	Toxic; Flammable
Sodium hydroxide	1310-73-2	Toxic; Flammable

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

Disclaimer This product should only be used as directed on the label and for the purpose intended. To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Further information	62338-00138 - 16 oz., EASY-OFF® Oven Cleaner - Heavy Duty Regular Scent: 371752 (772-004) 62338-81397 - 24 oz., EASY-OFF® Heavy Duty Oven Cleaner - Club Pack: 367270
Issue date	07-Jan-2010
Effective date	01-Jan-2010
Prepared by	Reckitt Benckiser Regulatory Department 800-333-3899
Other information	For an updated MSDS, please contact the supplier/manufacturer listed on the first page of the document.

Procter & Gamble
CPG TN 6
2 Procter & Gamble Plaza
Cincinnati, OH 45202

MATERIAL SAFETY DATA SHEET

Issue Date: 2/1/00
Supersedes: N/A Issue Date: N/A

SECTION I - CHEMICAL PRODUCT

Identity: **Fabric Refresher**

Brands: **FEBREZE (Professional Line)**

Hazard Rating: 2

Health: 1
Flammability: 2
Reactivity: 0

4=EXTREME
3=HIGH
2= MODERATE
1=SLIGHT

Emergency Telephone Number: - 1-800-332-7787 or call Local Poison Control Center

SECTION II - COMPOSITION AND INGREDIENTS

Ingredients/Chemical Name: Water, alcohol, odor eliminator derived from corn, fragrance

Hazardous Ingredients as defined by OSHA, 29 CFR 1910.1200.

Chemical Name	Common Name	CAS No.	Recommended Limits	Composition Range	LD50/LC50
Ethyl alcohol	Ethanol	64-17-5	ACGIH TLV: 1000 mg/m^3	3-7%	

SECTION III - HAZARDS IDENTIFICATION

Health Hazards (Acute and Chronic):

Inhalation: Inhalation of high concentrations of ethanol vapor may cause irritation of the eyes and respiratory tract, drowsiness and fatigue.

Ingestion: Possible mild gastrointestinal irritation with nausea, vomiting and/or diarrhea.

Eye Contact: Mild eye irritant. Do not spray directly toward face. If eye contact occurs, rinse well with water.

Skin: Prolonged skin contact may result in transient, superficial effects similar to those produced by mild toilet soaps.

SECTION IV - FIRST AID INFORMATION

Emergency and First Aid Procedures:

Inhalation:	Get fresh air.
Ingestion:	Dilute with fluids and treat symptomatically.
Eye contact:	Rinse well with water for at least 15 minutes.
Skin:	Rinse with water.

Other: Product package has a caution statement: CAUTION: KEEP OUT OF REACH OF CHILDREN. Do not spray directly toward face. If eye contact occurs, rinse well with water.

SECTION V - FIRE FIGHTING INFORMATION

Flash Point (Method Used): >>150°F (cc) **Explosive Limits**: *LEL:* N/A *UEL*: N/A

Extinguishing Media: CO_2, water, or dry chemical

Special Fire Fighting Procedures: N/A

Unusual Fire Hazards:N/A.

Stability *Unstable*: *Conditions to Avoid*: None known

Stable: X

Incompatibility (Materials to Avoid): None known

Hazardous Decomposition/By Products: None known

Hazardous Polymerization: *May Occur*: *Conditions to Avoid*: None known

Will Not Occur: X

SECTION VI - ACCIDENTAL RELEASE MEASURES

Personal Precautions: N/A

Environmental Precautions: DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS. Small quantities may be slowly flushed down sewer with excess water or dispose as liquid scrap. Discard empty container in trash.

Steps To Be Taken in Case Material is Released or Spilled: Use water spray or dilute and/or wash away spills to avoid exposure and to protect persons working to stop/repair leak. Any spills are to be prevented from entering waterways. Sorbents may be used.

SECTION VII - HANDLING AND STORAGE

Precautions To Be Taken in Handling and Storing:. Store at room temperature

Other Precautions: None.

SECTION VIII - EXPOSURE CONTROLS, PERSONAL PROTECTION

Respiratory Protection (Specify Type): No special requirements with casual exposure
Ventilation *Local Exhaust*: Not necessary. *Special*: None

Mechanical (General): Acceptable. *Other*: None
Eye Protection: None required with normal use.
Manufacturing: If splash of solution is likely, chemical goggles may be needed.
Protective Gloves: None required with normal use.
Manufacturing: Minimize skin contact with protective gloves (rubber, neoprene).
Other Protective Equipment: None required with normal use.
Manufacturing: Use ventilation to minimize exposure to vapor or mist (ethanol).

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point ° F: ~212°F
Vapor Pressure (mm Hg): N/A
Vapor Density (Air=1): N/A
Odor Threshold: N/A
Coefficient of Water/Oil Distribution: N/A
Scooped Density: N/A
Appearance and Odor: Clear liquid
Product is perfumed.

Specific Gravity (H_2O=1): ca. 1
Percent Volatile by Volume (%): ca. 95
Evaporation Rate (nBuOAc=1): N/K
Freezing Point: N/A
pH (1% solution): ~7.0
Solubility in Water: Completely
Reserve Alkalinity: N/A

SECTION X - STABILITY AND REACTIVITY

Possible Hazardous Reactions/Conditions: None known

Conditions to Avoid: None

Materials to Avoid: None

Hazardous Decomposition Products: None known

Other Recommendations: None

SECTION XI - TOXICOLOGICAL INFORMATION

LD50 (rats oral): >5000 mg/kg

SECTION XII - ECOLOGICAL INFORMATION

No concerns at relevant environmental concentrations.

SECTION XIII - DISPOSAL CONSIDERATIONS

Waste Disposal Method: Slowly flush down sewer with excess water or dispose as liquid scrap. . DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS. Discard empty container in trash.

SECTION XIV - TRANSPORT INFORMATION

DOT Classification: Febreze is not DOT hazardous.

SECTION XV - ADDITIONAL REGULATORY INFORMATION

All components are listed on the US TSCA Inventory. No components are affected by Significant New Use Rules (SNURs) under TSCA §5.

No components of Febreze are subject to California Proposition 65.

TSCA §4 N-amyl acetate (CAS# 628-63-7) of Febreze (Professional Line) is subject to TSCA §12(b) export notification.

SECTION XVI - OTHER INFORMATION

*N/A. - Not Applicable *N/K. - Not Known

The submission of this MSDS may be required by law, but this is not an assertion that the substance is hazardous when used in accordance with proper safety practices and normal handling procedures. Data supplied is for use only in connection with occupational safety and health.

The information contained herein has been compiled from sources considered by Procter & Gamble to be dependable and is accurate to the best of the Company's knowledge. The information relates to the specific material designated herein, and does not relate to the use in combination with any other material or any other process. Procter & Gamble assumed no responsibility for injury to the recipient or third persons, for any damage to any property resulting from misuse of the controlled product.

The Clorox Company
1221 Broadway
Oakland, CA 94612
Tel. (510) 271-7000

Material Safety Data Sheet

I Product:	GREEN WORKS™ NATURAL ALL PURPOSE CLEANER
Description:	LIQUID WITH LEMON ODOR

Other Designations	**Distributor**	**Emergency Telephone Nos.**
	Clorox Sales Company 1221 Broadway Oakland, CA 94612	For Medical Emergencies call: 1-800-446-1014 For Transportation Emergencies, call Chemtrec: 1-800-424-9300

II Health Hazard Data

Eye irritant. May cause skin irritation. No medical conditions are known to be aggravated by exposure to this product.

FIRST AID:

EYE CONTACT: Immediately rinse with plenty of water. If irritation persists, call a doctor.

INGESTION: Drink a glassful of water. Call a doctor or poison control center.

SKIN CONTACT: Rinse with plenty of water. If irritation persists, call a doctor.

INHALATION: Move person to fresh air. If breathing problems develop, call a doctor.

III Hazardous Ingredients

Ingredient	Concentration	Worker Exposure Limit
Alkyl polyglucoside CAS # 68515-73-1	2 - 5%	not established
Ethyl alcohol CAS # 64-17-5	1 - 3%	1000 ppm - TLV-TWA 1000 ppm - OSHA PEL

TLV-TWA = ACGIH Threshold Limit Value - Time Weighted Average

OSHA-PEL = OSHA Permissible Exposure Limit - Time Weighted Average

None of the materials in this product are on the IARC, OSHA, or NTP carcinogen lists.

IV Special Protection and Precautions

Hygienic Practices: Wash hands after direct contact. Do not wear product-contaminated clothing for prolonged periods.

Engineering Controls: Use local exhaust to minimize exposure to product mist.

Personal Protective Equipment: Wear safety glasses. Wear rubber or neoprene gloves if there is the potential for repeated or prolonged skin contact. In situations where exposure limits may be exceeded, a NIOSH-approved respirator is advised.

V Transportation and Regulatory Data

DOT/IATA/IMDG: Not restricted.

EPA - SARA Title III/CERCLA: This product is regulated under Sections 311/312. This product contains no chemicals which are regulated under Section 313 or regulated under Section 304/CERCLA.

VI Spill Procedures/Waste Disposal

Spill Procedures: Absorb and containerize. Wash residual down to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed-down material.

Waste Disposal: Dispose of in accordance with all applicable federal, state, and local regulations.

VII Reactivity Data

Stable under normal use and storage conditions.

VIII Fire and Explosion Data

Flash Point: >200°F (closed cup)

Fire Extinguishing Agents: Dry chemical, carbon dioxide (CO_2), foam, or water spray.

IX Physical Data

pH ..... ~7.0

Specific gravity 1.0

Solubility in water ..... Soluble

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DATE PREPARED 10/07

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product Name **Lime Out Stain Remover**

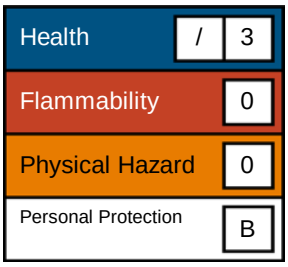
CAS # Mixture

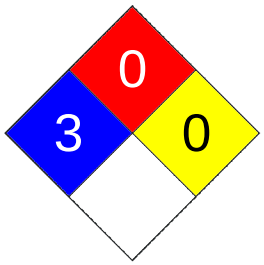
Product use Calcium and Lime Scale Stain Remover

Manufacturer

Iron Out dba Summit Brands
7201 Engle Road
Fort Wayne, IN 46804-5875 US
Phone: 260-483-2519
Emergency Phone: 1-800-424-9300 (CHEMTREC)

LEGEND HMIS/NFPA	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0





2. Hazards Identification

Emergency overview DANGER -- CORROSIVE

Potential short term health effects

Routes of exposure Eye, Skin contact, Inhalation, Ingestion.

Eyes Causes chemical burns. May cause blindness.

Skin Causes chemical burns.

Inhalation May cause respiratory tract irritation.

Ingestion Harmful if swallowed. May cause chemical burns to mouth, throat and stomach.

Target organs Eyes. Respiratory system. Skin.

Chronic effects Prolonged or repeated exposure to dilutions can cause drying, defatting and dermatitis.

Signs and symptoms The product causes burns of eyes, skin and mucous membranes.

OSHA Regulatory Status This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Potential environmental effects Components of this product have been identified as having potential environmental concerns.

3. Composition / Information on Ingredients

Ingredient(s)	CAS #	Percent
Citric acid	77-92-9	3 - 7
Hydrogen chloride	7647-01-0	3 - 7
Lactic Acid	79-33-4	3 - 7

4. First Aid Measures

First aid procedures

Eye contact Immediately flush with cool water. Remove contact lenses, if applicable, and continue flushing for 15 minutes. Obtain medical attention immediately.

Skin contact Immediately flush with cool water for 15 minutes while removing contaminated clothing and shoes. Discard or wash well before reuse. Obtain medical advice immediately.

Inhalation If symptoms develop move victim to fresh air. If symptoms persist, obtain medical attention.

Ingestion Do not induce vomiting. Never give anything by mouth if victim is unconscious, or is convulsing. Obtain medical attention.

General advice	If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

5. Fire Fighting Measures

Flammable properties	Not flammable by WHMIS/OSHA criteria.
Extinguishing media	
Suitable extinguishing media	Dry chemical. Foam. Carbon dioxide. Fog.
Unsuitable extinguishing media	Not available
Protection of firefighters	
Specific hazards arising from the chemical	Not available
Protective equipment for firefighters	Firefighters should wear full protective clothing including self contained breathing apparatus.
Hazardous combustion products	May include and are not limited to: Oxides of carbon. Hydrogen chloride.
Explosion data	
Sensitivity to mechanical impact	Not available
Sensitivity to static discharge	Not available

6. Accidental Release Measures

Personal precautions	Keep unnecessary personnel away. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak.
Environmental precautions	Prevent entry into waterways, sewers, basements or confined areas.
Methods for containment	Stop leak if you can do so without risk.
Methods for cleaning up	Before attempting clean up, refer to hazard data given above. Small spills may be absorbed with non-reactive absorbent and placed in suitable, covered, labelled containers. Prevent large spills from entering sewers or waterways. Contact emergency services and supplier for advice. Never return spills to original containers for re-use.

7. Handling and Storage

Handling	Use good industrial hygiene practices in handling this material. Do not get in eyes, on skin or on clothing. Avoid breathing vapors or mists of this product. Wash thoroughly after handling.
Storage	Keep out of the reach of children. Store in a closed container away from incompatible materials.

8. Exposure Controls / Personal Protection

Exposure limits

Ingredient(s)	Exposure Limits
Citric acid	**ACGIH-TLV** TWA: 10 mg/m3 **OSHA-PEL** TWA: 10 mg/m3
Hydrogen chloride	**ACGIH-TLV** Ceiling: 2 ppm **OSHA-PEL** Ceiling: 5 ppm
Lactic Acid	**ACGIH-TLV** Not established **OSHA-PEL** Not established

Engineering controls	Use only under good ventilation conditions or with respiratory protection.
Personal protective equipment	
Eye / face protection	Wear chemical goggles.
Hand protection	Rubber gloves. Confirm with a reputable supplier first.
Skin and body protection	As required by employer code. Rubber apron recommended.
Respiratory protection	Where exposure guideline levels may be exceeded, use an approved NIOSH respirator.
General hygiene considerations	Use good industrial hygiene practices in handling this material. When using do not eat or drink. Wash hands before breaks and immediately after handling the product.

9. Physical and Chemical Properties

Appearance	Clear
Color	Blue
Form	Liquid
Odor	Lime.
Odor threshold	Not available
Physical state	Liquid
pH	0.6 - 1.1
Melting point	Not available
Freezing point	Not available
Boiling point	Not available
Pour point	Not available
Evaporation rate	Not available
Flash point	None
Auto-ignition temperature	Not available
Flammability limits in air, lower, % by volume	Not available
Flammability limits in air, upper, % by volume	Not available
Vapor pressure	Not available
Vapor density	Not available
Specific gravity	1.01 - 1.05
Octanol/water coefficient	Not available
Viscosity	70 - 125 CPs
Percent volatile	Not available

10. Stability and Reactivity

Reactivity	Reacts vigorously with alkaline material. This product may react with reducing agents.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Chemical stability	Stable under recommended storage conditions.
Conditions to avoid	Do not mix with bleach or any other chemical.
Incompatible materials	Caustics. Oxidizers. Bases. Reducing agents.
Hazardous decomposition products	May include and are not limited to: Oxides of carbon. Hydrogen chloride.

11. Toxicological Information

Component analysis - LC50

Ingredient(s)	LC50
Citric acid	Not available
Hydrogen chloride	554 ppm mouse
Lactic Acid	Not available

Component analysis - Oral LD50

Ingredient(s)	LD50
Citric acid	5040 mg/kg mouse; 3000 mg/kg rat
Hydrogen chloride	900 mg/kg rabbit; 700 mg/kg rat
Lactic Acid	1810 mg/kg guinea pig; 3543 mg/kg rat; 4875 mg/kg mouse

Effects of acute exposure

Eye Causes chemical burns. May cause blindness.

Skin Causes chemical burns.

Inhalation May cause respiratory tract irritation.

Ingestion Harmful if swallowed. May cause chemical burns to mouth, throat and stomach.

Sensitization Not classified or listed by IARC, NTP, OSHA and ACGIH.

Chronic effects Not classified or listed by IARC, NTP, OSHA and ACGIH.

Carcinogenicity See below.

ACGIH - Threshold Limit Values - Carcinogens

Hydrogen chloride	7647-01-0	A4 - Not Classifiable as a Human Carcinogen

IARC - Group 3 (Not Classifiable)

Hydrogen chloride	7647-01-0	Monograph 54 [1992]

Mutagenicity Not classified or listed by IARC, NTP, OSHA and ACGIH.

Reproductive effects Not classified or listed by IARC, NTP, OSHA and ACGIH.

Teratogenicity Not classified or listed by IARC, NTP, OSHA and ACGIH.

Name of Toxicologically Synergistic Products Not available

12. Ecological Information

Ecotoxicity Because of the low pH of this product, it would be expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic systems.

Ecotoxicity - Freshwater Algae - Acute Toxicity Data

Lactic Acid	79-33-4	70 Hr EC50 Pseudokirchneriella subcapitata: 3.5 mg/L

Ecotoxicity - Freshwater Fish - Acute Toxicity Data

Citric acid	77-92-9	96 Hr LC50 Lepomis macrochirus: 1516 mg/L [static]
Hydrogen chloride	7647-01-0	96 Hr LC50 Gambusia affinis: 282 mg/L [static]
Lactic Acid	79-33-4	96 Hr LC50 Brachydanio rerio: 320 mg/L [semi-static]; 96 Hr LC50 Lepomis macrochirus: 100-180 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: 100-180 mg/L [static]

Ecotoxicity - Water Flea - Acute Toxicity Data

Citric acid	77-92-9	72 Hr EC50 Daphnia magna: 120 mg/L
Lactic Acid	79-33-4	48 Hr EC50 Daphnia magna: 240 mg/L; 48 Hr EC50 Daphnia magna: 180 - 320 mg/L [Static]

Persistence / degradability Not available

Bioaccumulation / accumulation Not available

Mobility in environmental media Not available

Environmental effects Not available

Aquatic toxicity Not available

Partition coefficient Not available

Chemical fate information Not available

Other adverse effects Not available

13. Disposal Considerations

Disposal instructions Review federal, state/provincial, and local government requirements prior to disposal.

Waste from residues / unused products Not available

Contaminated packaging Not available

14. Transport Information

U.S. Department of Transportation (DOT)

Basic shipping requirements:

Proper shipping name	Corrosive liquids, n.o.s. (HYDROGEN CHLORIDE)
Hazard class	8
UN number	UN1760
Packing group	II
Additional information:	
Special provisions	B2, IB2, T11, TP2, TP27
Packaging exceptions	154
ERG number	154

Transportation of Dangerous Goods (TDG - Canada)

Basic shipping requirements:

Proper shipping name	CORROSIVE LIQUID, N.O.S. (HYDROGEN CHLORIDE)
Hazard class	8
UN number	UN1760
Packing group	II
Additional information:	
Special provisions	16

15. Regulatory Information

Canadian federal regulations This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Canada - WHMIS - Ingredient Disclosure List

Citric acid	77-92-9	1 %
Hydrogen chloride	7647-01-0	1 %

WHMIS status Controlled

WHMIS classification Class E - Corrosive Material

WHMIS labeling

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical	Yes

US Federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

Hydrogen chloride	7647-01-0	5000 Lb final RQ; 2270 kg final RQ

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

Hydrogen chloride	7647-01-0	5000 Lb EPCRA RQ (gas only)

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

Hydrogen chloride	7647-01-0	500 Lb TPQ (gas only)

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

Hydrogen chloride	7647-01-0	1.0 % de minimis concentration (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)

U.S. - CWA (Clean Water Act) - Hazardous Substances

Hydrogen chloride	7647-01-0	Present

CERCLA (Superfund) reportable quantity

Hydrogen chloride: 5000.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes

Clean Air Act (CAA) Not available

Clean Water Act (CWA) Hazardous substance

State regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

U.S. - California - 8 CCR Section 339 - Director's List of Hazardous Substances

Hydrogen chloride	7647-01-0	Present

U.S. - Illinois - Toxic Air Contaminants

Hydrogen chloride	7647-01-0	Present (aerosol)

U.S. - Louisiana - Reportable Quantity List for Pollutants

Hydrogen chloride	7647-01-0	5000 Lb final RQ; 2270 kg final RQ

U.S. - Massachusetts - Right To Know List

Hydrogen chloride	7647-01-0	Extraordinarily hazardous

U.S. - Minnesota - Hazardous Substance List

Hydrogen chloride	7647-01-0	Present

U.S. - New Jersey - Right to Know Hazardous Substance List

Hydrogen chloride	7647-01-0	sn 1012

U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

Hydrogen chloride	7647-01-0	5000 Lb RQ (air); 100 lb RQ (land/water)

U.S. - North Carolina - Control of Toxic Air Pollutants

Hydrogen chloride	7647-01-0	0.7 mg/m3 (acute irritants)

U.S. - Ohio - Extremely Hazardous Substances - Threshold Quantities

Hydrogen chloride	7647-01-0	500 Lb TQ (gas only)

U.S. - Pennsylvania - RTK (Right to Know) List

Hydrogen chloride	7647-01-0	Environmental hazard

U.S. - Rhode Island - Hazardous Substance List

Hydrogen chloride	7647-01-0	Toxic; Flammable

Inventory name

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

Disclaimer	The data contained in this material safety data sheet was obtained from sources that were technically accurate, reliable, and state of the art when this document was prepared. If data was unavailable to complete certain sections, the absence of that data is identified in this document. Because the supplier cannot know the exact circumstances during actual use of this product, other hazards, exposure scenarios, disposal considerations, and regulations may apply and it is the responsibility of the user to read and understand the product label and this document before use. Do not use the product for purposes other than those stated in Section 1.
Issue date	28-Sep-2012
Effective date	31-Aug-2011
Expiry date	31-Aug-2014
Prepared by	Dell Tech Laboratories Ltd. (519) 858-5021
Other information	For an updated MSDS, please contact the supplier/manufacturer listed on the first page of the document.

ADVANCE CLEAN LIQUID DISHMACHINE DETERGENT - HW

HMIS		NFPA	Personal protective equipment
Health	3	3	
Fire Hazard	0	0	
Reactivity	0	0	

Version Number: 1

Preparation date: 2010-04-02

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: ADVANCE CLEAN LIQUID DISHMACHINE DETERGENT - HW

MSDS #: F-00475001
Product Code: 3318233
Recommended use: Warewashing product. This product is intended to be diluted prior to use.

Manufacturer, importer, supplier:

US Headquarters
Diversey, Inc.
8310 16th St.
Sturtevant, Wisconsin 53177-1964
Phone: 1-888-352-2249
MSDS Internet Address: www.diversey.com

Canadian Headquarters
Diversey, Inc. - Canada, Inc.
2401 Bristol Circle
Oakville, Ontario L6H 6P1
Phone: 1-800-668-3131

Emergency telephone number: 1-800-851-7145 (U.S.); 1-651-917-6133 (Int'l)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
DANGER. CORROSIVE. CAUSES SKIN AND EYE BURNS. HARMFUL OR FATAL IF SWALLOWED.

Principal routes of exposure: Eye contact. Skin contact. Inhalation.
Eye contact: Corrosive. Causes permanent eye damage, including blindness.
Skin contact: Corrosive. Causes permanent damage.
Inhalation: May cause irritation and corrosive effects to nose, throat and respiratory tract.
Ingestion: Corrosive. Causes burns to mouth, throat and stomach.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient(s)	CAS #	Weight %	LD50 Oral - Rat (mg/kg)	LD50 Dermal - Rabbit	LC50 Inhalation - Rat
Sodium hydroxide	1310-73-2	10 - 20%	500	1350 mg/kg	Not available
Sodium nitrilotriacetate	18662-53-8	20 - 30%	1100	Not available	Not available

4. FIRST AID MEASURES

Eye contact: Immediately flush eyes with running water for 15-20 minutes, keeping eyelids open. Get medical attention immediately.
Skin contact: Immediately flush with plenty of water for 15-20 minutes . Get medical attention immediately.
Inhalation: If breathing is affected, remove to fresh air. Get medical attention immediately.
Ingestion: If swallowed, rinse mouth. Give a cupful of water or milk . THEN IMMEDIATELY CONTACT A PHYSICIAN OR POISON CENTER. DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.
Aggravated Medical Conditions: Individuals with chronic respiratory disorders such as asthma, chronic bronchitis, emphysema, etc., may be more susceptible to irritating effects

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: The product is not flammable. Extinguish fire using agent suitable for surrounding fire.
Specific hazards: Not applicable
Unusual hazards: Corrosive material (See sections 8 and 10).
Specific methods: No special methods required

Special protective equipment for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear
Extinguishing media which must not be used for safety reasons: No information available

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Use personal protective equipment
Environmental precautions and clean-up methods: Clean-up methods - large spillage. Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal. Use a water rinse for final clean-up.

7. HANDLING AND STORAGE

Handling:
Avoid contact with skin, eyes and clothing. Do not taste or swallow. Avoid breathing vapors or mists. Use only with adequate ventilation. Remove and wash contaminated clothing and footwear before re-use. Wash thoroughly after handling. Mix only with water . Do not mix with any other product or chemical . May react to release hazardous gases. Product residue may remain on/in empty containers. All precautions for handling the product must be used in handling the empty container and residue. FOR COMMERICAL AND INDUSTRIAL USE ONLY.
Storage:
Protect from freezing. Keep tightly closed in a dry, cool and well-ventilated place. KEEP OUT OF REACH OF CHILDREN.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures to reduce exposure:
Good general ventilation should be sufficient to control airborne levels Respiratory protection is not required if good ventilation is maintained.

Personal Protective Equipment

Eye protection: Chemical-splash goggles.
Hand protection: Chemical-resistant gloves
Skin and body protection: Protective footwear. If major exposure is possible, wear suitable protective clothing and footwear.
Respiratory protection: In case of insufficient ventilation wear suitable respiratory equipment. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.
Hygiene measures: Handle in accordance with good industrial hygiene and safety practice

Ingredient(s)	CAS #	ACGIH	OSHA	Mexico
Sodium hydroxide	1310-73-2	2 mg/m³ (Ceiling)	2 mg/m³ (TWA)	2 mg/m³ (Ceiling)

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Appearance: Liquid
Specific gravity: 1.25
Vapor density: No information available
Boiling point/range: Not determined
Decomposition temperature: Not determined
Solubility: Completely Soluble
Solubility in other solvents: No information available
Partition coefficient (n-octanol/water): No information available
Elemental Phosphorus: 0.3 % by wt.
pH: >13
Explosion limits: - upper: Not determined **- lower:** Not determined

Bulk density: No information available
Evaporation Rate No information available
Color: Clear Colorless
Odor: No Odor/Odorless
Melting point/range: Not determined
Autoignition temperature: No information available
Density: 10.42 lbs/gal 1.25 Kg/L
Flash point: > 93.4 °F > 200 °C
Viscosity: No information available
VOC: 0 % *
Dilution pH: No information available.

* - Title 17, California Code of Regulations, Division 3, Chapter 1, Subchapter 8.5, Article 2, Consumer Products, Sections 94508

10. STABILITY AND REACTIVITY

Stability: The product is stable
Polymerization: Hazardous polymerization does not occur
Hazardous decomposition products: None reasonably foreseeable.

Materials to avoid: Acids.

11. TOXICOLOGICAL INFORMATION

Acute toxicity: Oral LD50 estimated to be between 2000 - 5000 mg/kg
Component Information: See Section 3

Chronic toxicity: Based upon ingestion of NTA in lifetime feeding studies, NTA has been shown to induce tumors in the urinary tracts of rats and mice. However, on a practical basis and according to guidelines for classification of experimental animal carcinogens of the American Council of Governmental Industrial Hygienists (ACGIH), NTA would not be considered an occupational carcinogen of any practical significance.

Specific effects

Carcinogenic effects: None known
Mutagenic effects: None known
Reproductive toxicity: None known
Target organ effects: None known

Ingredient(s)	CAS #	NTP	IARC	OSHA
Sodium nitrilotriacetate	18662-53-8		2B	X

12. ECOLOGICAL INFORMATION

Environmental Information: No data available

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products:
Dispose of according to all federal, state and local applicable regulations
RCRA Hazard Class: D002

14. TRANSPORT INFORMATION

DOT/TDG/IMDG: Please refer to the Diversey HazMat Library, http://naextranet.diversey.com/dot/, for up to date shipping information.

DOT Bill of Lading Description: UN1824, Sodium hydroxide solution, 8, II

IMDG Bill of Lading Description: UN1824, Sodium hydroxide solution, 8, II

15. REGULATORY INFORMATION

International Inventories at CAS# Level
All components of this product are listed on the following inventories: U.S.A. (TSCA), Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Australia (AICS), Korea (ECL), Japan (ENCS), Philippines (PICCS), New Zealand (NZIoC), China (IECSC).

U.S. Regulations
California Proposition 65: This product is not subject to the reporting requirements under California's Proposition 65

RIGHT TO KNOW (RTK)

Ingredient(s)	CAS #	MARTK:	NJRTK:	PARTK:	RIRTK:
Sodium hydroxide	1310-73-2	X	X	X	X
Sodium nitrilotriacetate	18662-53-8	X	-	-	-
Water	7732-18-5	-	-	-	-
Methylene phosphonic acid	6419-19-8	-	-	-	-

CERCLA/ SARA

Ingredient(s)	CAS #	Weight %	CERCLA/SARA RQ (lbs)	Section 302 TPQ (lbs)	Section 313
Sodium hydroxide	1310-73-2	10 - 20%	1000		

SARA 311/312 Hazard Categories

Immediate:	X
Delayed:	-
Fire:	-
Reactivity:	-
Sudden Release of Pressure:	-

Canada

WHMIS hazard class: E Corrosive material

16. OTHER INFORMATION

Reason for revision:	Not applicable
Prepared by:	NAPRAC
Additional advice:	None

Notice to Reader: This document has been prepared using data from sources considered technically reliable. It does not constitute a warranty, express or implied, as to the accuracy of the information contained within. Actual conditions of use and handling are beyond seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

The Procter & Gamble Company
P & G Household Care
Fabric & Home Care Innovation Center
5299 Spring Grove Avenue
Cincinnati, OH 45217-1087

MATERIAL SAFETY DATA SHEET

MSDS / CT# FH/H/2007/LHLA-6ZHM2R
FH/H/2006/SDSM-6QMNQV
FH/H/2006/LHLA-6N3NZP
FH/H/2005/LHLA-6DMMS2

Issue Date: 04/13/07

SECTION I - CHEMICAL PRODUCT

Identity: **Liquid Laundry Detergent**

Brands: **GAIN** **(All Non 2X Variations for Retail*)**

Gain Orig. Scent, Gain Gentle Breeze, Gain Island Fresh, Gain Whitewater Fresh, Gain Fresh Awakenings,

Gain with Bleach Alternative, Gain Joyful Expressions Apple Mango Tango,
Gain Joyful Expressions Gardenia Delight, Gain Joyful Expressions Mandarin Lime Fusion,
Gain Joyful Expressions Honeysuckle Guava Groove, Gain High Efficiency Orig. Scent,
Gain High Efficiency Island Fresh, Gain Plus A Touch of Softness Simply Fresh,
Gain Plus A Touch of Softness Cotton Fresh

Emergency Telephone Number: 1-800-888-4246 or call Local Poison Control Center

* **This MSDS applies to** all uses/handling of these products in a retail package for consumer home use.

SECTION II - HAZARDS IDENTIFICATION

Health Hazards (Acute and Chronic):

Ingestion: May cause transient gastrointestinal irritation.
Eye Contact: Contact may cause mild, transient irritation.
Skin: Prolonged/repeated contact may cause irritation.
Inhalation: None.

Signs and Symptoms of Exposure:

Ingestion: May result in nausea, vomiting, and/or diarrhea.
Eye Contact: May cause stinging, tearing, itching, swelling, and/or redness.
Skin: Prolonged contact with concentrated material may be drying or transiently irritating to skin.
Inhalation: None.

SECTION III - COMPOSITION AND INGREDIENTS

Ingredients/Chemical Name: Biodegradable surfactants (anionic and nonionic) and enzymes.
Biodegradable surfactants (anionic, nonionic, and cationic) and enzymes.

Hazardous Ingredients as defined by OSHA, 29 CFR 1910.1200.

Chemical Name	Common Name	CAS No.	Recommended Limits	Composition Range	LD50/LC50
Ethyl alcohol	Ethanol	64-17-5	ACGIH TWA: 1880 mg/m^3 OSHA PEL & TWA: 1900 mg/m^3	0.5-5%	7.06 g/kg (oral, rat)
Sodium borate	Borax	1330-43-4	ACGIH TWA: 5mg/m^3	0.5 – 5%	NA
2-Aminoethanol	Ethanolamine	141-43-5	ACGIH TWA: 7.5 mg/m^3 ACGIH STEL: 15 mg/m^3 OSHA PEL: 6 mg/m^3 OSHA TWA: 8 mg/m^3 OSHA STEL: 15 mg/m^3	1 – 5%	1.7g/kg (oral, rat)

SECTION IV - FIRST AID INFORMATION

Emergency and First Aid Procedures:

Ingestion: Drink a glassful of water.
Eye Contact: Flush eyes with water for 10 to 15 minutes.
Skin: If prolonged contact occurs, rinse thoroughly with water. If spilled on clothing, change clothes.

If symptoms persist or reoccur, seek medical attention.

Other: Consumer product package has a caution statement: "CAUTION: Eye irritant. Harmful if swallowed. KEEP OUT OF REACH OF CHILDREN. If swallowed, give a glassful of water. Call a physician. In case of eye contact, flush with water."

SECTION V - FIRE FIGHTING INFORMATION

Flash Point (Method Used): >200°F PM CC **Explosive Limits**: *LEL:* N/A *UEL*: N/A

Extinguishing Media: CO_2, water

Special Fire Fighting Procedures:. None.

Unusual Fire Hazards: None. This product has a flash point above 200°F. It is an aqueous solution containing ethyl alcohol and it does not sustain combustion.

Stability *Unstable*: *Conditions to Avoid*: None
Stable: X

Incompatibility (Materials to Avoid): None known

Hazardous Decomposition/By Products: None known

Hazardous Polymerization: *May Occur*: *Conditions to Avoid*: None
Will Not Occur: X

SECTION VI - ACCIDENTAL RELEASE MEASURES

Personal Precautions: None

Environmental Precautions: DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH ALL REGULATIONS. Small or household quantities may be disposed of in refuse or in sewer. First check with your local water treatment plant. For larger quantities, incineration is preferred. Do not landfill.

Steps To Be Taken in Case Material is Released or Spilled: Flush small or household quantities down acceptable sewer (contains biodegradable surfactants). Prevent spills from reaching a waterway. Sorbents may be used.

SECTION VII - HANDLING AND STORAGE

Precautions To Be Taken in Handling and Storing: No unusual precautions necessary.

Other Precautions: None

SECTION VIII - EXPOSURE CONTROLS, PERSONAL PROTECTION

Respiratory Protection (Specify Type): None required with normal use.

Ventilation *Local Exhaust*: None required with normal consumer use. *Special*: None

Mechanical (General): Normal/general dilution ventilation is acceptable. *Other*: None

Eye Protection: None required with normal consumer use.

Industrial Setting: If a splash is likely, chemical goggles may be needed.

Protective Gloves: None required with normal use.

Industrial Setting: Protective gloves (rubber, neoprene) should be used for prolonged direct contact.

Other Protective Equipment: None required with normal use.

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point °F: 205°F-208°F

Specific Gravity (H_2O=1): 1.04 to 1.074g/cc

Vapor Pressure (mm Hg): <29.4

Percent Volatile by Volume (%):~76.9-80.8% @ 105ºC

Vapor Density (Air=1): Unknown

Evaporation Rate (nBuOAc=1): Unknown

Odor Threshold: N/A

Freezing Point: N/A

Coefficient of Water/Oil Distribution: N/A

pH (10% solution): 8.1 to 8.5

Scooped Density: N/A

Solubility in Water: Completely soluble.

Appearance and Odor: All Liquid Gain products are blue and contain perfume except the Gain Joyful Expressions products are green and contain perfume.

Reserve Alkalinity: N/A

SECTION X - STABILITY AND REACTIVITY

Possible Hazardous Reactions/Conditions: None known

Conditions to Avoid: None

Materials to Avoid: None

Hazardous Decomposition Products: None known

Other Recommendations: None

SECTION XI - TOXICOLOGICAL INFORMATION

Liquid Gain formulas have a low order of toxicity. If ingested, it may be mildly irritating. It is expected to be moderately emetic.

LD50 (oral, estimated): > 2g/kg
ED50 (emesis, estimated): ~ 0.5 g/kg

Chronic Effects: No chronic health effects reported.

Target Organs: No target organs reported.

Carcinogenicity: NTP: No
IARC: No
OSHA: No

SECTION XII - ECOLOGICAL INFORMATION

Based on ecotoxicity and fate data for the individual ingredients in this specific formulation and for related consumer household cleaning product formulations, it is expected that this product would exhibit a non-hazardous order of toxicity at relevant environmental concentrations.

SECTION XIII - DISPOSAL CONSIDERATIONS

Waste Disposal Method: Disposal is to be performed in compliance with all Federal, state/provincial and local regulations.

Non Household Setting: For non household use/larger quantities, incineration is preferred. Do not landfill.

Household Use: Consumer produced household solutions may be disposed of down the drain with running water. may be disposed of in refuse or in sewer. Consumer may discard empty container in trash, or recycle where facilities exist.

SECTION XIV - TRANSPORT INFORMATION

U.S. D.O.T.
Ground Transport: These products are not regulated when transported by ground.
IATA: These products are not regulated when transported by air.
IMDG: These products are not regulated when transported by vessel.

SECTION XV - ADDITIONAL REGULATORY INFORMATION

United States

All intentionally-added components of these products are listed on the US TSCA Inventory.
These products are not subject to warning labeling under California Proposition 65.

Canada

All ingredients are CEPA approved for import to Canada by Procter & Gamble. This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and this MSDS contains all information required by the Controlled Products Regulations.

SECTION XVI - OTHER INFORMATION

Perfumes contained within these products covered by this MSDS comply with appropriate IFRA guidance.

P&G Hazard Rating: 1	Health: 1	4=EXTREME
	Flammability: 1	3=HIGH
	Reactivity: 0	2= MODERATE
		1=SLIGHT
		0= NOT SIGNIFICANT

*N/A. - Not Applicable *N/K. - Not Known

Data supplied is for use only in connection with occupational safety and health.

DISCLAIMER: This MSDS is intended to provide a brief summary of our knowledge and guidance regarding the use of this material. The information contained here has been compiled from sources considered by Procter & Gamble to be dependable and is accurate to the best of the Company's knowledge. It is not meant to be an all-inclusive document on worldwide hazard communication regulations.

This information is offered in good faith. Each user of this material needs to evaluate the conditions of use and design the appropriate protective mechanisms to prevent employee exposures, property damage or release to the environment. Procter & Gamble assumed no responsibility for injury to the recipient or third persons, or for any damage to any property resulting from misuse of the product.

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product Name	**LYSOL® Brand II (Kills 99.9% of Viruses & Bacteria) Antibacterial Kitchen Cleaner Complete Clean**
UPC CODES	Refer to Section 16
CAS #	Mixture
Product Use	Disinfectant
Distributed by	Reckitt Benckiser (Canada) Inc. 1680 Tech Avenue Unit #2 Mississauga, ON L4W 5S9 In Case of Emergency: 1-800-888-0192 Transportation Emergencies: 24 Hour Number: North America: CHEMTREC: 1-800-424-9300 Outside North America: 1-703-527-3887

LEGEND HMIS/NFPA	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

Health	/	2
Flammability		0
Physical Hazard		0
Personal Protection		B

2. Hazards Identification

Emergency Overview

This product is regulated by Health Canada as a disinfectant. Extensive testing has been completed to show that it is safe and effective when used as directed.

CAUTION
EYE IRRITANT. DO NOT get in eyes. Wash thoroughly with soap and water after handling. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Keep out of reach of children.

Potential short term health effects

Routes of exposure	Eye, Skin contact, Inhalation, Ingestion.
Eyes	May cause eye irritation.
Skin	Non-irritating to the skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.
Inhalation	None expected during normal conditions of use.
Ingestion	None expected during normal conditions of use. Not orally toxic.
Target organs	Skin. Eyes.
Chronic effects	The finished product is not expected to have chronic health effects.
Signs and symptoms	Symptoms may include redness, oedema, drying, defatting and cracking of the skin. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

3. Composition/Information on Ingredients

Ingredient(s)	CAS #	Percent
N-Alkyl (40% C12, 50% C14, 10% C16) dimethyl benzyl ammonium chloride	68424-85-1	0 - 0.1
N-Alkyl (1% C8, 1% C10, 67% C12, 25% C14, 7% C16, 1% C18) dimethyl benzyl ammonium chloride	63449-41-2	0 - 0.1

4. First Aid Measures

First aid procedures

Eye contact	If in eyes, IMMEDIATELY flush eyes thoroughly with water. Remove any contact lenses and continue to flush eyes with water for at least 15 minutes. Get medical attention if irritation persists.
Skin contact	If on skin, wash area with plenty of soap and water. Get medical attention if irritation develops.
Inhalation	Remove to fresh air.
Ingestion	Rinse mouth with water. Contact a physician or poison control center if symptoms develop. NEVER give an unconscious person anything to ingest.
Notes to physician	Symptoms may be delayed.
General advice	If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

5. Fire-fighting Measures

Flammable properties	Not flammable by WHMIS criteria.
Extinguishing media	
Suitable extinguishing media	Water spray. Foam. Dry chemical. Carbon dioxide.
Unsuitable extinguishing media	Not available
Protection of firefighters	
Specific hazards arising from the chemical	Not available
Protective equipment for firefighers	Firefighters should wear full protective clothing including self contained breathing apparatus.
Hazardous combustion products	May include and are not limited to: Oxides of nitrogen. Oxides of carbon.
Explosion data	
Sensitivity to mechanical impact	Not available
Sensitivity to static discharge	Not available

6. Accidental Release Measures

Personal precautions	Keep unnecessary personnel away. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak.
Methods for containment	Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas.
Methods for cleaning up	Before attempting clean up, refer to hazard data given above. Small spills may be absorbed with non-reactive absorbent and placed in suitable, covered, labelled containers. Prevent large spills from entering sewers or waterways. Contact emergency services and supplier for advice. Never return spills in original containers for re-use.

7. Handling and Storage

Handling	CAUTION May cause eye irritation. Avoid contact with eyes. Use good industrial hygiene practices in handling this material. When using do not eat or drink.
Storage	Store in original container in a cool, secure area inaccessible to children and pets. Keep in properly labelled containers.

8. Exposure Controls / Personal Protection

Exposure limit values

Ingredient(s)	Exposure limit values
N-Alkyl (1% C8, 1% C10, 67% C12, 25% C14, 7% C16, 1% C18) dimethyl benzyl ammonium chloride	**ACGIH-TLV** Not established
N-Alkyl (40% C12, 50% C14, 10% C16) dimethyl benzyl ammonium chloride	**ACGIH-TLV** Not established

Engineering controls General ventilation normally adequate.

Personal protective equipment

Eye/Face protection Avoid contact with eyes. If splashing is likely to occur or for occupational exposures, wear appropriate eye protection.
Emergency responders should wear full eye and face protection.

Hand protection For sensitive skin or prolonged use, wear rubber gloves.
Emergency responders should wear impermeable gloves.

Skin and body protection As required by employer code.
Emergency responders should wear impermeable clothing and footwear when responding to a situation where contact with the liquid is possible.

Respiratory protection No special requirements under normal use conditions.
Emergency responders should wear self-contained breathing apparatus (SCBA) to avoid inhalation of vapours generated by this product during a spill or other clean-up operations.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink.
Washing with soap and water after use is recommended as good hygienic practice to prevent possible eye irritation from hand contact.

9. Physical and Chemical Properties

Appearance	Liquid
Colour	Water white
Form	aqueous solution
Odour	Lemon
Odour threshold	Not available
Physical state	Liquid
pH	11.3 (Basic)
Freezing point	Not available
Boiling point	Not available
Pour point	Not available
Flash point	> 93.3 °C (> 199.94 °F) Tagliabue
Evaporation Rate	Not available
Flammability limits in air, lower, % by volume	Not available
Flammability Limits in Air, Upper, % by Volume	Not available
Vapour pressure	Not available
Vapour density	Not available
Specific gravity	1.0 (Water = 1)
Octanol/water coefficient	Not available
Solubility (H2O)	Complete
Auto-ignition temperature	Not available

10. Stability and Reactivity

Chemical stability	Stable under recommended storage conditions.
Conditions to avoid	DO NOT MIX WITH BLEACH or use in conjunction with other household products. Excessive heat.
Incompatible materials	Acids. Oxidizers.

Hazardous decomposition products	May include and are not limited to: Oxides of nitrogen. Oxides of carbon.
Possibility of hazardous reactions	Hazardous polymerisation does not occur.

11. Toxicological Information

Component analysis - LC50

Ingredient(s)	LC50
N-Alkyl (1% C8, 1% C10, 67% C12, 25% C14, 7% C16, 1% C18) dimethyl benzyl ammonium chloride	Not available
N-Alkyl (40% C12, 50% C14, 10% C16) dimethyl benzyl ammonium chloride	Not available

Component analysis - Oral LD50

Ingredient(s)	LD50
N-Alkyl (1% C8, 1% C10, 67% C12, 25% C14, 7% C16, 1% C18) dimethyl benzyl ammonium chloride	Not available
N-Alkyl (40% C12, 50% C14, 10% C16) dimethyl benzyl ammonium chloride	Not available

Effects of acute exposure

Eye	May cause eye irritation.
Skin	Non-irritating to the skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.
Inhalation	None expected during normal conditions of use.
Ingestion	None expected during normal conditions of use. Not orally toxic.
Sensitisation	Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.
Chronic effects	The finished product is not expected to have chronic health effects.
Carcinogenicity	The finished product is not expected to have chronic health effects.
Mutagenicity	The finished product is not expected to have chronic health effects.
Reproductive effects	The finished product is not expected to have chronic health effects.
Teratogenicity	The finished product is not expected to have chronic health effects.
Synergistic Materials	Not available

12. Ecological Information

Ecotoxicity	Not available
Environmental effects	Not available
Aquatic toxicity	Not available
Persistence and degradability	Not available
Bioaccumulation/accumulation	Not available
Partition coefficient	Not available
Mobility in environmental media	Not available
Chemical fate information	Not available
Other adverse effects	Not available

13. Disposal Considerations

Waste codes	Not available
Disposal instructions	Dispose in accordance with all applicable regulations. Do not reuse empty container. Rinse container and offer for recycling where facilities exist.
Waste from residues / unused products	Not available
Contaminated packaging	Not available

14. Transport Information

UN/ID N.o. Not applicable

U.S. Department of Transportation (DOT): Classification: Not regulated

Proper shipping name	Not applicable
U.S. DOT Hazard Class	Not applicable
Subsidiary Risk	Not applicable
Packing group	Not applicable
DOT RQ (lbs)	Not applicable
ERG NO	Not applicable

Transportation of Dangerous Goods (TDG - Canada): Classification: Not regulated

Proper shipping name	Not applicable
Status	Not applicable
Packing group	Not applicable

IMDG (Marine Transport): Classification: Not regulated

Proper shipping name	Not applicable
Class	Not applicable
Subsidiary Risk	Not applicable
Packing group	Not applicable
IMDG Page	Not applicable
Marine pollutant	Not applicable
EMS	Not applicable
MFAG	Not applicable
Maximum Quantity	Not applicable

IATA/ICAO (Air): Classification: Not regulated

Proper shipping name	Not applicable
Class	Not applicable
Subsidiary Risk:	Not applicable
Packing group	Not applicable
Maximum Quantity	Not applicable

15. Regulatory Information

Canadian federal regulations

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Product Registration: Registered with TPD, DIN 02246379

WHMIS classification

Exempt - Registered product - (DIN 02246379)

Inventory Status

Country(s) or region	Inventory Name	On Inventory (Yes/No)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

Disclaimer

This product should only be used as directed on the label and for the purpose intended. To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Further information

59631-50305-3 - LYSOL® Brand II (Kills 99.9% of Viruses & Bacteria) Antibacterial Kitchen Cleaner Complete Clean - 650 mL - Citrus Scent - 0160711

Issue date

01-Jun-2010

Effective Date

01-Jun-2010

Expiry Date

01-Jun-2013

Prepared by

Reckitt Benckiser Regulatory Department 800-333-3899

Other Information

For an updated MSDS, please contact the supplier/manufacturer listed on the first page of the document.

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product Names

Product code: **Sound 911 Horn**: 911PSH, 911PSHR, 911, 9112R, 911C
Mighty Sonic Horn: MSN, MSNR, **Super Sonic**: SSCN, SSN, SSNR
Push Button: PBSHN, PBSHNCSH, PBSHNR
Push Button Jr: PBNJC, PBNJR, **Commander-4**: FC4N, FNR
Super Sound: SH3, SH3R, **Aqua Blast**: PWH, PWHR

CAS # Mixture

Product use Personal Safety – Hand Held Signaling Device

Manufacturer

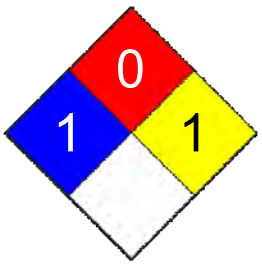
Falcon Safety Products, Inc.
25 Imclone Drive
Branchburg, NJ 08876 US
Phone: 1-908-707-4900

Supplier

Falcon Safety Products, Inc.
25 Imclone Drive
Branchburg, NJ 08876 US
Phone 1-908-707-4900

LEGEND HMIS/NFPA	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

Health	/ 1
Flammability	0
Physical Hazard	1
Personal Protection	X



2. Hazards Identification

Emergency overview

CAUTION
Contents under pressure. Containers may explode when heated.

Potential short term health effects

Routes of exposure Eye, Skin contact, Inhalation.

Eyes Contact with liquid may cause frostbite.

Skin Contact with liquid may cause frostbite.

Inhalation Excessive intentional inhalation may cause respiratory tract irritation and central nervous system effects (headache, dizziness). Vapors may cause dizziness or suffocation.

Ingestion Not a normal route of exposure.

Target organs Eyes. Skin. Respiratory system.

Chronic effects Prolonged or repeated exposure can cause drying, defatting and dermatitis.

Signs and symptoms Symptoms may include redness, edema, drying, defatting and cracking of the skin.

3. Composition / Information on Ingredients

Ingredient(s)	CAS #	Percent
Ethane, 1,1,1,2-tetrafluoro-	811-97-2	60 - 100

4. First Aid Measures

First aid procedures

Eye contact Immediately flush with cool water. Remove contact lenses, if applicable, and continue flushing for 15 minutes. Obtain medical attention immediately.

Skin contact Flush with cool water. Wash with soap and water. Obtain medical attention if irritation persists.

Inhalation	If symptoms develop, move victim to fresh air. If symptoms persist, obtain medical attention. If breathing has stopped, trained personnel should administer CPR immediately.
Ingestion	Do not induce vomiting. Never give anything by mouth if victim is unconscious, or is convulsing. Obtain medical attention.
General advice	Do not puncture or incinerate container. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

5. Fire Fighting Measures

Flammable properties	Not flammable by WHMIS/OSHA criteria. Containers may explode when heated.
Extinguishing media	
Suitable extinguishing media	Small Fires: Carbon dioxide. Dry chemical. Large Fires: Water spray. Fog. Foam.
Unsuitable extinguishing media	Not available
Protection of firefighters	
Specific hazards arising from the chemical	Contents under pressure. Pressurized container may explode when exposed to heat or flame. Cool containers with flooding quantities of water until well after fire is out.
Protective equipment for firefighters	Firefighters should wear full protective clothing including self contained breathing apparatus.
Hazardous combustion products	May include and are not limited to: Oxides of carbon. Fluoride gases.
Explosion data	
Sensitivity to mechanical impact	Not available
Sensitivity to static discharge	Not available

6. Accidental Release Measures

Personal precautions	Keep unnecessary personnel away. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak.
Methods for containment	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas.
Methods for cleaning up	Before attempting clean up, refer to hazard data given above. Remove sources of ignition. Although the chance of a significant spill or leak is unlikely in aerosol containers, in the event of such an occurrence, absorb spilled material with a non-flammable absorbent such as sand or vermiculite.

7. Handling and Storage

Handling	Avoid breathing mists or aerosols of this product. Use good industrial hygiene practices in handling this material.
Storage	Keep out of reach of children. Do not store at temperatures above 49 °C (120.2°F). Keep away from heat, open flames or other sources of ignition.

8. Exposure Controls / Personal Protection

Exposure limits

Ingredient(s)	Exposure Limits
Ethane, 1,1,1,2-tetrafluoro-	**ACGIH-TLV** Not established **OSHA-PEL** Not established

Engineering controls	Use only under good ventilation conditions or with respiratory protection.
Personal protective equipment	
Eye / face protection	Wear safety glasses with side shields.

Hand protection	If there is constant skin contact, rubber gloves are recommended.
Skin and body protection	As required by employer code.
Respiratory protection	Where exposure guideline levels may be exceeded, use an approved NIOSH respirator.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. Wash hands and face before breaks and immediately after handling the product.

9. Physical and Chemical Properties

Appearance	Clear.
Color	Colorless
Form	Liquefied gas
Odor	Slight ethereal.
Odor threshold	Not available
Physical state	Gas
pH	Not applicable
Melting point	Not available
Freezing point	Not available
Boiling point	-26.5 °C (-15.70 °F)
Flash point	None
Pour point	Not available
Evaporation rate	Not available
Flammability limits in air, lower, % by volume	Not available
Flammability limits in air, upper, % by volume	Not available
Vapor pressure	662 kPa
Vapor density	3.6 @25°C (air=1)
Specific gravity	1.21 @25°C
Octanol/water coefficient	Not available
Solubility (H2O)	Slightly
Auto-ignition temperature	> 750 °C (> 1382.00 °F)
Percent volatile	100

10. Stability and Reactivity

Chemical stability	Stable under recommended storage conditions.
Conditions to avoid	Aerosol containers are unstable at temperatures above 49°C (120.2°F).
Incompatible materials	Alkaline materials. Alkaline earth metals.
Hazardous decomposition products	May include and are not limited to: Oxides of carbon. Fluoride gases.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Component analysis - LC50

Ingredient(s)	**LC50**
Ethane, 1,1,1,2-tetrafluoro-	Not available

Component analysis - Oral LD50

Ingredient(s)	**LD50**
Ethane, 1,1,1,2-tetrafluoro-	Not available

Effects of acute exposure

Eye	Contact with liquid may cause frostbite.
Skin	Contact with liquid may cause frostbite.

Inhalation	Excessive intentional inhalation may cause respiratory tract irritation and central nervous system effects (headache, dizziness). Vapors may cause dizziness or suffocation.
Ingestion	Not a normal route of exposure.
Sensitization	Non-hazardous by WHMIS/OSHA criteria.
Chronic effects	Non-hazardous by WHMIS/OSHA criteria.
Carcinogenicity	Non-hazardous by WHMIS/OSHA criteria.
Mutagenicity	Non-hazardous by WHMIS/OSHA criteria.
Reproductive effects	Non-hazardous by WHMIS/OSHA criteria.
Teratogenicity	Non-hazardous by WHMIS/OSHA criteria.
Synergistic Materials	Not available

12. Ecological Information

Ecotoxicity	Not available
Environmental effects	Not available
Aquatic toxicity	Not available
Persistence / degradability	Not available
Bioaccumulation / accumulation	Not available
Partition coefficient	Not available
Mobility in environmental media	Not available
Chemical fate information	Not available
Other adverse effects	Not available

13. Disposal Considerations

Waste codes	Not available
Disposal instructions	Review federal, state/provincial, and local government requirements prior to disposal.
Waste from residues / unused products	Not available
Contaminated packaging	Not available

14. Transport Information

U.S. Department of Transportation (DOT)

Basic shipping requirements:

Proper shipping name	Refrigerant gas R 134a, mixture
Hazard class	2.2
UN number	3159
Additional information:	
Packaging exceptions	ORM-D (applicable to containers up to 1 L)

Transportation of Dangerous Goods (TDG - Canada)

Basic shipping requirements:

Proper shipping name	Refrigerant gas R 134a
Hazard class	2.2
UN number	3159
Additional information:	
Packaging exceptions	Limited quantity (containers up to 125mL)

IATA/ICAO (Air)

Basic shipping requirements:

Proper shipping name	Refrigerant gas R 134a mixture
Hazard class	2.2
UN number	3159
Additional information:	
Maximum net quantity packaging	75 kg

15. Regulatory Information

Canadian federal regulations	This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.
US Federal regulations	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List. CERCLA/SARA Hazardous Substances - Not applicable.

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical	Yes

CERCLA (Superfund) reportable quantity

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - No Pressure Hazard - Yes Reactivity Hazard - No
Section 302 extremely hazardous substance	No
Section 311 hazardous chemical	Yes
Clean Air Act (CAA)	Not available
Clean Water Act (CWA)	Not available
WHMIS status	Controlled
WHMIS classification	Class A - Compressed Gas

WHMIS labeling

State regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

U.S. - Minnesota - Hazardous Substance List

Ethane, 1,1,1,2-tetrafluoro-	811-97-2	Present

U.S. - New Jersey - Right to Know Hazardous Substance List

Ethane, 1,1,1,2-tetrafluoro-	811-97-2	sn 2744; sn 2745 (flammable)

Inventory name

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

Disclaimer Information contained herein was obtained from sources considered technically accurate and reliable. While every effort has been made to ensure full disclosure of product hazards, in some cases data is not available and is so stated. Since conditions of actual product use are beyond control of the supplier, it is assumed that users of this material have been fully trained according to the requirements of all applicable legislation and regulatory instruments. No warranty, expressed or implied, is made and supplier will not be liable for any losses, injuries or consequential damages which may result from the use of or reliance on any information contained in this document.

Issue date 28-Oct-2009

Effective date 15-Oct-2009

Expiry date 15-Oct-2012

Prepared by Dell Tech Laboratories Ltd. (519) 858-5021

Other information For an updated MSDS, please contact the supplier/manufacturer listed on the first page of the document.

SUMA REVOFLOW QUICK DRYING RINSE AID FOR PLASTICS

HMIS		NFPA	Personal protective equipment
Health	1	1	None / Aucune / Ninguno
Flammability	0	0	
Physical Hazard / Instability	0	0	

Version Number: 1

Preparation date: 2012-01-26

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: SUMA REVOFLOW QUICK DRYING RINSE AID FOR PLASTICS

MSDS #: MS0300735
Product Code: 5257171
Recommended use: Warewashing product. This product is intended to be diluted prior to use.

Manufacturer, importer, supplier:
US Headquarters
Diversey, Inc.
8310 16th St.
Sturtevant, Wisconsin 53177-1964
Phone: 1-888-352-2249
MSDS Internet Address: www.diversey.com

Canadian Headquarters
Diversey, Inc. - Canada
2401 Bristol Circle
Oakville, Ontario L6H 6P1
Phone: 1-800-668-3131

Emergency telephone number: 1-800-851-7145 (U.S.); 1-651-917-6133 (Int'l)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
CAUTION. MAY BE MILDLY IRRITATING TO EYES. MAY BE MILDLY IRRITATING TO SKIN.

Principal routes of exposure: Eye contact. Skin contact. Inhalation.
Eye contact: May be mildly irritating to eyes.
Skin contact: May be mildly irritating to skin.
Inhalation: None
Ingestion: None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components None

4. FIRST AID MEASURES

Eye contact: Flush immediately with plenty of water. If irritation develops, get medical attention.
Skin contact: Flush immediately with plenty of water. If irritation develops, get medical attention.
Inhalation: No specific first aid measures are required.
Ingestion: No specific first aid measures are required.
Aggravated Medical Conditions: None known

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: The product is not flammable. Extinguish fire using agent suitable for surrounding fire.
Specific hazards: None known.
Unusual hazards: None known.
Specific methods: None known.

Special protective equipment for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.
Extinguishing media which must not be used for safety reasons: None.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Use personal protective equipment.
Environmental precautions and clean-up methods: Clean-up methods - large spillage. Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal. Use a water rinse for final clean-up.

7. HANDLING AND STORAGE

Handling:
Avoid contact with skin and eyes. FOR COMMERCIAL AND INDUSTRIAL USE ONLY.
Storage:
Protect from freezing. Keep tightly closed in a dry, cool and well-ventilated place. KEEP OUT OF REACH OF CHILDREN.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures to reduce exposure:
No special ventilation requirements General room ventilation is adequate

Personal Protective Equipment

Eye protection: No special requirements under normal use conditions.
Hand protection: No special requirements under normal use conditions
Skin and body protection: No special requirements under normal use conditions.
Respiratory protection: No special requirements under normal use conditions.
Hygiene measures: Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Appearance: Liquid
Specific gravity: 1.02
Vapor density: No information available
Boiling point/range: Not determined
Decomposition temperature: Not determined
Solubility: Completely Soluble
Solubility in other solvents: No information available
Partition coefficient (n-octanol/water): No information available
Elemental Phosphorus: 0.00 % by wt.
pH: 8.0
Explosion limits: - upper: Not determined **- lower:** Not determined

Bulk density: No information available
Evaporation Rate No information available
Color: Clear Blue
Odor: Surfactant
Melting point/range: Not determined
Autoignition temperature: No information available
Density: 8.51 lbs/gal 1.02 Kg/L
Flash point: > 200 °F > 93.4 °C
Viscosity: No information available
VOC: 0 % *
Dilution pH: 7.5 **@** 1:5000

* - Title 17, California Code of Regulations, Division 3, Chapter 1, Subchapter 8.5, Article 2, Consumer Products, Sections 94508

10. STABILITY AND REACTIVITY

Stability: Stable
Polymerization: None under normal processing.
Hazardous decomposition products: None reasonably foreseeable.
Materials to avoid: None known.
Conditions to avoid: Stable at normal conditions.

11. TOXICOLOGICAL INFORMATION

Acute toxicity: Oral LD50 estimated to be greater than 5000 mg/kg; Dermal LD50 estimated to be > 2000 mg/kg
Component Information: See Section 3

Chronic toxicity: None known

Specific effects

Carcinogenic effects: None known
Mutagenic effects: None known
Reproductive toxicity: None known
Target organ effects: None known

12. ECOLOGICAL INFORMATION

Environmental Information: No data available

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products:
Dispose of according to all federal, state and local applicable regulations.

14. TRANSPORT INFORMATION

DOT/TDG/IMDG: Please refer to the Diversey HazMat Library, http://naextranet.diversey.com/dot/, for up to date shipping information.

DOT Bill of Lading Description: CLEANING, WASHING, BUFFING, OR POLISHING COMPOUNDS LIQUID

IMDG Bill of Lading Description: Same as DOT above.

15. REGULATORY INFORMATION

International Inventories at CAS# Level
All components of this product are listed on the following inventories: U.S.A. (TSCA), Canada (DSL/NDSL).

U.S. Regulations
California Proposition 65: This product is not subject to the reporting requirements under California's Proposition 65

RIGHT TO KNOW (RTK)

Ingredient(s)	CAS #	MARTK:	NJRTK:	PARTK:	RIRTK:
Sodium xylene sulfonate	1300-72-7	-	-	-	-
Linear alcohol alkoxylate	68987-81-5	-	-	-	-
Water	7732-18-5	-	-	-	-
Polyoxypropylene-polyoxyethylene block copolymer	9003-11-6	-	-	-	-

CERCLA/ SARA

SARA 311/312 Hazard Categories
Immediate: -
Delayed: -
Fire: -
Reactivity: -
Sudden Release of Pressure: -

Canada
WHMIS hazard class: Non-controlled

16. OTHER INFORMATION

Reason for revision: Not applicable
Prepared by: NAPRAC

Notice to Reader: This document has been prepared using data from sources considered technically reliable. It does not constitute a warranty, express or implied, as to the accuracy of the information contained within. Actual conditions of use and handling are beyond seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

The Clorox Company
1221 Broadway
Oakland, CA 94612
Tel. (510) 271-7000

Material Safety Data Sheet

I Product: S.O.S® STEEL WOOL SOAP PADS

Description: BLUE SOAP MIXTURE IMPREGNATED INTO STEEL WOOL PADS

Other Designations	Distributor	Emergency Telephone Nos.
S.O.S® Lemon Fresh Scent Steel Wool Soap Pads S.O.S® Orange Scent Steel Wool Soap Pads S.O.S® Lavender Fresh Scent Steel Wool Soap Pads S.O.S® Clean n' Toss Steel Wool Soap Pads S.O.S® Industrial Size Steel Wool Soap Pads S.O.S® Heavy Duty Steel Wool Soap Pads Commercial Solutions® S.O.S® Steel Wool Soap Pads	Clorox Sales Company 1221 Broadway Oakland, CA 94612	For Medical Emergencies, call 1-800-446-1014. For Transportation Emergencies, call 1-800-424-9300 (Chemtrec).

II Health Hazard Data

Contact with eyes may produce irritation and redness. If ingested, gastric irritation and nausea/vomiting are possible.

FIRST AID:

EYE CONTACT: Immediately flush eyes with plenty of water for 15 minutes. If irritation persists, call a doctor.

SKIN CONTACT: Rinse with plenty of with water. If irritation persists, call a doctor.

INGESTION: Soap - Drink a glassful of water to dilute. Steel wool pad - Immediately contact a doctor or poison control center.

III Hazardous Ingredients

This product is not hazardous as defined by 29 CFR Part 1910.1200 (OSHA).

None of the ingredients in this product is on the IARC, NTP, or OSHA carcinogen list.

IV Special Protection and Precautions

Wash hands after contact.

Personal protection: For industrial/manufacturing settings, wear safety glasses and rubber or neoprene gloves.

V Transportation and Regulatory Data

DOT/IATA/IMDG: Not restricted

TSCA Status: All components of this product are on the TSCA inventory.

EPA - SARA Title III/CERCLA: This product is regulated under Sections 311/312. This product contains sodium nitrite (CAS #7632-00-0, <2%), which is regulated under Section 313 and Section 304/CERCLA, and contains sodium hydroxide (CAS #1310-73-2, <0.5%), which is regulated under Section 304/CERCLA.

VI Spill Procedures/Waste Disposal

Spill Procedures: Containerize. Wash residual down to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed-down material.

Waste Disposal: Dispose of in accordance with all applicable federal, state, and local regulations.

VII Reactivity Data

Stable under normal use and storage conditions.

Avoid contact with strong mineral acids and strong oxidizers.

VIII Fire and Explosion Data

Not flammable or explosive.

IX Physical Data

Solubility in water ..... Soap is completely soluble.

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DATA SUPPLIED IS FOR USE ONLY IN CONNECTION WITH OCCUPATIONAL SAFETY AND HEALTH

DATE PREPARED 1/2009

Material Safety Data Sheet

Zep Inc.
1310 Seaboard Industrial Blvd.
Atlanta, GA 30318
1-877-I-BUY-ZEP (428-9937)
www.zep.com

Section 1. Chemical Product and Company Identification

Product name ZEP SPIRIT II READY-TO-USE DETERGENT DISINFECTANT

Product use Cleaner - Disinfectant - Deodorant.

Product code 0679

Date of issue 08/13/08 **Supersedes** 11/08/04

This product is a registered pesticide. EPA ID No. 1839-83-1270

Emergency Telephone Numbers

For MSDS Information:
Compliance Services 1-877-I-BUY-ZEP (428-9937)

For Medical Emergency
INFOTRAC: (877) 541-2016 Toll Free - All Calls Recorded

For Transportation Emergency
CHEMTREC: (800) 424-9300 - All Calls Recorded
In the District of Columbia (202) 483-7616

Printing date: 08/13/08

Prepared By
Compliance Services
1420 Seaboard Industrial Blvd.
Atlanta, GA 30318

Section 2. Hazards Identification

Emergency overview

CAUTION !

CAUSES EYE IRRITATION.

*Hazard Determination System (HDS): Health, Flammability, Reactivity

NOTE: MSDS data pertains to the product as delivered in the original shipping container(s). Risk of adverse effects are lessened by following all prescribed safety precautions, including the use of proper personal protective equipment.

Acute Effects **Routes of Entry** Dermal contact. Eye contact.

Eyes Causes eye irritation. Inflammation of the eye is characterized by redness, watering and itching.

Skin May cause skin irritation. Skin inflammation is characterized by itching, scaling, or reddening.

Inhalation Avoid breathing vapors, spray or mists. Over-exposure by inhalation may cause respiratory irritation.

Ingestion May be harmful if swallowed. Ingestion may cause gastrointestinal irritation and diarrhea.

Chronic effects Prolonged or repeated contact may dry skin and cause irritation. Contains material which may cause damage to the following organs: blood, kidneys, liver.

Ingredients: Not listed as carcinogen by OSHA, NTP or IARC.

Additional Information: See Toxicological Information (Section 11)

Section 3. Composition/Information on Ingredients

DIETHYLENE GLYCOL MONOBUTYL ETHER; 2-(2-butoxyethoxy)-ethanol; butyl carbitol	112-34-5	1 - 10
TETRASODIUM ETHYLENEDIAMINE TETRAACETATE; ethylenediamine tetraacetic acid; tetrasodium salt	64-02-8	1 - 5
QUATERNARY AMMONIUM CHLORIDES; blend of alkyl dimethylbenzyl ammonium chlorides, alkyl dimethyl ethylbenzyl ammonium chlorides, and ethanol	68391-01-5; 68956-79-6; 64-17-5	<1

Section 4. First Aid Measures

Eye Contact Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention immediately.

Skin Contact Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Get medical attention if irritation develops.

Inhalation Move exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If affected person is conscious, give plenty of water to drink. Get medical attention immediately.

Section 5. Fire Fighting Measures

National Fire Protection Association (U.S.A.)

Flash Point Closed cup: >93.9°C (>201°F)

Flammable Limits Not applicable.

Flammability Non-combustible.

Fire hazard In a fire or if heated, a pressure increase will occur and the container may burst.

Fire-Fighting Procedures Use an extinguishing agent suitable for the surrounding fire. Do not release runoff from fire to sewers or waterways.

Section 6. Accidental Release Measures

Spill Clean up Put on appropriate personal protective equipment (see section 8). Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container.

Section 7. Handling and Storage

Handling Put on appropriate personal protective equipment (see section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Apply this product only as specified on the label. Do not reuse container. Wash thoroughly after handling.

Storage Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep out of the reach of children.

Section 8. Exposure Controls/Personal Protection

Product name	Exposure limits
DIETHYLENE GLYCOL MONOBUTYL ETHER; 2-(2-butoxyethoxy)-ethanol; butyl carbitol	**Manufacturer (United States).** TWA: 35 ppm 8 hour(s).

Personal Protective Equipment (PPE)

Eyes Safety glasses.

Body Recommended: Neoprene gloves. Rubber gloves. Nitrile gloves.

Respiratory A respirator is not needed under normal and intended conditions of product use.

Section 9. Physical and Chemical Properties

Physical State Liquid. []

pH 11.5 - 12.5

Boiling Point >100°C (>212°F)

Specific Gravity 1

Solubility Easily soluble in the following materials: cold water and hot water.

Color Clear. Green.

Odor Citrus

Vapor Pressure Not determined.

Vapor Density Not determined.

Evaporation Rate 1 (Water = 1)

VOC (Consumer) 0 (g/l).

Section 10. Stability and Reactivity

Stability and Reactivity The product is stable.

Incompatibility Reactive or incompatible with the following materials: oxidizing materials, acids and alkalis.

Hazardous Polymerization Will not occur.

Hazardous Decomposition Products carbon oxides (CO, CO_2), nitrogen oxides (NO, NO_2 etc.), Ammonia.

Section 11. Toxicological Information

Acute Toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Diethylene Glycol Monobutyl Ether	LD50 Dermal	Rabbit	2700 mg/kg	-
	LD50 Oral	Rat	5660 mg/kg	-
	LD50 Oral	Mouse	2400 mg/kg	-
Tetrasodium Ethylenediamine Tetraacetate	LD50 Oral	Rat	4100 mg/kg	-
Quaternary Ammonium Chlorides	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	>500 mg/kg	-

Section 12. Ecological Information

Environmental Effects Toxic to aquatic organisms.

Aquatic Ecotoxicity

Product/ingredient name	Test	Result	Species	Exposure
Quaternary Ammonium Chlorides	-	Acute EC50 0.058 mg/L	Daphnia	48 hours
	-	Acute LC50 0.52 mg/L	Fish - Bluegill.	96 hours

Section 13. Disposal Considerations

Waste Information

Waste must be disposed of in accordance with federal, state and local environmental control regulations. Consult your local or regional authorities for additional information.

Waste Stream Non-hazardous waste

Section 14. Transport Information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label
DOT Classification	Not regulated.	Not a DOT controlled material (United States).			
IMDG Class	Not determined.				

NOTE: DOT classification applies to most package sizes. For specific container size classifications or for size exceptions, refer to the Bill of Lading with your shipment.

PG* : Packing group

Section 15. Regulatory Information

U.S. Federal Regulations

SARA 313 toxic chemical notification and release reporting:

Product name

Diethylene Glycol Monobutyl Ether

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: Diethylene Glycol Monobutyl Ether

All Components of this product are listed or exempt from listing on TSCA Inventory.

State Regulations

California Prop 65 No products were found.

Section 16. Other Information

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

**NOTE: Hazard Determination System (HDS) ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although these ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HDS ratings are to be used with a fully implemented program to relay the meanings of this scale.*

ZEP MANUFACTURING COMPANY
Acuity Specialty Products Group, Inc.
P.O. BOX 2015
ATLANTA, GA 30301
1- 877- I - BUY- ZEP

Material Safety Data Sheet

and Safe Handling and Disposal Information

Issue Date 05/20/98
Supersedes 05/22/92
Product Name **ZEP DRYING AGENT**
Product No. **0807**
Rinse Agent

Printing Date: 03/25/03

SECTION I - EMERGENCY CONTACTS

For MSDS Information:
Acuity Specialy Products Group, Inc.
Compliance Services 1-877-I-BUY-ZEP

For Medical Emergency:
INFOTRAC
(877) 541-2016 Toll Free - All Calls Recorded

For a Transportation Emergency:
CHEMTREC
(800) 424-9300 - All Calls Recorded
In the District of Columbia (202) 483-7616

SECTION II - HAZARDOUS INGREDIENTS

** PROPRIETARY CATIONIC SURFACTANT ** CAS# - NONE; RTECS# - NONE; OSHA PEL - N/D ; TLV - N/D; EFFECTS - FBL COR SEN; % IN PROD - 10-20
** MINERAL SEAL OIL ** (mineral oil); petrolatum; CAS# 64742-30-9; RTECS# - NONE; ACGIH/OSHA OIL MIST LIMIT = 5 mg/m3; TLV - N/A; EFFECTS - IRR; % IN PROD - 10-20
** ISOPROPYL ALCOHOL ** ipa; dimethylcarbinol; 2-pro_ panol; CAS# 67-63-0; RTECS# NT8050000; OSHA PEL-400 PPM; OSHA/ACGIH STEL-500 PPM ; TLV - 400; EFFECTS - IRR FBL; % IN PROD - < 5
** HEXYLENE GLYCOL ** 2-methyl-2,4-pentanediol; 2,4- dihydroxy-2-methylpentane; 1,2-hexanediol; CAS# 107- 41-5; RTECS# SA0810000; OSHA/ACGIH CEILING LIMIT- 25 ppm; TLV - N/D; EFFECTS - IRR; % IN PROD - < 5

SECTION III - HEALTH HAZARD DATA

SPECIAL NOTE: MSDS data pertains to the product as dispensed from the container. Adverse health effects would not be expected under recommended conditions of use (diluted) so long as prescribed safety precautions are practiced.
ACUTE EFFECTS OF OVEREXPOSURE:
This product can be an eye irritant. Inflammation of eye tissue is characterized by redness, watering, and/or itching. Prolonged skin contact can cause irritation characterized by itching or reddening of the skin. Harmful or fatal if swallowed. Overexposure by inhalation may cause respiratory irritation. Existing respiratory disorders or skin diseases may be aggravated by exposure.
CHRONIC EFFECTS OF OVEREXPOSURE:
Skin which is repeatedly defatted by contact with this product may be more susceptible to irritation, infection, or dermatitis. None of the ingredients are listed as carcinogens by IARC, NTP, or OSHA.
EST'D PEL/TLV: Not established
PRIMARY ROUTES OF ENTRY: N/A
HMIS CODES: HEALTH 2; FLAM 2; REACT 0; PERS. PROTECT B; CHRONIC HAZ NO
FIRST AID PROCEDURES:
SKIN: Wash contaminated skin thoroughly with soap or a mild detergent. Apply a skin cream with lanolin. Get medical attention if irritation persists.
EYES: Immediately flush eyes with plenty of water for at least 15 minutes. If irritation develops, consult a physician.
INHALE: If symptoms occur, move affected person to fresh air. If symptoms persist, get medical attention promptly.
INGEST: Aspiration hazard - do not induce vomiting. If vomiting occurs, keep head below hip level. Get emergency medical attention immediately.

SECTION IV - SPECIAL PRECAUTION INFORMATION

PROTECTIVE CLOTHING: Wear neoprene, nitrile, or natural rubber gloves or gloves with proven resistance to the ingredients listed.
EYE PROTECTION: Wear splash-proof safety goggles especially if contact lenses are worn.
RESPIRATORY PROTECTION: Keep face away from spray mist and do not breathe vapors.
VENTILATION: Provide local exhaust/ventilation as needed to keep concentration of vapors below exposure limits (PEL/TLV).

SECTION V - PHYSICAL DATA

BOILING POINT (F) - 212-600 SPECIFIC GRAVITY - 0.95
VAPOR PRESSURE(mmHg) - N/D EVAPORATION RATE (=1) - N/D
VAPOR DENSITY(AIR-1) - N/D pH(CONCENTRATE) - 5.5-7.5
SOLUBILITY IN WATER - EMULSIFIES
pH(USE DILUTION OF - 1% SOLUTION): 6.0-7.5
VOC CONTENT (CONCENTRATE) - 20.0% 1.58 lb/gl
APPERANCE AND ODOR - CLEAR, SIGHTLY AMBER LIQUID WITH ESSENTIALLY NO ODOR.

SECTION VI - FIRE AND EXPLOSION DATA

FLASH POINT(F) (METHOD USED): 142 TCC
FLAMMABLE LIMITS:LEL: N/D UEL: N/D
EXTINGUISHING MEDIA: Carbon dioxide, dry chemical and foam.
SPECIAL FIRE FIGHTING: Wear self-contained positive pres. breathing apparatus.
UNUSUAL FIRE HAZARDS: Concentrated vapor may ignite if exposed to spark.

SECTION VII - REACTIVITY DATA

STABILITY: Stable
INCOMPATIBILITY(AVOID): Heat, open flame, spark, and oxidizing agents.
POLYMERIZATION: Will not occur.
HAZARDOUS DECOMPOSITION: Carbon dioxide, carbon monoxide, and other unidentified organic compounds.

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIALS IS RELEASED OR SPILLED:
DO NOT ALLOW product or runoff to enter storm drains or other bodies of water. Observe safety precautions in Sections 4 & 9 during clean-up. Sweep powder or absorb spilled liquid on inert absorbent material and place in a clean D.O.T. specification container for disposal.
WASTE DISPOSAL METHOD:
Unusable material should be properly drummed. Consult local, state, and federal agencies for proper method of disposal in your area. Do not contaminate water supply by disposal of wastes or containers.
RCRA HAZ WASTE NOS: N/A

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING
Store tightly closed container in a dry area at temps. between 40-120 degrees F. Combustible! Store and use away from heat, sparks, open flame, or any source of ignition. Keep product away from skin and eyes. Do not breathe spray mists or vapors. Clothing or shoes which become contaminated with substance should be removed promptly and not reworn until thoroughly cleaned. Keep out of the reach of children.

SECTION X - REGULATORY INFORMATION

DOT PROPER SHIPPING NAME: BUFFING OR POLISHING COMPOUND, NOI, OR WAX, KEEP FROM FREEZING
NOTE: DOT information applies to larger package sizes of affected products. For some products, DOT may require alternate names and labeling in accordance with packaging group requirements.
DOT HAZARD CLASS: NA DOT PACKING GROUP:
DOT I.D. NUMBER: DOT LABEL/PLACARD:
EPA TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED
EPA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER): NONE
EPA CAA: N/A

MATERIAL SAFETY DATA SHEET

NOTICE

Thank you for your interest in, and use of, this product. Acuity Specialty Products Group is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. Acuity Specialty Products Group is concerned for your health and safety. This product and all others supplied by Acuity Specialty Products Group companies can be used safely with proper protective equipment and proper handling practices consistent with label instructions and the MSDS. Before using any this product, be sure to read the complete label and the Material Safety Data Sheet.

As a further word of caution, Acuity Specialty Products Group wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode or develop harmful vapors and possibly cause injury or death. Clean empty containers by triple rinsing with water or an appropriate solvent. Empty containers must be sent to a drum reconditioner before reuse.

TERMS AND ABBREVIATIONS
Listed Alphabetically by Section

SECTION II: HAZARDOUS INGREDIENTS

CAR: Carcinogen - A chemical listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or OSHA as a definite or possible human cancer causing agent.
CAS#: Chemical Abstract Services Registry Number - A universally accepted numbering system for chemical substances.
CBL: Combustible - At temperatures between 100°F and 200°F chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.
CNS: Central Nervous System depressant that reduces the activity of the brain and spinal cord.
COR: Corrosive - Causes irreversible injury to living tissue (e.g. burns).
DESIGNATIONS: Chemical and common names of hazardous ingredients.
EIR: Eye Irritant Only - Causes reversible reddening and/or inflammation of eye tissues.
EXPOSURE LIMITS: The time weighted average (TWA) airborne concentration at which most workers can be exposed without any expected adverse effects. Primary sources include ACGIH TLVs, and OSHA PELs.
- **ACGIH:** American Conference of Governmental Industrial Hygienists
- **CEILING:** "The concentration that should not be exceeded in the workplace during any part of the working exposure." Source, ACGIH
- **OSHA:** Occupational Safety and Health Administration.
- **PEL:** Permissible Exposure Limit - A set of time weighted average exposure values, established by OSHA, for a normal 8-hour day and a 40-hour workweek.
- **PPM:** Parts per million - unit of measure for exposure limits.
- **(S) SKIN:** Skin contact with substance can contribute to overall exposure.
- **STEL:** Short Term Exposure Limit - Maximum concentration for a continuous 15-minute exposure period.
- **TLV:** Threshold Limit Value - A set of time weighted average exposure limits, established by the ACGIH, for a normal 8-hour day and a 40-hour workweek.

FBL: Flammable - At temperatures under 100°F, chemical gives off enough vapors to ignite if a source of ignition is present as tested with a closed cup tester.
HAZARDOUS INGREDIENTS: Chemical substances that are determined to be potential health or physical hazards based on the criteria established in the OSHA Hazard Communication Standard - 29 CFR 1910.1200
HTX: Highly toxic - the probable lethal dose for a 70 kg (150 lb.) man, which may be approximated as less than 6 teaspoons (2 tablespoons)
IRR: Irritant - Causes reversible effects in living tissues (e.g. inflammation) - primarily skin and eyes.
N/A: Not Applicable - Category is not appropriate for this product.
N/D: Not Determined - Insufficient information to make a determination for this item.
RTECS#: Registry of Toxic Effects of Chemical Substances - an unreviewed listing of published toxicology data on chemical substances.
SARA: Superfund Amendment and Reauthorization Act - Section 313 designates certain chemicals for possible reporting for the Toxic Chemical Release Inventory.
SEN: Sensitizer - Causes allergic reaction after repeated exposure.
TOX: Toxic - The probable lethal dose for a 70 kg (150 kg) man is one ounce (2 tablespoons) or more.

SECTION III: HEALTH HAZARD DATA

ACUTE EFFECT: An adverse effect on the human body from a single exposure with symptoms developing almost immediately after exposure or within a relatively short time.
CHRONIC EFFECT: Adverse effects that are most likely to occur from repeated exposure over a long period of time.
EST'D PEL/TLV: This estimated, time-weighted-average, exposure limit, developed by using a formula provided by the ACGIH, pertains to airborne concentrations from the product as a whole. This value should serve as guide for providing safe workplace conditions to nearly all workers.
HMIS CODES: Hazardous Material Identification System - a rating system developed, by the National Paint and Coating Association for estimating the hazard potential of a chemical under normal workplace conditions. These risk estimates are indicated by a numerical rating given in each of three hazard areas (Health/ Flammability/Reactivity) ranging from a low of zero to a high of 4. The presence of a chronic hazard is indicated by a "YES". Consult HMIS training guides for Personal Protection letter codes, which indicate necessary protective equipment.
PRIMARY ROUTE OF ENTRY: The way one or more hazardous ingredients may enter the body and cause a generalized systemic or specific-organ toxic effect.
- **ING:** Ingestion - A primary route of exposure through swallowing of material.
- **INH:** Inhalation - A primary route of exposure through breathing of vapors.
- **SKIN:** A primary route of exposure through contact with the skin.

SECTION IV: SPECIAL PROTECTION INFORMATION

Where respiratory protection is recommended, use only MSHA and NIOSH approved respirators and dust masks.
MSHA: Mine Safety and Health Administration
NIOSH: National Institute for Occupational Safety and Health.

SECTION V: PHYSICAL DATA

EVAPORATION RATE: Refers to the rate of change from the liquid state to the vapor state at ambient temperature and pressure in comparison to a given substance (e.g. water).
pH: A value representing the acidity or alkalinity of an aqueous solution (Highly Acidic pH = 1; Neutral pH = 7; Highly Alkaline pH = 14)
VOC CONTENT: The percentage or amount in pounds per gallon of the product that is regulated as a Volatile Organic Compound under the Clean Air Act of 1990 and various state jurisdictions.
SOLUBILITY IN WATER: A description of the ability of the product to dissolve in water.

SECTION VII: REACTIVITY DATA

HAZARDOUS DECOMPOSITION: Breakdown products expected to be produced upon product decomposition by extreme heat or fire.
INCOMPATIBILITY: Keep product away from listed substances or conditions to prevent hazardous reactions.
POLYMERIZATION: Indicates the tendency of the product's molecules to combine with themselves in a chemical reaction releasing excess pressure and heat.
STABILITY: Indicates the susceptibility of the product to decompose spontaneously and dangerously.

SECTION VIII: SPILL AND DISPOSAL PROCEDURES

RCRA WASTE NOs: RCRA (Resource Conservation and Recovery Act) waste codes (40 CFR 261) applicable to the disposal of spilled or unusable product from the original container.

SECTION X: TRANSPORTATION DATA

CWA: Clean Water Act - Federal law that regulates chemical releases to bodies of water.
RQ: Reportable Quantity - The amount of the specific ingredient that, when spilled to the ground and, can enter a storm sewer or natural watershed, must be reported to the National Response Center, and other regulatory agencies.
TSCA: Toxic Substances Control Act - A federal law requiring all commercial chemical substances to appear on an inventory maintained by the EPA.

DISCLAIMER

All statements, technical information, and recommendations contained herein are based on available scientific tests or data that we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Acuity Specialty Products Group assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings, and advisories in the product label and Material Safety Data Sheet

(rev 06/02)

Safety Data Sheet

This safety data sheet complies with the requirements of: 2012 OSHA Hazard Communication Standard (29CFR 1910.1200)

Product name PYRO-CHEM ABC Multipurpose Dry Chemical Stored Pressure Extinguisher

1. Identification

1.1. Product Identifier

Product name PYRO-CHEM ABC Multipurpose Dry Chemical Stored Pressure Extinguisher

1.2. Other means of identification

Product code 074011
UN/ID no UN1044
Synonyms None
Chemical Family No information available

1.3. Recommended use of the chemical and restrictions on use

Recommended use No information available
Uses advised against Consumer use

1.4. Details of the Supplier of the Safety Data Sheet

Company Name Tyco Fire Protection Products
One Stanton Street
Marinette, WI 54143-2542
Telephone: 715-735-7411

Contact point Product Stewardship at 1-715-735-7411
E-mail address psra@tycofp.com

1.5. Emergency Telephone Number

Emergency telephone CHEMTREC 800-424-9300 or 703-527-3887

2. Hazards Identification

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Gases Under Pressure - Compressed Gas

2.2. Label Elements

Signal Word
WARNING

hazard statements

Contains gas under pressure; may explode if heated

Precautionary Statements

Storage
Protect from sunlight. Store in a well-ventilated place.

2.3. Hazards Not Otherwise Classified (HNOC)

Not Applicable.

2.4. OTHER INFORMATION

Unknown Acute Toxicity — 5.6208% of the mixture consists of ingredient(s) of unknown toxicity

3. Composition/information on Ingredients

3.1. Mixture

The following component(s) in this product are considered hazardous under applicable OSHA(USA)

Chemical name	CAS No	weight-%
Ammonium sulfate, technical	7783-20-2	7 - 13
Attapulgite	12174-11-7	1 - 5
Calcium carbonate	471-34-1	1 - 5

4. First aid measures

4.1. Description of first aid measures

Eye Contact — Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists: Get medical advice/attention.

Skin contact — Wash skin with soap and water. Get medical attention if irritation develops and persists.

Inhalation — If experiencing respiratory symptoms: Call a POISON CENTER or doctor.

Ingestion — If swallowed: Call a POISON CENTER or doctor/physician if you feel unwell.

4.2. Most Important Symptoms and Effects, Both Acute and Delayed

Symptoms — None known.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

Note to physicians — Treat symptomatically.

5. Fire-fighting measures

5.1. Suitable Extinguishing Media

Product is extinguishing agent. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2. Unsuitable Extinguishing Media
None.

5.3. Specific Hazards Arising from the Chemical
Containers may explode when heated. Ruptured cylinders may rocket.

5.4. Explosion Data
Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

5.5. Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal Precautions	Provide adequate ventilation. Avoid creating dust. Avoid breathing dust/fume/gas/mist/vapors/spray.
For emergency responders	Use personal protection recommended in Section 8.

6.2. Environmental Precautions

Environmental Precautions	See Section 12 for additional Ecological Information.

6.3. Methods and material for containment and cleaning up

Methods for Containment	Stop leak if you can do it without risk. If sweeping of a contaminated area is necessary use a dust suppressing agent which does not react with product.
Methods for Cleaning Up	Clean up material with vacuum equipped with HEPA filter. Use water as dust suppressant if necessary. Following product recovery, flush area with water.

7. Handling and Storage

7.1. Precautions for Safe Handling

Advice on safe handling	Avoid generation of dust. Do not breathe dust/fume/gas/mist/vapors/spray. Use with local exhaust ventilation. Use personal protective equipment as required. Wash thoroughly after handling. Do not drag, slide or roll extinguishers. Do not drop extinguishers or permit them to strike against each other. Refer to NFPA-10 Standard for Portable Fire Extinguishers and OSHA 1910.157 Portable Extinguishers regarding requirements for inspection, maintenance and training.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions	Store in a well-ventilated place. Keep cool. Keep container tightly closed. Guard against dust accumulation of material. Use care in handling/storage. Pressurized extinguishers should be properly stored and secured to prevent falling or being knocked over.

Incompatible Materials Strong acids.

8. Exposure Controls/Personal Protection

8.1. Control Parameters

Exposure guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Attapulgite 12174-11-7	TWA: 1 mg/m³ respirable fraction	-	-
Calcium carbonate 471-34-1	-	-	TWA: 10 mg/m³ total dust TWA: 5 mg/m³ respirable dust

ACGIH (American Conference of Governmental Industrial Hygienists) OSHA (Occupational Safety and Health Administration of the US Department of Labor): NIOSH IDLH Immediately Dangerous to Life or Health

8.2. Appropriate Engineering Controls

Engineering controls Showers
Eyewash stations
Ventilation systems.

8.3. Individual protection measures, such as personal protective equipment

Eye/Face Protection Wear safety glasses with side shields (or goggles).

Skin and Body Protection No special precautions are needed in handling this material.

Respiratory Protection In case of insufficient ventilation, wear suitable respiratory equipment.

Ventilation Use local exhaust or general dilution ventilation to control exposure with applicable limits

8.4. General hygiene considerations

Do not eat, drink or smoke when using this product. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State powder
Odor odorless
odor threshold No data available

Color Yellow

Property	VALUES	Remarks • Method
pH	No data available	
Melting point/freezing point	No data available	
Boiling point / boiling range	No data available	
Flash Point	No data available	
Evaporation Rate	No data available	
flammability (solid, gas)	No data available	
Flammability limit in air		

Upper flammability limit:	No data available
Lower flammability limit:	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific gravity	No data available
Water Solubility	No data available
Solubility in Other Solvents	No data available
Partition coefficient	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Kinematic viscosity	No data available

10. Stability and Reactivity

10.1. Chemical Stability

Stable under recommended storage conditions.

10.2. Reactivity

No data available

10.3. Possibility of hazardous reactions

Hazardous polymerization does not occur.

hazardous polymerization	Hazardous polymerization does not occur.

10.4. Conditions to Avoid

None known based on information supplied.

10.5. Incompatible Materials

Strong acids.

10.6. Hazardous decomposition products

Carbon oxides. Nitrogen oxides (NOx).

11. Toxicological Information

11.1. Information on Likely Routes of Exposure

Product information

INHALATION	May cause irritation of respiratory tract.
Eye Contact	May cause irritation.
Skin contact	May cause irritation.

INGESTION Ingestion may cause irritation to mucous membranes.

Acute Toxicity

Chemical name	Oral LD50	dermal LD50	Inhalation LC50
Ammonium sulfate, technical 7783-20-2	= 2000 mg/kg (Rat)	-	-
Calcium carbonate 471-34-1	= 6450 mg/kg (Rat)	-	-

11.2. Information on Toxicological Effects

Symptoms No information available.

11.3. Delayed and immediate effects as well as chronic effects from short and long-term exposure

sensitization No information available.

Germ Cell Mutagenicity No information available

carcinogenicity Attapulgite (palygorskite fibers) is a hydrated magnesium aluminum silicate. Long palygorskite (attapulgite) fibers (>5 micrometers) are possibly carcinogenic to humans (Group 2B). Short palygorskite (attapulgite) fibers (<5 micrometers) cannot be classified as to their carcinogenicity to humans (Group 3). The attapulgite present in this product contains fibers 0.5-2.5 um range, so would be considered by IARC as Group 3.

Chemical name	ACGIH	IARC	NTP	OSHA
Attapulgite 12174-11-7	-	Group 3	-	-

IARC (International Agency for Research on Cancer)
Not classifiable as a human carcinogen

Reproductive Toxicity No information available.

STOT - Single Exposure No information available.

STOT - Repeated Exposure No information available.

Target organ effects EYES, Respiratory System, skin.

Aspiration Hazard No information available.

11.4. Numerical Measures of Toxicity - Product information

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral) 16260 mg/kg

ATEmix (dermal) 9942 mg/kg

12. Ecological Information

12.1. ecotoxicity

Not classified

0.03348% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical name	Algae/aquatic plants	Fish	Crustacea

Ammonium sulfate, technical 7783-20-2	-	LC50 96 h 460 - 1000 mg/L Leuciscus idus static; LC50 96 h 123 - 128 mg/L Poecilia reticulata semi-static; LC50 96 h = 126 mg/L Poecilia reticulata; LC50 96 h > 100 mg/L Pimephales promelas; LC50 96 h 32.2 - 41.9 mg/L Oncorhynchus mykiss flow-through; LC50 96 h 5.2 - 8.2 mg/L Oncorhynchus mykiss static; LC50 96 h = 18 mg/L Cyprinus carpio; LC50 96 h = 480 mg/L Brachydanio rerio flow-through; LC50 96 h = 420 mg/L Brachydanio rerio semi-static; LC50 96 h = 250 mg/L Brachydanio rerio	LC50 48 h = 14 mg/L Daphnia magna; EC50 24 h = 423 mg/L Daphnia magna
Silicic Acid/silica gel, Amorphous 7631-86-9	EC50 72 h = 440 mg/L Pseudokirchneriella subcapitata	LC50 96 h = 5000 mg/L Brachydanio rerio static	EC50 48 h = 7600 mg/L Ceriodaphnia dubia

12.2. Persistence and Degradability
No information available.

12.3. Bioaccumulation
No information available.

Chemical name	Partition coefficient
Ammonium sulfate, technical 7783-20-2	-5.1

12.4. Other Adverse Effects
No information available

13. Disposal Considerations

13.1. Waste Treatment Methods
Disposal of wastes

This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.

Contaminated Packaging

Do not reuse container. Pressurized container: Do not pierce or burn, even after use.

14. Transport Information

DOT
UN/ID no UN1044
Description UN1044, Fire extinguishers, 2.2
Proper Shipping Name Fire extinguishers

Hazard class	2.2
Special Provisions	18, 110
Emergency Response Guide Number	126

TDG

UN/ID no	UN1044
Description	UN1044, Fire extinguishers, 2.2
Proper Shipping Name	Fire extinguishers
Hazard class	2.2

MEX

UN/ID no	UN1044
Description	UN1044, Fire extinguishers, 2.2
Proper Shipping Name	Fire extinguishers
Hazard class	2.2

ICAO (air)

UN/ID no	UN1044
Description	UN1044, Fire extinguishers, 2.2
Proper Shipping Name	Fire extinguishers
Hazard class	2.2
Special Provisions	A19

IATA

UN/ID no	UN1044
Description	UN1044, Fire extinguishers, 2.2
Proper Shipping Name	Fire extinguishers
Hazard class	2.2
ERG Code	2L
Special Provisions	A19

IMDG

UN/ID no	UN1044
Description	UN1044, Fire extinguishers, 2.2
Proper Shipping Name	Fire extinguishers
Hazard class	2.2
EmS-No	F-C, S-V
Special Provisions	225

15. Regulatory Information

15.1. International Inventories

TSCA	Complies
DSL/NDSL	Complies
ENCS	Does not comply
IECSC	Complies
KECL	Does not comply
PICCS	Complies
AICS	Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

15.2. US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical name	SARA 313 - Threshold Values %
Ammonium dihydrogen phosphate - 7722-76-1	1.0
Ammonium sulfate, technical - 7783-20-2	1.0

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic health hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	Yes
Reactive Hazard	No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

15.3. US State Regulations

California Proposition 65

Classification only applies to Attapulgite with fibers >5 um. This product contains Attapulgite with fibers <5 um.

Chemical name	California Proposition 65
Attapulgite - 12174-11-7	Carcinogen
Quartz - 14808-60-7	Carcinogen

U.S. State Right-to-Know Regulations

This product does not contain any substances regulated by state right-to-know regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Silicic Acid/silica gel, Amorphous 7631-86-9	X	X	X
Magnesium carbonate 546-93-0	X	X	-
Quartz 14808-60-7	X	X	X

16. Other information, including date of preparation of the last revision

NFPA	**Health Hazards** 0	**flammability** 0	**Instability** 0	**Physical and chemical properties** -
HMIS	**Health Hazards** 0	**flammability** 0	**Physical Hazards** 3	**Personal Protection** X

Revision date 25-May-2015

Revision note

No information available

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

Safety Data Sheet

Version No. 01/EN
Revision N.A.
Printing date 10 Oct. 2017

1. IDENTIFICATION OF SUBSTANCE / MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Trade name	MSR ISOPRO CANISTER (4oz, 8oz & 16oz)
Registration no.	N.A.

1.2 Relevant identified uses of substance or mixture and uses advised against

Identified uses	Fuel etc.

1.3 Details of the supplier of the safety data sheet

Company	TAEYANG CORPORATION
Telephone	+82-2-2186-1182
E-mail	ek277@taeyangsun.co.kr

1.4 Emergency telephone number +82-2-2186-1182
(This number is serviced during office hours only.)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]

Flammable gases Cat. 1
Gases under pressure (Liquefied gas)

2.1.2. Classification according to Directive 1999/45/EC

Extremely flammable.

2.2 Label elements

2.2.1 Labelling according Regulation (EC) No 1272/2008 [CLP]

Symbol

Signal word	DANGER
Hazard Statement	H220 Extremely flammable gas.
	H280 Contains gas under pressure; may explode if heated.
Precautionary statement	P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
	P410 + P403 Protect from sunlight. Store in a well-ventilated place.

2.2.2 According to European Directive 67/548/EEC as amended

Hazard symbol(s)

R-phrase(s)	R12 Extremely flammable.
S-phrase(s)	S 9 Keep container in a well-ventilated place.
	S16 Keep away from sources of ignition - No smoking.

2.3. Other hazards

CERCLA Index (0~3)	Health=1, Fire=3, Reactivity=0, Durability=0
NFPA Index (0~4)	Health=1, Fire=4, Reactivity=0

3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Mixture

Components	%	Classification
Iso-Butane CAS No. 75-28-5	36.0	Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP] - Flammable gases Cat. 1 - Gases under pressure (Liquefied gas)
		According to European Directive 67/548/EEC as amended. - Extremely flammable.
Propane CAS No. 74-98-6	24.8	Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP] - Flammable gases Cat. 1 - Gases under pressure (Liquefied gas)
		According to European Directive 67/548/EEC as amended. - Extremely flammable.
N-Butane CAS No. 106-97-8	39.2	Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP] - Flammable gases Cat. 1 - Gases under pressure (Liquefied gas)
		According to European Directive 67/548/EEC as amended. - Extremely flammable.

4. FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation

Move from the exposed areas immediately. Artificial respiration if needed.
Secure the airway, maintain blood pressure, and inhale oxygen if possible.
Keep a patient in a warm and comfortable condition.
Treat appropriately depending on the symptoms. Take a proper medical action.

Skin contact	Thoroughly wash off with soft detergent and much water (15~20 minutes). If there are symptoms such as frostbite and freezing, take the following process. Warm the affected part with warm water of 107 ℉ (41.7 ℃). Gently wrap the affected part in blanket. Take an immediate medical action.
Eye contact	Wash eyes immediately with much water or saline solution until no chemicals remain. Take an immediate medical action.
Ingestion	Treat properly based on the symptoms. Take an immediate medical action.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Powder fire extinguisher, carbon dioxide (Use water or fog in case of a blaze)

5.2 Special hazards arising from the substance or mixture

May burst or explode if exposed to heat or spark.
Heavier than the air, and there is a possibility of ignition and backfire.
Container may explode by heat or fire.
Mixture of gas & air may explode.
Low electrical conduction may cause static electricity, and ignited by a spark.

5.3 Advice for firefighters

If not dangerous, remove from a fire area.
After putting out a fire, sprinkle cooling water in the side of the container which is exposed by heat.
Escape from the end of tank.
Use a fire hose or monitor nozzle if a blaze occurs in the stored area, and leave it burned if difficult.
Immediately remove if the size of blaze grows bigger or the tank is discolored by heat.
Leave it burned and isolate by more than 1 mile if we cannot stop the spills from gas tank, and tank lorry.
Extinguish it if the gas spills can be stopped. Use much water in a form of fog from a long distance.
Keep away outside a 8.045 km radius if fire is out of control or the container is exposed to a flame.
Don't inhale the smoke from the burning materials with one's back against the wind.

5.4 Special Information

No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Avoid heat, flame, spark and other source of ignition.
Do not touch a spilled material.
Do it if you can stop a spilled material with safety.
Sprinkle water in order to reduce vapour.
Isolate the area until the gas disperses.
Prohibit smoke, flame or fire at the dangerous area.
No entry to unauthorized persons, and isolate the dangerous and restricted area.
Ventilate the closed place before entering.

6.2 Environmental precautions

No data available

6.3 Methods and material for containment and cleaning up

No data available

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Store and handle in accordance with the regulations of a central government and local autonomous entity.

Recommend a practical training against static electricity.

7.2 Conditions for safe storage, including any incompatibilities

Please isolate and store the materials separated from other materials which shall not be put together at the same time.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Occupational exposure limits

Exposure standard : Industry safety & health law

Components	OSHA TWA	ACGIH TWA	NIOSH TWA
Iso-Butane	No data	800 ppm (1900 mg/m^3)	800 ppm (1900 mg/m^3)
Propane	1000 ppm (1800 mg/m^3)	2500 ppm	1000 ppm (1800 mg/m^3)
N-Butane	800 ppm (1900 mg/m^3)	800 ppm	800 ppm (1900 mg/m^3)

8.2 Appropriate engineering controls

Set up a partial ventilation or general diluted ventilation equipment.

Install explosion-screening facilities for the relevant ventilation equipment if there is a possibility of explosion for the material.

Employer shall install a washing equipment and shower stall near the work place because possibly employee's eye can be exposed to foreign materials

8.3 Personal protection equipment

Eye protection	For the gas, eye protection not required, but recommended. For the liquid, spray or dust protective goggles are needed to avoid a direct contact with foreign materials. Contact lense shall not be used
Protection clothes	For gas, protective clothing is not necessary. In case of possible contact with liquid, employee must wear proper protection clothes and equipment in order to prevent a skin from freezing.
Protection gloves	Wear insulated gloves and gloves against the cold.
Respiratory protection	Below respirator and maximum use concentration is recommended by NISOH guide or allowance standard report about chemical hazard established by America Health and Human Services Department. Specifically-selected respirator shall be based on pollutant density in a work place, and does not exceed the operation limit of respirator, and finally approved by NIOSH and NSHA at the same time.

9. PHYSICAL & CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Properties	Iso-Butane	Propane	N-Butane
Appearance	liquid & vapor	liquid & vapor	liquid & vapor
Odor	odorless	odorless	odorless
Odor threshold	No data	No data	No data
pH	Not applicable	Not applicable	Not applicable
Melting point/Freezing point	-160°C	-187.7°C	-138.3°C
Boiling point and range	-11.5°C	-42.1°C	-0.5°C
Flash point	-88.0°C	-104.4°C	-73.3°C
Evaporation rate	100%	100%	100%
Flammability (solid, gas)	no way to know	no way to know	no way to know
Upper/lower flammability or explosive limits	8.4 vol% 1.8 vol%	9.5 vol% 2.2 vol%	8.4 vol% 1.9 vol%
Vapor pressure	0.304MPa @20°C	0.75MPa @20°C	0.214MPa @21.1°C
Vapor density	2.595(air=1)	1.55(air=1)	2.1(air=1)
Relative density	0.549 @ 20°C	0.501 @ 20°C	0.549 @ 20°C
Solubility	no way to know	0.007 g/100mL @ 20°C	3.25 mL/100mL @ 20°C
Partition coefficient: n-octanol/water	2.8 as log POW	2.36 as log POW	2.89 as log POW
Auto-ignition temperature	460°C	466.1°C	287°C
Decomposition temperature	no way to know	no way to know	no way to know
Viscosity	No data	No data	No data
Explosive properties	No data	No data	No data
Oxidizing properties	No data	No data	No data

10. STABILITY AND REACTIVITY

10.1 Reactivity Stable at a normal temperature and pressure

10.2 Chemical stability No data available.

10.3 Possibility of hazardous reactions No dangerous reactions known.

10.4 Conditions to avoid Avoid a contact with heat, flame, spark and other sources of ignition.
Vapor has a explosiveness.
Do not contact with a skin.
May cause frostbite.
Because of a pressure, containers may be burst if exposed to heat, and thus could move to a long distance.

10.5 Incompatible materials Strong oxidizer : Hazard of fire, explosion
Nitric acid, chlorine dioxide : Material to be avoided
Carbonyl nickel & acid: Explode at (20~40) ℃

10.6 Hazardous decomposition products Pyrolysis product may contain poisonous carbon oxidized substance

11. TOXICOLOGICAL INFORMATION

11.1 Routes of exposure	No data available
11.2 Information on toxicological effects	
Acute toxicity	No toxicity by inhalation.
Skin corrosion/irritation	Contact with liquid may cause frostbite, ache, and water blister.
Serious eye damage/irritation	Not irritating (Rabbit) Contact with liquid may cause frostbite, ache, and eyesight loss.
Respiratory or skin sensitisation	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	This product is or contains a component that is probably not carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.
Reproductive toxicity	No data available
STOT-single exposure	Simple asphyxiant, and central nervous system suppressant.
STOT-repeated exposure	No data available
Aspiration hazard	No data available

12. ECOLOGICAL INFORMATION

12.1 Ecotoxicity	No data available.
12.2 Persistence and degradability	No data available.
12.3 Bioaccumulative potential	No data available.
12.4 Mobility in soil	No data available.
12.5 Other adverse effects	No data available.

13. DISPOSAL CONSIDERATIONS

13.1 Disposal instructions	Comply with a central government and local autonomous entity regulations. Disposal shall be executed by a standard of 40 CFR 262 applied for hazardous waste generator. EPA hazardous waste No. D001.
13.2 Waste from residues / unused products	No data available.
13.3 Contaminated packaging	No data available.

14. TRANSPORT INFORMATION

14.1 UN number	UN 2037 - Propane : LPG, UN 1075 - Iso-Butane : Iso-Butane, UN 1999 - N-Butane : N-Butane or N-Butane mixture UN 1011
14.2 UN proper shipping name	RECEPTACLES, SMALL, CONTAINING GAS (GAS CARTRIDGES) without a release device, non-refillable LQ2

14.3 Transport hazard class(es)	2.1
14.4. Packing group	N.A.
14.5. Environmental hazards	N.A.
14.6. Special precautions for user	Passenger plane or train : Prohibited Cargo plane : 150 kg

15. REGULATORY INFORMATION

15.1 Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.2 Chemical Safety Assessment:

No data available

15.3 Inventory status

No data available

16. OTHER INFORMATION

The contents and format of this MSDS/SDS are in accordance with Regulation (EC) No 1907/2006.

- **References**

  Other MSDS (TAEYANG Corporation, GS Caltex Corporation, Korea Petro Chemical Ind. Co., Ltd., Aldirch, Shell Trading International Limited etc.)

  KOSHA – Chemical information database system

  ESIS (European chemical Substances Information System) (http://ecb.jrc.ec.europa.eu/)

  International Uniform Chemical Information Database (IUCLID) (http://ecb.jrc.it/esis)

- **Abbreviation and acronyms**

  ACGIH – American Conference of Industrial Hygienists

  CAS - Chemical Abstracts Service

  CLP - Regulation on classification, labeling and packaging of substances and mixtures. (Directive67/548/EEC)

  EC - European Community

  EEC - The European Economic Community

  EPA - Environmental Protection Agency

  GHS - Global Harmonized System

  IARC - International Agency for Research on Cancer

  NIOSH - National Institute for Occupational Safety and Health

  NTP - The National Toxicology Program

  OSHA - Occupational Safety and Health Administration

  STOT - Specific Target Organ Toxicity

- **Disclaimer of Liability**

The information in this MSDS/SDS was obtained from source which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reason, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of component in another product, this MSDS/SDS information may not be applicable.

********** **End of Document**

Schering-Plough Canada Inc.
3535 Trans-Canada
Pointe Claire, Quebec
Canada H9R 1B4

MATERIAL SAFETY DATA SHEET

Schering-Plough urges each user or recipient of this MSDS to read the entire data sheet to become aware of the hazards associated with this material.

SECTION 1. IDENTIFICATION OF SUBSTANCE AND CONTACT INFORMATION

MSDS NAME:	**Muskol Aerosol, 23.5% DEET**
SYNONYM(S):	Muskol Insect Repellent Aerosol
MSDS NUMBER:	SP001588
EMERGENCY NUMBER(S):	Schering-Plough Security Control Center (908) 820-6921 (24 Hours) Transportation Emergencies - CANUTEC: (613) 996-6666 (Canada)
INFORMATION:	Schering-Plough HealthCare Products Canada Customer Service (English): 1-800-361-6550 Service à la clientèle (French): 1-800-361-2431
SCHERING-PLOUGH MSDS HELPLINE:	(800) 770-8878 (US and Canada) (908) 473-3371 (Worldwide) Monday to Friday, 9am to 5pm (US Eastern Time) .

SECTION 2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Aerosol
Clear, Light yellow
Alcohol odor

Flammable.

May be severely irritating to the eyes.
May be harmful by inhalation.
Absorbed through the skin.
Harmful if swallowed or absorbed through the skin in large amounts.

May cause effects to:
nervous system
cardiovascular system
liver
kidney

May be harmful to fish and aquatic organisms.

Consumers: Refer to the package insert or product label for appropriate consumer-specific information about this product when used according to manufacturer's directions.

POTENTIAL HEALTH EFFECTS:

The following summary is based upon available information about the individual ingredients of the mixture, or of the expected properties of the mixture.

DEET is a common insect repellent which is applied directly to the skin. DEET may cause stinging and slight to moderate eye and mucous membrane irritation. DEET may cause contact dermatitis or excerbation of pre-existing skin disease in sensitive individuals. DEET is efficiently absorbed from the skin or gut. If large amounts of DEET are inhaled, ingested, or applied dermally (especially areas of skin that are occluded), the potential for severe toxicity exists. However, compared to the widespread use of the product, there are relatively few cases of toxicity. Reported acute or chronic effects from overexposure to DEET were restlessness, drowsiness, irritability, weakness, headaches, incoordination, slurred speech, confusion, insomnia, tremor, flexing or extending of extremities, decreases in blood pressure, decreased heartbeat, skin effects (rashes, bullous eruptions and necrosis), pyschosis, seizures, prolonged disability, coma, or anaphylactic reaction. Death has been reported when large amounts of DEET were ingested.

Ethanol (ethyl alcohol) is an eye, nose, and mucous membrane irritant. It may cause skin irritation or sensitization after prolonged exposure. Acute effects of ethanol may include headache, dizziness, nausea, sensations of warmth and cold, numbness, fatigue, breathing difficulty, cough, tearing, vision impairment, incoordination, decreased reaction time, alteration of mood and personality, slurred speech, coma and respiratory depression. Chronic effects may include concentration difficulty, sleepiness, kidney and liver damage, and cardiac effects. Chronic ingestion of ethanol may cause cancer of the oral cavity, pharynx, larynx, esophagus, and liver. Oral ingestion of alcohol during pregnancy may cause Fetal Alcohol Syndrome (FAS) including joint, limb, and cardiac abnormalities and behavioral and learning impairment. There have been no reports of FAS as a result of occupational handling of ethanol.

Isobutane and propane are simple asphixiant gases (displaces oxygen from the breathing atmosphere), anesthetics, and central nervous system depressants. Inhalation exposure to high concentrations may cause fatigue, vomiting, nausea dizziness, decreased vision, mood disturbances, numbness of extremities (e.g. fingers), headache, confusion, decreased coordination and judgment, breathing difficulties, irregular heartbeat, cyanosis, convulsions, or coma. Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal. Direct contact with liquefied isobutane or propane may cause frostbite or burns to the eyes or following prolonged skin contact.

LISTED CARCINOGENS

CHEMICAL NAME	CAS NUMBER	OSHA	IARC	NTP	ACGIH
Ethyl Alcohol.	64-17-5				Group A4 Not classifiable as a human carcinogen.

Ethanol (ethyl alcohol): IARC (International Agency for Research on Cancer) has classified Alcoholic Beverages as Group 1 (indicating in their evaluation that the agent is carcinogenic to humans). However, occupational handling or manufacturer's specified use of this product is not expected to result in relevant exposures.

SECTION 3. COMPOSITION AND INFORMATION ON INGREDIENTS

PRODUCT USE: Consumer product

CHEMICAL FORMULA: Mixture.

The formulation for this product is proprietary information. Only hazardous ingredients in concentrations of 1% or greater and/or carcinogenic ingredients in concentrations of 0.1% or greater are listed in the Chemical Composition table. Active ingredients in any concentration are listed.

CHEMICAL COMPOSITION

CHEMICAL NAME	CAS NUMBER	PERCENT
Isobutane.	75-28-5	
Ethyl Alcohol.	64-17-5	30-60
Diethyltoluamide (DEET).	134-62-3	23.5
Propane.	74-98-6	10-30

ADDITIONAL INFORMATION: This MSDS is written to provide health and safety information for individuals who will be handling the final product formulation during research, manufacturing, and distribution. For health and safety information for individual ingredients used during manufacturing, refer to the appropriate MSDS for each ingredient. Refer to the package insert or product label for handling guidance for the consumer.

SECTION 4. FIRST AID MEASURES

INHALATION: Remove to fresh air. If any trouble breathing, get immediate medical attention. Administer artificial respiration if breathing has ceased. If irritation or symptoms occur or persist, consult a physician.

SKIN CONTACT: In case of skin contact, while wearing protective gloves, carefully remove any contaminated clothing, including shoes, and wash skin thoroughly with soap and water. If irritation or symptoms occur or persist, consult a physician.

SECTION 4. FIRST AID MEASURES

EYE CONTACT: In case of eye contact, IMMEDIATELY rinse eyes thoroughly with plenty of water. If wearing contact lenses, remove only after initial rinse, and continue rinsing eyes for at least 15 minutes. Get IMMEDIATE medical attention.

INGESTION: Rinse mouth and drink a glass of water. Do not induce vomiting unless under the direction of a qualified medical professional or Poison Control Center. If symptoms persist, consult a physician.

SECTION 5. FIRE FIGHTING MEASURES

FLAMMABILITY DATA:

Flash Point:	Concentrate (Similar Product Formulation): 13 deg C (55.4 deg F) Method: Tagliabue closed cup (TCC) Ethanol (50%): 24 deg C (79 deg F) Method: Close cup Propellant:: -84.4 deg C (-120 deg F)
Classification:	Flammable (US OSHA Criteria) Flammable (Canada WHMIS Criteria)
Autoignition Temperature:	Concentrate: 422 deg C (791.6 deg F)

SPECIAL FIRE FIGHTING PROCEDURES:
Wear full protective clothing and self-contained breathing apparatus (SCBA).

SUITABLE EXTINGUISHING MEDIA:
Carbon dioxide (CO2), extinguishing powder or water spray.

See Section 9 for Physical and Chemical Properties.

SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:
Wear appropriate personal protective equipment as specified in Section 8. Keep personnel away from the clean-up area.

SPILL RESPONSE / CLEANUP:
All spills should be handled according to site requirements and based on precautions cited in the MSDS. In the case of liquids, use proper absorbent materials. For laboratories and small-scale operations, incidental spills within a hood or enclosure should be cleaned by using a HEPA filtered vacuum or wet cleaning methods as appropriate. For large dry or liquid spills or those spills outside enclosure or hood, appropriate emergency response personnel should be notified. In manufacturing and large-scale operations, HEPA vacuuming prior to wet mopping or cleaning is required.

See Sections 9 and 10 for additional physical, chemical, and hazard information.

SECTION 7. HANDLING AND STORAGE

HANDLING:
Keep containers adequately sealed during material transfer, transport, or when not in use.

Appropriate handling of this material is dependent on many factors, including physical form, duration and frequency of process or task, and effectiveness of engineering controls. Site-specific risk assessments should be conducted to determine the feasibility and the appropriateness of all exposure control measures. See Section 8 (Exposure Controls) for additional guidance.

STORAGE:
Store in a cool, dry, well ventilated area. Keep away from heat, sparks, open flames, and direct sunlight.

See Section 8 for exposure controls and additional safe handling information.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

EXPOSURE CONTROLS:

The health hazard risks of handling this material are dependent on many factors, including physical form, duration and frequency of process or task, and effectiveness of engineering controls. Site-specific risk assessments should be conducted to determine the feasibility and the appropriateness of all exposure control measures. Exposure controls for normal operating or routine procedures follow a tiered strategy. Engineering controls are the preferred means of long-term or permanent exposure control. If engineering controls are not feasible, appropriate use of personal protective equipment (PPE) may be considered as alternative control measures. Exposure controls for non-routine operations must be evaluated and addressed as part of the site-specific risk assessment.

RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (PPE):

Respiratory Protection:

None required for consumer use of this product.

Respiratory protective equipment (RPE) may be required for certain laboratory and large-scale manufacturing tasks if potential airborne breathing zone concentrations of substances exceed the relevant exposure limit(s). Workplace risk assessment should be completed before specifying and implementing RPE usage. Potential exposure points and pathways, task duration and frequency, potential employee contact with the substance, and the ability of the substance to be rendered airborne during specific tasks should be evaluated. Initial and ongoing strategies of quantitative exposure measurement should be obtained as required by the workplace risk assessment. All RPE must conform to local and regional specifications for efficacy and performance. Consult your site or corporate health and safety professional for additional guidance.

Skin Protection:

None required for consumer use of this product.

Gloves that provide an appropriate barrier to the skin are recommended if there is potential for contact with this material. Consult your site safety staff for guidance.

Eye Protection:

None required for consumer use of this product.

Safety glasses with side shields. Use of goggles or full face protection is required if there is potential for contact with this material. Consult your site safety staff for guidance.

Body Protection:

None required for consumer use of this product.

In small-scale or laboratory operations, lab coats or equivalent protection is required. Disposable Tyvek or other dust impermeable suit should be considered based on procedure or level of exposure. Use of additional PPE such as shoe coverings, gauntlets, hood, or head covering may be necessary. Consult your site safety staff for guidance.

In large-scale or manufacturing operations, disposable Tyvek or other dust impermeable suit is recommended and based on level of exposure. Use of additional PPE such as shoe coverings, gauntlets, hood, or head covering may be necessary. Consult your site safety staff for guidance.

EXPOSURE LIMIT VALUES

CHEMICAL NAME	CAS NUMBER	ACGIH TLV (TWA)	OSHA PEL (TWA)
Ethyl Alcohol.	64-17-5	1000 ppm	1900 mg/m^3 1000 ppm
Propane.	74-98-6		1800 mg/m^3 1000 ppm

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

FORM: Aerosol
COLOR: Clear, Light yellow
ODOR: Alcohol odor
BOILING POINT / RANGE: 79-100 deg C
VAPOR PRESSURE: 45-55 psi @ 20 deg C
VAPOR DENSITY: >1
SPECIFIC GRAVITY: Aerosol: 0.75-0.79
Concentrate: 0.85-0.89
SOLUBILITY:
Water: Not determined
EVAPORATION RATE: >1

See Section 5 for flammability/explosivity information.

SECTION 10. STABILITY AND REACTIVITY

STABILITY/ REACTIVITY:
Stable under normal conditions.

INCOMPATIBLE MATERIALS / CONDITIONS TO AVOID:
Oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS / REACTIONS:
No dangerous decomposition is expected if used according to manufacturer's specifications.

SECTION 11. TOXICOLOGICAL INFORMATION

There are no data available specifically for this formulation. The data shown below pertains to the following individual ingredients in the formulation, or are from studies conducted using similar formulas containing the same active and/or hazardous ingredients found in this product.

ACUTE TOXICITY DATA

INHALATION:
Deet: LC50: 5.95 mg/L

Ethanol: Inhalation LC50 (10hr): 20,000ppm
Ethanol caused dose dependent effects following inhalation exposure in rats on the central nervous system including drowsiness, incoordination, narcosis and excitation.

Propane caused irregular breathing, tremors, stupor, and CNS depression in guinea pigs exposed to 2.2 to 5.5% (24,000 to 55,000 ppm). Effects were rapidly reversible upon cessation of exposure. In cats, 89% propane caused a decrease in blood pressure, and in dogs, 1% to 3.3% caused hemodynamic changes, decreases in mean arotic pressure, stroke volume, and cardiac output, increase in pulmonary vascular resistance, and decreases in the contractility of the heart muscle. Weak cardiac sensitization was observed in mice and dogs exposed to 10 to 15% propane. Respiratory depression was observed in non-human primates exposed to 20% propane.

Isobutane caused CNS depression, rapid and shallow respiration, and apnea in mice exposed to high concentrations. In dogs, 45% isobutane caused anesthetic effects.

SKIN:
Similiar product formulations were shown to be slightly irritating to animals.

DEET caused minimal to moderate transient dermal irritation in animals, which cleared by day 7.

Ethanol was mildly to moderately irritating to the skin of rabbits.

Propane is a moderate irritant.

EYE:
Similar product formulations were shown to be moderate to severe eye irritants to animals.

Ethanol (95%) was irritating to the eyes of rabbits.

ORAL:
Clinical signs of toxicity noted in animals treated with DEET at 50 to 500 mg/kg included piloerection, increased vocalization and decreased activity. At lethal doses, animals showed signs of lacrimation, depression, prostration, tremors, asphyxial convulsions or respiratory failure usually preceding cardiac failure.

Ethanol: Oral LD50: 6.2 to 17.8 g/kg (rat); 5.5 to 6.6 g/kg (dog)

SENSITIZATION:
Ethanol has been shown to be a weak sensitizer in a human patch test. Ethanol was negative in the mouse ear sensitization assay.

REPEAT DOSE TOXICITY DATA

SUBCHRONIC / CHRONIC TOXICITY:
Subchronic (56 to 90 days) to chronic (2-year) oral studies with DEET were conducted in animals. Effects noted at dosages ranging from 8.4 to 10,000 mg/kg/day included decreases in food consumption and weight, salivation, tremors, elevated liver and kidney weights and cholesterol, and death (high dose groups only). Microscopic findings were observed in the kidneys, testis, epidiymides, and uterus. NOELs ranged from 61 to 100 mg/kg/day across species.

Repeated oral and inhalation exposure to high concentrations of ethanol has caused kidney and liver damage in animals.

REPRODUCTIVE / DEVELOPMENTAL TOXICITY:
DEET caused no effects on reproduction or development in animals administered oral doses up to 1,000 mg/kg/day. Maternal toxicity was observed at the higher dosages and was consisted with that seen in acute, subchronic and chronic studies. The reproductive and developmental NOEL was 250 mg/kg/day.

Ethanol: Exposure to large doses during gestation is reported to cause effects on reproduction, including fetotoxicity and growth retardation in mice, rats, and rabbits. However, no teratogenic effects were reported.

MUTAGENICITY / GENOTOXICITY:
DEET was negative in a bacterial mutagenicity study (Ames), a chromosome aberration study, a dominant lethal test, and in an unscheduled DNA synthesis assay. DEET was negative in a mouse lymphoma assay without metabolic activation but positive with metabolic activation.

Ethanol was positive in a bacterial mutagenicity study (Ames) and negative in a mammalian mutagenicity study (mouse lymphoma).

Propane was negative in a bacterial mutagenicity study.

Isobutane was negative in a bacterial mutagenicity study (Ames).

CARCINOGENICITY:
This material or product has not been evaluated for carcinogenicity.

There was no evidence of carcinogenicity in mice or rats treated with DEET at dosages up to 1000 mg/kg/day for 78 weeks and 2 years, respectively.

Rats given 25 to 50% ethanol by oral gavage or in the drinking water for one to two years did not show a significant increase in tumors compared to the control groups. Mice given 43% ethanol in drinking water for three years showed an increase in papillomas of the forestomach, malignant lymphomas and lung adenomas. Ethanol was an effective promoter of liver tumors in rats given a single intraperitoneal dose of diethylnitrosamine followed by treatment of ethanol in the drinking water for 12 to 18 months.

SECTION 12. ECOLOGICAL INFORMATION

There are no data for the final product or its formulation(s). The information presented below pertains to the following ingredient(s).

ECOTOXICITY DATA

INGREDIENT ECOTOXICITY

Deet: 96-hr LC50 (rainbow trout): 75 mg/L
Deet: 48-hr EC50 (daphnid): 75 mg/L
Deet: Avian Oral LD50 (quail): 1375 mg/kg

Ethanol: 96-hr (static) LC50 (rainbow trout): 13 g/L
Ethanol: 96-hr (flow-through) LC50 (fathead minnow): 12.9-15.3 g/L

ENVIRONMENTAL DATA

OTHER INGREDIENT ENVIRONMENTAL DATA:

DEET: n-Octanol/Water Partition Coefficient (log Pow): 2.02
DEET will be stable to hydrolysis at pH levels 5 to 9.

SECTION 13. DISPOSAL CONSIDERATIONS

MATERIAL WASTE:
Disposal must be in accordance with applicable federal, state/provincial, and/or local regulations. Incineration is not the preferred method of disposal. Operations that involve the crushing or shredding of waste materials or returned goods must be handled to meet the recommended exposure limit(s).

PACKAGING AND CONTAINERS:
Disposal must be in accordance with applicable federal, state/provincial, and/or local regulations.

SECTION 14. TRANSPORT INFORMATION

Refer to site-specific procedures and requirements for additional guidance.

DOT CLASSIFICATION:

Proper Shipping Name:	Aerosols
Hazard Class:	2.1
UN Number:	UN 1950

Packing Group: None

IATA CLASSIFICATION:

Proper Shipping Name: Aerosols, flammable
Hazard Class: 2.1
UN Number: UN 1950
Packing Group: None

ADR CLASSIFICATION:

Proper Shipping Name: Aerosols
Hazard Class: 2.1
UN Number: UN 1950
Packing Group: None

IMDG CLASSIFICATION:

Proper Shipping Name: Aerosols
Hazard Class: 2
UN Number: UN 1950
Packing Group: None

SECTION 15. REGULATORY INFORMATION

WHMIS CLASSIFICATIONS:

This product has been classified in accordance with the hazard criteria on the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations. The final packaged product is not subject to WHMIS classification. The following classification applies to the bulk formulation handled in the workplace.

Controlled Product Class: B2: Flammable Liquid
D1B: Toxic
D2B: Toxic

TSCA LISTING

CHEMICAL NAME	TSCA
Isobutane.	Listed.
Ethyl Alcohol.	Listed
Diethyltoluamide (DEET).	Listed
Propane.	Listed.

SECTION 16. OTHER INFORMATION

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequence of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

DEPARTMENT ISSUING MSDS:

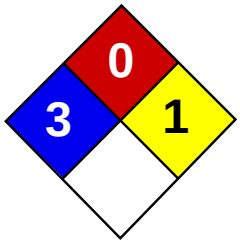
Global Safety and Environmental Affairs
Occupational and Environmental Toxicology
Schering-Plough Corporation
556 Morris Avenue
Summit, NJ 07901 USA.

SCHERING-PLOUGH MSDS HELPLINE:

(800) 770-8878 (US and Canada)
(908) 473-3371 (Worldwide)
Monday to Friday, 9am to 5pm (US Eastern Time) .

MSDS CREATION DATE:

24-Oct-2002



Health	3
Fire	0
Reactivity	2
Personal Protection	J

Material Safety Data Sheet

Sodium hydroxide, Pellets, Reagent ACS MSDS

Section 1: Chemical Product and Company Identification

Product Name: Sodium hydroxide, Pellets, Reagent ACS

Catalog Codes: SLS4090

CAS#: 1310-73-2

RTECS: WB4900000

TSCA: TSCA 8(b) inventory: Sodium hydroxide

CI#: Not available.

Synonym: Caustic Soda

Chemical Name: Sodium Hydroxide

Chemical Formula: NaOH

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Sodium hydroxide	1310-73-2	100

Toxicological Data on Ingredients: Sodium hydroxide LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (irritant, corrosive), of ingestion, of inhalation. The amount of tissue damage depends on length of contact. Eye contact can result in corneal damage or blindness. Skin contact can produce inflammation and blistering. Inhalation of dust will produce irritation to gastro-intestinal or respiratory tract, characterized by burning, sneezing and coughing. Severe over-exposure can produce lung damage, choking, unconsciousness or death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to lungs. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: of metals

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Slightly explosive in presence of heat.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards:
sodium hydroxide + zinc metal dust causes ignition of the latter. Under proper conditions of temperature, pressure and state of division, it can ignite or react violently with acetaldehyde, ally alcohol, allyl chloride, benzene-1,4-diol, chlorine trifluoride, 1,2 dichlorethylene, nitroethane, nitromethane, nitroparaffins, nitropropane, cinnamaldehyde, 2,2-dichloro-3,3-dimethylbutane. Sodium hydroxide in contact with water may generate enough heat to ignite adjacent combustible materials. Phosphorous boiled with NaOH yields mixed phosphines which may ignite spontanously in air. sodium hydroxide and cinnamaldehyde + heat may cause ignition. Reaction with certain metals releases flammable and explosive hydrogen gas.

Special Remarks on Explosion Hazards:
Sodium hydroxide reacts to form explosive products with ammonia + silver nitrate. Benzene extract of allyl benzenesulfonate prepared from allyl alcohol, and benzene sulfonyl chloride in presence of aquesous sodium hydroxide, under vacuum distillation, residue darkened and exploded. Sodium Hydroxde + impure tetrahydrofuran, which can contain peroxides, can

cause serious explosions. Dry mixtures of sodium hydroxide and sodium tetrahydroborate liberate hydrogen explosively at 230-270 deg. C. Sodium Hydroxide reacts with sodium salt of trichlorophenol + methyl alcohol + trichlorobenzene + heat to cause an explosion.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. If necessary: Neutralize the residue with a dilute solution of acetic acid.

Large Spill:
Corrosive solid. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of acetic acid. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep container dry. Do not breathe dust. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing agents, metals, acids, alkalis, moisture.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 23°C (73.4°F).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:
Splash goggles. Synthetic apron. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor and dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
CEIL: 2 from ACGIH (TLV) [United States] [1995] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid.

Odor: Odorless.

Taste: Not available.

Molecular Weight: 40 g/mole

Color: White.

pH (1% soln/water): 13.5 [Basic.]

Boiling Point: 1388°C (2530.4°F)

Melting Point: 323°C (613.4°F)

Critical Temperature: Not available.

Specific Gravity: 2.13 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water.

Solubility: Easily soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances:
Highly reactive with metals. Reactive with oxidizing agents, reducing agents, acids, alkalis, moisture.

Corrosivity: Not available.

Special Remarks on Reactivity:
Hygroscopic. Much heat is evolved when solid material is dissolved in water. Therefore cold water and caution must be used for this process. Sodium hydroxide solution and octanol + diborane during a work-up of a reaction mixture of oxime and diborane in tetrahyrofuran is very exothermic, a mild explosion being noted on one occassion. Reactive with water, acids, acid chlorides, strong bases, strong oxidizing agents, strong reducing agents, flammable liquids, organic halogens, metals (i.e aluminum, tin, zinc), nitromethane, glacial acetic acid, acetic anhydride, acrolein, chlorohydrin, chlorosulfonic acid, ethylene cyanohydrin, glyoxal, hydrochloric acid, sulfuric acid, hydrosulfuric acid, nitric acid, oleum, propiolactone, acylonitrile, phorosous pentoxide, chloroethanol, chloroform-methanol, tetrahydroborate, cyanogen azide, 1,2,4,5 tetrachlorobenzene, cinnamaldehyde. Reacts with formaldehyde hydroxide to yield formic acid, and hydrogen.

Special Remarks on Corrosivity: Very caustic to aluminum and other metals in presence of moisture.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans: Causes damage to the following organs: lungs.

Other Toxic Effects on Humans:
Extremely hazardous in case of inhalation (lung corrosive). Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (corrosive), of ingestion, .

Special Remarks on Toxicity to Animals:

Lowest Published Lethal Dose: LDL [Rabbit] - Route: Oral; Dose: 500 mg/kg

Special Remarks on Chronic Effects on Humans: May affect genetic material (mutagenic). Investigation as a mutagen (cytogenetic analysis), but no data available.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: May be harmful if absorbed through skin. Causes severe skin irritation and burns. May cause deep penetrating ulcers of the skin. Eyes: Causes severe eye irritation and burns. May cause chemical conjunctivitis and corneal damage. Inhalation: Harmful if inhaled. Causes severe irritation of the respiratory tract and mucous membranes with coughing, burns, breathing difficulty, and possible coma. Irritation may lead the chemical pneumonitis and pulmonary edema. Causes chemical burns to the respiratory tract and mucous membranes. Ingestion: May be fatal if swallowed. May cause severe and permanent damage to the digestive tract. Causes severe gastrointestinal tract irritation and burns. May cause perforation of the digestive tract. Causes severe pain, nausea, vomiting, diarrhea, and shock. May cause corrosion and permanent destruction of the esophagus and digestive tract.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Class 8: Corrosive material

Identification: : Sodium hydroxide, solid UNNA: 1823 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Illinois toxic substances disclosure to employee act: Sodium hydroxide Illinois chemical safety act: Sodium hydroxide New York release reporting list: Sodium hydroxide Rhode Island RTK hazardous substances: Sodium hydroxide Pennsylvania RTK: Sodium hydroxide Minnesota: Sodium hydroxide Massachusetts RTK: Sodium hydroxide New Jersey: Sodium hydroxide Louisiana spill reporting: Sodium hydroxide California Director's List of Hazardous Substances: Sodium hydroxide TSCA 8(b) inventory: Sodium hydroxide CERCLA: Hazardous substances.: Sodium hydroxide: 1000 lbs. (453.6 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): CLASS E: Corrosive solid.

DSCL (EEC):

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 2

Personal Protection: j

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 0

Reactivity: 1

Specific hazard:

Protective Equipment:
Gloves. Synthetic apron. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/09/2005 06:32 PM

Last Updated: 11/01/2010 12:00 PM

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Safety Data Sheet

Issue Date: 01-Jan-2014 **Revision Date:** 01-May-2018 **Version** 1

1. IDENTIFICATION

Product Identifier
Product Name Sealed Nickel Cadmium Rechargeable Batteries

Other means of identification
SDS # POWER-002

Other Information Nominal Voltage: 1.2V

Recommended use of the chemical and restrictions on use
Recommended Use Battery

Details of the supplier of the safety data sheet
Manufacturer Address
Power-Sonic Corporation
7550 Panasonic Way
San Diego, CA 92154

Emergency Telephone Number
Company Phone Number 1-619-661-2020
Emergency Telephone (24 hr) INFOTRAC 1-800-535-5053 (domestic), 1-352-323-3500 (International)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: This product is a sealed, rechargeable nickel cadmium battery. The information below is intended for repeated and prolonged contact with the battery contents in an occupational setting. In the absence of an incident or accident, it is not likely to apply to normal product use. However, this Safety Data Sheet (SDS) contains valuable information critical to the safe handling and proper use of this product. This SDS should be retained and available for employees and other users of this product. Always be aware of the risk of fire, explosion, or burns. Do not short circuit the (+) and (-) terminals with any other metals. Do not disassemble or modify the battery. Do not solder a battery directly. Keep away from fire or open flame.

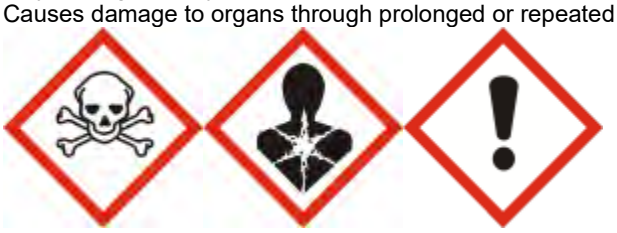
Appearance Battery **Physical State** Solid Article

Classification

Acute toxicity - Oral	Category 4
Acute toxicity - Dermal	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 1
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2
Respiratory sensitization	Category 1
Skin sensitization	Category 1
Germ cell mutagenicity	Category 2
Carcinogenicity	Category 1A
Reproductive toxicity	Category 1B
Specific target organ toxicity (repeated exposure)	Category 1

Signal Word
Danger

Hazard Statements
Harmful if swallowed
Harmful in contact with skin
Fatal if inhaled
Causes skin irritation
Causes serious eye irritation
May cause allergy or asthma symptoms or breathing difficulties if inhaled
May cause an allergic skin reaction
Suspected of causing genetic defects
May cause cancer
May damage fertility or the unborn child
Causes damage to organs through prolonged or repeated exposure



Precautionary Statements - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear respiratory protection
In case of inadequate ventilation wear respiratory protection
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves/protective clothing/eye protection/face protection

Precautionary Statements - Response
If exposed or concerned: Get medical advice/attention
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
IF ON SKIN: Wash with plenty of soap and water
Take off contaminated clothing and wash it before reuse
Call a poison center or doctor/physician if you feel unwell
If skin irritation or rash occurs: Get medical advice/attention
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a poison center or doctor/physician
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Rinse mouth

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other Hazards
Very toxic to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
Cadmium hydroxide	21041-95-2	11-26
Cadmium	7440-43-9	11-26
Nickel	7440-02-0	8-17
Nickel hydroxide	12054-48-7	5-12
Potassium hydroxide	1310-58-3	<3

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST-AID MEASURES

First Aid Measures

Eye Contact IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Skin Contact Wash off immediately with soap and plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing before reuse. Call a poison center or doctor/physician if you feel unwell. If skin irritation or rash occurs: Get medical advice/attention.

Inhalation Remove to fresh air. Seek immediate medical attention/advice.

Ingestion Do not induce vomiting. Call a physician or poison control center immediately.

Most important symptoms and effects

Symptoms Inhalation: During normal use inhalation is highly unlikely due to the containment of hazardous materials inside the sealed battery case. However, if the batteries are exposed to extreme heat or pressure causing a breach in the battery cell case, cadmium fumes and dust may be emitted. Inhalation of cadmium dusts or fumes may cause throat dryness, respiratory irritation, headache, nausea, vomiting, chest pain, extreme restlessness and irritability, pneumonitis and bronchopneumonia. In the case of high concentration exposures (e.g. above 1 to 5mg/m³ during an eight hour period) death may occur within several days of exposure.

Ingestion: If the battery case is breached in the digestive tract, the electrolyte may cause localized burns. Ingestion of cadmium compounds may result in increased salivation, chocking, nausea, persistent vomiting, diarrhea, abdominal pain, amnesia, tenesmus, and kidney dysfunction.

Skin Contact: Exposure to the electrolyte inside the battery may result in severe irritation and chemical burns. Exposure to nickel may cause dermatitis for some sensitive individuals. May cause an allergic skin reaction.

Eye Contact: Exposure to the electrolyte contained inside the battery may result in severe irritation and chemical burns.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical
See Section 2, Hazard Statements. Exposure to temperatures above 212 °F can cause evaporation of the liquid content of the potassium hydroxide electrolyte, resulting in the rupturing of the cell. Potential exposure to cadmium fumes during fire.

Hazardous Combustion Products Oxides of cadmium and nickel and potassium hydroxide.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Use personal protective equipment as required. Avoid contact with skin, eyes or clothing.

Environmental Precautions Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. See Section 13: DISPOSAL CONSIDERATIONS.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up Collect all released material in a plastic lined container. Report all spills in accordance with Federal, State and Local reporting requirements.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Use personal protection recommended in Section 8. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash face, hands, and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Do not breathe dust/fume/gas/mist/vapors/spray. Contaminated work clothing should not be allowed out of the workplace.

Conditions for safe storage, including any incompatibilities

Storage Conditions

Keep container tightly closed and store in a cool, dry and well-ventilated place. Store away from heat, sparks, flame. Protect from moisture. Store away from incompatible materials. Prevent condensation on cells or battery terminals. Elevated temperatures may result in reduced battery life. Accidental short circuit will bring high temperature elevation to the battery as well as shorten the battery life. Be sure to avoid prolonged short circuit since the heat generated can burn skin and even rupture the battery cell case. Batteries packaged in bulk containers should not be shaken. Metal covered tables or belts used for the assembly of batteries into devices can be the source of short circuits; apply insulating material to assembly work surfaces. Soldering/Welding: If soldering or welding to the case is required consult our Technical Department for proper precautions to prevent seal damage or external short circuit.
Charging: These batteries are designed for recharging. A loss of voltage and capacity of the battery due to self- discharge during prolonged storage is unavoidable. Charge battery before use. Observe the specified charge rate since higher rates can cause a rise in internal gas pressure which may result in damaging heat generation or cell rupture and/or venting.

Incompatible Materials

Potential incompatibilities: The battery cells are encased in a non-reactive container; however, if the container is breached, avoid contact of internal battery components with acids, aldehydes and carbonate compounds.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Cadmium hydroxide 21041-95-2	TWA: 0.01 mg/m^3 Cd TWA: 0.002 mg/m^3 Cd respirable fraction	-	IDLH: 9 mg/m^3 Cd dust and fume
Cadmium 7440-43-9	TWA: 0.01 mg/m^3 Cd TWA: 0.002 mg/m^3 Cd respirable fraction	TWA: 0.1 mg/m^3 fume applies to any operations or sectors for which the Cadmium standard is stayed or otherwise not in effect TWA: 0.2 mg/m^3 dust applies to any operations or sectors for which the Cadmium standard is stayed or otherwise not in effect TWA: 5 µg/m^3 (vacated) STEL: 0.3 ppm fume Ceiling: 0.3 mg/m^3 fume applies to any operations or sectors for which the Cadmium standard is stayed or otherwise not in effect Ceiling: 0.6 mg/m^3 dust applies to any operations or sectors for which the Cadmium standard is stayed or otherwise not in effect	IDLH: 9 mg/m^3 Cd dust and fume
Nickel 7440-02-0	TWA: 1.5 mg/m^3 inhalable fraction	TWA: 1 mg/m^3 (vacated) TWA: 1 mg/m^3	IDLH: 10 mg/m^3 Ni TWA: 0.015 mg/m^3 except Nickel carbonyl Ni
Nickel hydroxide 12054-48-7	TWA: 0.2 mg/m^3 Ni inhalable fraction	TWA: 1 mg/m^3 Ni (vacated) TWA: 1 mg/m^3 Ni	IDLH: 10 mg/m^3 Ni TWA: 0.015 mg/m^3 except Nickel carbonyl Ni
Potassium hydroxide 1310-58-3	Ceiling: 2 mg/m^3	(vacated) Ceiling: 2 mg/m^3	Ceiling: 2 mg/m^3

Appropriate engineering controls

Engineering Controls

Apply technical measures to comply with the occupational exposure limits.

Individual protection measures, such as personal protective equipment

Eye/Face Protection None needed under normal conditions. If handling damaged or broken batteries use chemical splash goggles or face shield.

Skin and Body Protection None needed under normal conditions. If battery case is damaged use rubber or plastic gloves.

Respiratory Protection None required under normal conditions. If battery is overcharged and concentrations of components are known to exceed PEL use NIOSH or MSH approved respiratory protection.

General Hygiene Considerations Handle batteries carefully to avoid damaging the case. Do not allow metallic articles to contact the battery terminals during handling. Avoid contact with the internal components of the battery.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Solid Article		
Appearance	Battery	**Odor**	Not determined
Color	Not determined	**Odor Threshold**	Not determined

Property	Values	Remarks • Method
pH	Not determined	
Melting Point/Freezing Point	Not determined	
Boiling Point/Boiling Range	Not determined	
Flash Point	Not determined	
Evaporation Rate	Not determined	
Flammability (Solid, Gas)	Not determined	
Upper Flammability Limits	Not determined	
Lower Flammability Limit	Not determined	
Vapor Pressure	Not determined	
Vapor Density	Not determined	
Specific Gravity	Not determined	
Water Solubility	Insoluble	
Solubility in other solvents	Not determined	
Partition Coefficient	Not determined	
Auto-ignition Temperature	Not determined	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	
Dynamic Viscosity	Not determined	
Explosive Properties	Not determined	
Oxidizing Properties	Not determined	

10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization Hazardous polymerization does not occur.

Conditions to Avoid
Exposure to temperatures above 212 °F can cause evaporation of the liquid content of the potassium hydroxide electrolyte, resulting in the rupturing of the cell. Potential exposure to cadmium fumes during fire. See Sec. 7 Handling & Storage.

Incompatible Materials
Potential incompatibilities: The battery cells are encased in a non-reactive container; however, if the container is breached, avoid contact of internal battery components with acids, aldehydes and carbonate compounds.

Hazardous Decomposition Products
Oxides of cadmium and nickel and potassium hydroxide.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact Causes serious eye irritation.

Skin Contact Causes skin irritation. Harmful in contact with skin.

Inhalation Fatal if inhaled.

Ingestion Harmful if swallowed.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Cadmium 7440-43-9	= 1140 mg/kg (Rat)	-	= 25 mg/m^3 (Rat) 30 min
Nickel 7440-02-0	> 9000 mg/kg (Rat)	-	-
Nickel hydroxide 12054-48-7	= 1515 mg/kg (Rat)	> 2 g/kg (Rat)	= 1200 mg/m^3 (Rat) 4 h
Potassium hydroxide 1310-58-3	= 284 mg/kg (Rat)	-	-

Information on physical, chemical and toxicological effects

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Germ cell mutagenicity Suspected of causing genetic defects.

Carcinogenicity May cause cancer.

Chemical Name	ACGIH	IARC	NTP	OSHA
Cadmium hydroxide 21041-95-2	A2	Group 1	Known	X
Cadmium 7440-43-9	A2	Group 1	Known	X
Nickel 7440-02-0		Group 1	Known Reasonably Anticipated	X
Nickel hydroxide 12054-48-7	A1	Group 1	Known	X

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)
A1 - Known Human Carcinogen
A2 - Suspected Human Carcinogen
IARC (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
NTP (National Toxicology Program)
Known - Known Carcinogen
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen
OSHA (Occupational Safety and Health Administration of the US Department of Labor)
X - Present

Reproductive toxicity May damage fertility or the unborn child.

STOT - repeated exposure Causes damage to organs through prolonged or repeated exposure.

Numerical measures of toxicity
Not determined

12. ECOLOGICAL INFORMATION

Ecotoxicity
Very toxic to aquatic life with long lasting effects.

Component Information

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Cadmium 7440-43-9		0.016: 96 h Oryzias latipes mg/L LC50 0.002: 96 h Cyprinus carpio mg/L LC50 0.0004 - 0.003: 96 h Pimephales promelas mg/L LC50 4.26: 96 h Cyprinus carpio mg/L LC50 semi-static 0.24: 96 h Cyprinus carpio mg/L LC50 static 21.1: 96 h Lepomis macrochirus mg/L LC50 flow-through 0.003: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 0.006: 96 h Oncorhynchus mykiss mg/L LC50 static		0.0244: 48 h Daphnia magna mg/L EC50 Static
Nickel 7440-02-0	0.18: 72 h Pseudokirchneriella subcapitata mg/L EC50 0.174 - 0.311: 96 h Pseudokirchneriella subcapitata mg/L EC50 static	100: 96 h Brachydanio rerio mg/L LC50 1.3: 96 h Cyprinus carpio mg/L LC50 semi-static 10.4: 96 h Cyprinus carpio mg/L LC50 static		100: 48 h Daphnia magna mg/L EC50 1: 48 h Daphnia magna mg/L EC50 Static
Potassium hydroxide 1310-58-3		80: 96 h Gambusia affinis mg/L LC50 static		

Persistence/Degradability
Not determined.

Bioaccumulation
Not determined.

Mobility

Chemical Name	Partition Coefficient
Potassium hydroxide 1310-58-3	0.65 0.83

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

US EPA Waste Number

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Cadmium 7440-43-9		Included in waste streams: F006, F039, K061, K069, K100	1.0 mg/L regulatory level	
Nickel 7440-02-0		Included in waste streams: F006, F039		

California Hazardous Waste Status

Chemical Name	California Hazardous Waste Status
Nickel 7440-02-0	Toxic powder Ignitable powder
Potassium hydroxide 1310-58-3	Toxic Corrosive

14. TRANSPORT INFORMATION

Note Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances. Power-Sonic sealed Nickel Cadmium batteries are considered to be “dry cell” batteries and are unregulated for purposes of transport by the US Department of Transportation (DOT), International Civil Aviation Administration (ICAO), International Air Transport Association (IATA) and the International Maritime Organization (IMO).

DOT The only requirements for shipping these batteries by DOT is Special Provision 130 which states “Batteries, dry are not subject to the requirements of this subchapter only when they are offered for transportation in a manner that prevents the dangerous evolution of heat (for example, by the effective insulation of exposed terminals).

IATA

The only requirements for shipping these batteries by ICAO and IATA is Special Provision A123 which states “an electrical battery or battery powered device having the potential of dangerous evolutions of heat that is not prepared so as to prevent a short circuit (e.g. in the case of batteries, by the effective insulation of exposed terminals: or in the case of equipment, by disconnection of the battery and protection of exposed terminals) is forbidden from transportation.”

IMDG

Marine Pollutant This material may meet the definition of a marine pollutant

15. REGULATORY INFORMATION

International Inventories

Chemical Name	TSCA	DSL	NDSL	EINECS	ELINCS	ENCS	IECSC	KECL	PICCS	AICS
Cadmium hydroxide	Present		X	Present		Present	X	Present		X
Cadmium	Present	X		Present			X	Present	X	X
Nickel	Present	X		Present			X	Present	X	X
Nickel hydroxide	Present	X		Present		Present	X	Present	X	X
Potassium hydroxide	Present	X		Present		Present	X	Present	X	X

Legend:

TSCA *- United States Toxic Substances Control Act Section 8(b) Inventory*

DSL/NDSL *- Canadian Domestic Substances List/Non-Domestic Substances List*

EINECS/ELINCS *- European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances*

ENCS *- Japan Existing and New Chemical Substances*

IECSC *- China Inventory of Existing Chemical Substances*

KECL *- Korean Existing and Evaluated Chemical Substances*

PICCS *- Philippines Inventory of Chemicals and Chemical Substances*

AICS *- Australian Inventory of Chemical Substances*

US Federal Regulations

CERCLA

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Cadmium 7440-43-9	10 lb		RQ 10 lb final RQ RQ 4.54 kg final RQ
Nickel 7440-02-0	100 lb		RQ 100 lb final RQ RQ 45.4 kg final RQ
Nickel hydroxide 12054-48-7	10 lb		RQ 10 lb final RQ RQ 4.54 kg final RQ
Potassium hydroxide 1310-58-3	1000 lb		RQ 1000 lb final RQ RQ 454 kg final RQ

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	CAS No	Weight-%	SARA 313 - Threshold Values %
Cadmium hydroxide - 21041-95-2	21041-95-2	11-26	0.1
Cadmium - 7440-43-9	7440-43-9	11-26	0.1
Nickel - 7440-02-0	7440-02-0	8-17	0.1
Nickel hydroxide - 12054-48-7	12054-48-7	5-12	0.1

CWA (Clean Water Act)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Cadmium hydroxide		X		
Cadmium		X	X	
Nickel		X	X	
Nickel hydroxide		X		X
Potassium hydroxide	1000 lb			X

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals.

Chemical Name	California Proposition 65
Cadmium hydroxide - 21041-95-2	Carcinogen
Cadmium - 7440-43-9	Carcinogen Developmental Male Reproductive
Nickel - 7440-02-0	Carcinogen
Nickel hydroxide - 12054-48-7	Carcinogen

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Cadmium hydroxide 21041-95-2	X		X
Cadmium 7440-43-9	X	X	X
Nickel 7440-02-0	X	X	X
Nickel hydroxide 12054-48-7	X	X	X
Potassium hydroxide 1310-58-3	X	X	X

16. OTHER INFORMATION

NFPA	**Health Hazards**	**Flammability**	**Instability**	**Special Hazards**
	Not determined	Not determined	Not determined	Not determined
HMIS	**Health Hazards**	**Flammability**	**Physical Hazards**	**Personal Protection**
	Not determined	Not determined	Not determined	Not determined

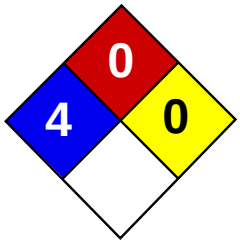
Issue Date: 01-Jan-2014
Revision Date: 01-May-2018
Revision Note: 2018 update

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

Rev.1.4



Material Safety Data Sheet
Nitric acid, 65% MSDS

Section 1: Chemical Product and Company Identification

Product Name: Nitric acid, 65%

Catalog Codes: SLN2161

CAS#: Mixture.

RTECS: Not applicable.

TSCA: TSCA 8(b) inventory: Water; Nitric acid, fuming

CI#: Not applicable.

Synonym: Nitric Acid, 65%

Chemical Name: Not applicable.

Chemical Formula: Not applicable.

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Water	7732-18-5	35
Nitric acid, fuming	7697-37-2	65

Toxicological Data on Ingredients: Nitric acid, fuming: VAPOR (LC50): Acute: 244 ppm 0.5 hours [Rat]. 344 ppm 0.5 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (irritant, corrosive), of ingestion, . Slightly hazardous in case of inhalation (lung sensitizer). Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Prolonged exposure may result in skin burns and ulcerations. Over-exposure by inhalation may cause respiratory irritation. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to lungs, mucous membranes, upper respiratory

tract, skin, eyes, teeth. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: of combustible materials

Explosion Hazards in Presence of Various Substances:
Explosive in presence of reducing materials, of organic materials, of metals, of alkalis. Non-explosive in presence of open flames and sparks, of shocks.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards:
Flammable in presence of cellulose or other combustible materials. Phosphine, hydrogen sulfide, selenide all ignite when fuming nitric acid is dripped into gas. (Nitric Acid, fuming)

Special Remarks on Explosion Hazards:
Reacts exlposively with metallic powders, carbides, cyanides, sulfides, alkalies and turpentine. Can react explosively with many reducing agents. Arsine, phosphine, tetraborane all oxidized explosively in presence of nitric acid. Cesium and rubidium

acetylides explode in contact with nitric acid. Explosive reaction with Nitric Acid + Nitrobenzene + water. Detonation with Nitric Acid + 4-Methylcyclohexane. (Nitric acid, fuming)

Section 6: Accidental Release Measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.

Large Spill:
Corrosive liquid. Oxidizing material. Poisonous liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Avoid contact with a combustible material (wood, paper, oil, clothing...). Keep substance damp using water spray. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep container dry. Keep away from heat. Keep away from sources of ignition. Keep away from combustible material.. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as reducing agents, combustible materials, organic materials, metals, acids, alkalis, moisture. May corrode metallic surfaces. Store in a metallic or coated fiberboard drum using a strong polyethylene inner package.

Storage:
Keep container tightly closed. Keep container in a cool, well-ventilated area. Separate from acids, alkalies, reducing agents and combustibles. See NFPA 43A, Code for the Storage of Liquid and Solid Oxidizers. Do not store above 23°C (73.4°F).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 2 STEL: 4 (ppm) from ACGIH (TLV) [United States] TWA: 2 STEL: 4 from OSHA (PEL) [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Acrid. Disagreeable and choking. (Strong.)

Taste: Not available.

Molecular Weight: Not applicable.

Color: Colorless to light yellow.

pH (1% soln/water): Acidic.

Boiling Point: 121°C (249.8°F)

Melting Point: -41.6°C (-42.9°F)

Critical Temperature: Not available.

Specific Gravity: 1.408 (Water = 1)

Vapor Pressure: 6 kPa (@ 20°C)

Vapor Density: 2.5 (Air = 1)

Volatility: Not available.

Odor Threshold: 0.29 ppm

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether.

Solubility:
Easily soluble in cold water, hot water. Soluble in diethyl ether.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials

Incompatibility with various substances:
Highly reactive with alkalis. Reactive with reducing agents, combustible materials, organic materials, metals, acids.

Corrosivity:
Extremely corrosive in presence of aluminum, of copper. Non-corrosive in presence of glass, of stainless steel(304), of stainless steel(316), of brass.

Special Remarks on Reactivity:
A strong oxidizer. Reacts violently with alcohol, organic material, turpene, charcoal. Violent reaction with Nitric acid + Acetone and Sulfuric acid. Nitric Acid will react with water or steam to produce heat and toxic, corrosive and flammable vapors. (Nitric acid, fuming)

Special Remarks on Corrosivity:
In presence of traces of oxides, it attacks all base metals except aluminum and special chromium steels. It will attack some forms of plastics, rubber, and coatings. No corrosive effect on bronze. No corrosivity data for zinc, and steel

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans:

Contains material which may cause damage to the following organs: lungs, mucous membranes, upper respiratory tract, skin, eyes, teeth.

Other Toxic Effects on Humans:
Extremely hazardous in case of inhalation (lung corrosive). Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (corrosive), of ingestion, .

Special Remarks on Toxicity to Animals: LDL - Lowest Published Lethal Dose [Human] - Route: Oral; Dose: 430 mg/kg (Nitric acid, fuming)

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects (effects on newborn and fetotoxicity) based on animal data. (Nitric acid, fuming)

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Severely irritates skin. Causes skin burns and may cause deep and penetrating ulcers of the skin with a characteristic yellow to brownish discoloration. May be fatal if absorbed through skin. Eyes: Severely irritates eyes. Causes eye burns. May cause irreversible eye injury. Ingestion: May be fatal if swallowed. Causes serious gastrointestinal tract irritation or burns with nausea, vomiting, severe abdominal pain, and possible "coffee grounds" appearance of the vomitus . May cause perforation of the digestive tract. Inhalation: May be fatal if inhaled. Vapor is extremely hazardous. Vapor may cause nitrous gas poisoning. Effects may be delayed. May cause irritation of the mucous membranes and respiratory tract with burning pain in the nose and throat, coughing, sneezing, wheezing, shortness of breath and pulmonary edema. Other symptoms may include nausea, and vomiting. Chronic Potential Health Effects: Repeated inhalation may produce changes in pulmonary function and/or chronic bronchitis. It may also affect behavior (headache, dizziness, drowsiness, muscle contaction or spasticity, weakness, loss of coordinaton, mental confusion), and urinary system (kidney faillure, decreased urinary output after several hours of

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Class 8: Corrosive material

Identification: : Nitric acid UNNA: 2031 PG: II

Special Provisions for Transport: Marine Pollutant

Section 15: Other Regulatory Information

Federal and State Regulations:
New York release reporting list: Nitric acid, fuming Rhode Island RTK hazardous substances: Nitric acid, fuming Pennsylvania RTK: Nitric acid, fuming Florida: Nitric acid, fuming Minnesota: Nitric acid, fuming Massachusetts RTK: Nitric acid, fuming

New Jersey: Nitric acid, fuming TSCA 8(b) inventory: Water; Nitric acid, fuming SARA 302/304/311/312 extremely hazardous substances: Nitric acid, fuming SARA 313 toxic chemical notification and release reporting: Nitric acid, fuming 65% CERCLA: Hazardous substances.: Nitric acid, fuming: 1000 lbs. (453.6 kg);

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC). CLASS E: Corrosive liquid.

DSCL (EEC):
R8- Contact with combustible material may cause fire. R35- Causes severe burns. S23- Do not breathe gas/fumes/vapour/spray [***] S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S36- Wear suitable protective clothing. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 0

Personal Protection:

National Fire Protection Association (U.S.A.):

Health: 4

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 10:59 AM

Last Updated: 11/01/2010 12:00 PM

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SAFETY DATA SHEET

Creation Date 12-Mar-2009 **Revision Date** 20-Dec-2010 **Revision Number** 2

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Description: **Nitric acid (65 - 70%)**
Cat No. **N/2272/PB08, N/2272/PB15, N/2272/PB17**
Synonyms Azotic acid; Engraver's acid; Aqua fortis

Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Laboratory chemicals
Uses advised against No Information available

Details of the supplier of the safety data sheet

Company
Fisher Scientific UK
Bishop Meadow Rd
Loughborough, Leicestershire, Great Britain
LE115RG
Tel: 01509 231166

E-mail address begel.sdsdesk@thermofisher.com

Emergency Telephone Number
Tel: 01509 231166 Chemtrec US: (800) 424-9300
Chemtrec EU: 001 (202) 483-7616

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture
REGULATION (EC) No 1272/2008

Skin Corrosion / irritation	Category 1 A
Oxidizing liquids.	Category 3

Classification according to EU Directives 67/548/EEC or 1999/45/EC
For the full text of the R phrases mentioned in this Section, see Section 16
Symbol(s) C - Corrosive
R -phrase(s) R35 - Causes severe burns

Label Elements

2. HAZARDS IDENTIFICATION

Signal Word **Danger**

Hazard Statements
H314 - Causes severe skin burns and eye damage
H272 - May intensify fire; oxidizer

Precautionary Statements - EU (§28, 1272/2008)
P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor/ physician
P304 + P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing
P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking

Other Hazards
No information available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	EC No.	Weight %	CAS-No	Classification	GHSCLAS	REACH Reg. No.
Nitric acid 7697-37-2		65 - 70	7697-37-2	O;R8 C;R35	Skin Corr. 1A (H314) Ox. Liq. 3 (H272)	-

For the full text of the R phrases mentioned in this Section, see Section 16

4. FIRST AID MEASURES

Description of first aid measures

4. FIRST AID MEASURES

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes Immediate medical attention is required

Skin Contact Wash off immediately with plenty of water for at least 15 minutes Immediate medical attention is required

Ingestion Do not induce vomiting Call a physician or Poison Control Center immediately

Inhalation Move to fresh air If breathing is difficult, give oxygen Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with a respiratory medical device Immediate medical attention is required

Notes to Physician Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure

5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable Extinguishing Media

Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.

Extinguishing media which must not be used for safety reasons

No information available.

Special hazards arising from the substance or mixture

Oxidizer: Contact with combustible/organic material may cause fire Corrosive Material Causes severe burns by all exposure routes Thermal decomposition can lead to release of irritating gases and vapors

Advice for fire-fighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Wear self-contained breathing apparatus and protective suit. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing.

Environmental precautions

Should not be released into the environment.

Methods and material for containment and cleaning up

Soak up with inert absorbent material. Keep in suitable and closed containers for disposal. Keep away from clothing and other combustible materials.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Use only under a chemical fume hood Wear personal protective equipment Do not get in eyes, on skin, or on clothing Keep away from clothing and other combustible materials Do not breathe vapors/dust Do not ingest Contents under pressure

Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place Do not store near combustible materials Corrosives area

Specific End Uses

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

Exposure limits

Component	European Union	The United Kingdom	France	Belgium	Spain
Nitric acid			VLCT: 2.6 mg/m^3 VLCT: 1 ppm	STEL: 1 ppm STEL: 2.6 mg/m^3	VLA-EC: 2.6 mg/m^3 VLA-EC: 1 ppm

Component	Italy	Portugal	The Netherlands	Finland	Denmark
Nitric acid	STEL: 2.6 mg/m^3 STEL: 1 ppm	STEL: 4 ppm TWA: 2 ppm	STEL: 1.3 mg/m^3	TWA: 0.5 ppm TWA: 1.3 mg/m^3 STEL: 1 ppm STEL: 2.6 mg/m^3	

Component	Austria	Switzerland	Poland	Norway	Ireland
Nitric acid	STEL: 2.6 mg/m^3 STEL: 1 ppm	STEL: 2 ppm STEL: 5 mg/m^3 MAK: 2 ppm MAK: 5 mg/m^3	NDSCh: 2.6 mg/m^3 NDS: 1.4 mg/m^3	TWA: 5 mg/m^3 TWA: 2 ppm	STEL: 1 ppm

Derived No Effect Level (DNEL) No information available.

Predicted No Effect Concentration (PNEC) No information available.

Exposure controls

Engineering Measures Use only under a chemical fume hood Ensure that eyewash stations and safety showers are close to the workstation location

Personal protective equipment

Eye Protection Safety glasses with side-shields

Hand Protection Protective gloves

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice

Environmental exposure controls No information available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Clear Colorless, Light yellow
odor	strong Acrid
pH	1.0 (0.1M)
Vapor Pressure	0.94 kPa (20°C)
Boiling Point/Range	120.5°C / 248.9°F
Melting Point/Range	-41°C / -41.8°F
Flash Point	Not applicable
Specific Gravity	1.40
Molecular Formula	HNO3
Molecular Weight	63.02

10. STABILITY AND REACTIVITY

Reactivity

Reactive Hazard Yes

Chemical Stability

Oxidizer: Contact with combustible/organic material may cause fire.

Possibility of Hazardous Reactions

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions . None under normal processing..

Conditions to Avoid

Incompatible products, Combustible material, Excess heat.

Incompatible Materials

Strong bases, Reducing agents, Organic materials, Aldehydes, Alcohols, Cyanides, Metals, Powdered metals, Ammonia.

Hazardous Decomposition Products

Nitrogen oxides (NOx).

11. TOXICOLOGICAL INFORMATION

Information on Toxicological Effects

Acute Toxicity

Product Information Product does not present an acute toxicity hazard based on known or supplied information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation

11. TOXICOLOGICAL INFORMATION

Nitric acid			130 mg/m^3 (Rat) 4 h 7 mg/L (Rat) 1 h

Chronic Toxicity

Carcinogenicity There are no known carcinogenic chemicals in this product

Sensitization No information available.
Mutagenic Effects No information available
Reproductive Effects Experiments have shown reproductive toxicity effects on laboratory animals
Developmental Effects No information available.
Teratogenicity Teratogenic effects have occurred in experimental animals.
Target Organs Eyes Respiratory system Skin Teeth Kidney Gastrointestinal tract (GI)
Other Adverse Effects See actual entry in RTECS for complete information
Endocrine Disruptor Information None known

12. ECOLOGICAL INFORMATION

Toxicity

Ecotoxicity effects Do not empty into drains

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Nitric acid		72 mg/L LC50 96 h		

Persistence and degradability
No information available

Bioaccumulative potential
No information available.

Component	log Pow
Nitric acid	0

Mobility in soil

Results of PBT and vPvB assessment

Other adverse effects
No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from Residues / Unused Products Dispose of in accordance with local regulations

Contaminated Packaging Empty containers should be taken for local recycling, recovery or waste disposal

14. TRANSPORT INFORMATION

IMDG/IMO

UN-No	UN2031
Hazard Class	8
Subsidiary Hazard Class	5.1
Packing Group	II
Proper Shipping Name	NITRIC ACID

ADR

UN-No	UN2031
Hazard Class	8
Subsidiary Class	5.1
Packing Group	II
Proper Shipping Name	NITRIC ACID

IATA

UN-No	UN2031
Hazard Class	8
Subsidiary Hazard Class	5.1
Packing Group	II
Proper Shipping Name	NITRIC ACID

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

International Inventories

All of the components in the product are on the following Inventory lists:

Component	EINECS	ELINCS	NLP	TSCA	DSL	NDSL	PICCS	ENCS	CHINA	AICS	KECL
Nitric acid	231-714-2	-		X	X	-	X	X	X	X	KE-25911 X

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
EINECS/ELINCS - European Inventory Lists
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
PICCS - Philippines Inventory of Chemicals and Chemical Substances
ENCS - Japan Existing and New Chemical Substances
CHINA - China Inventory of Existing Chemical Substances
AICS - Inventory of Chemical Substances
KECL - Existing and Evaluated Chemical Substances

Chemical Safety Assessment

16. OTHER INFORMATION

Text of R phrases mentioned in Section 2-3
R 8 - Contact with combustible material may cause fire
R35 - Causes severe burns

Revision Date	20-Dec-2010
Revision Summary	Not applicable

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006
Disclaimer
The information provided on this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text

End of Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

Product Code: 62-221

Product Name: Navipol Orange 2 HF Special

Company Name: Sunbelt Corporation
2120 Burkette Rd.
Rock Hill, SC 29730

Phone Number: (803)329-9787

Web site address: www.Sunbeltcolors.com

Email address: sunbelt@sunbeltcolors.com

Emergency Contact: CHEMTREC (800)424-9300

Information: Customer Service (803)329-9787 222

2. HAZARDS IDENTIFICATION

Toxic To Reproduction, Category 2
Serious Eye Damage/Eye Irritation, Category 2A

GHS Signal Word: **Warning**

GHS Hazard Phrases:
H319 - Causes serious eye irritation.
H361 - Suspected of damaging fertility or the unborn child .

GHS Precautionary Phrases:
P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P264 - Wash hands thoroughly after handling.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P281 - Use personal protective equipment as required.

GHS Response Phrases:
P305+351+338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+313 - IF exposed or concerned: Get medical attention/advice.
P337+313 - If eye irritation persists, get medical advice/attention.

GHS Storage and Disposal Phrases:
P405 - Store locked up.
P501 - Dispose of contents/container to ...

OSHA Regulatory Status: This material is classified as hazardous under OSHA regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS #	Hazardous Components (Chemical Name)	Concentration	
67784-80-9	Soybean oil, Me ester {Soybean oil, methyl esters}	40.0 -50.0 %	
92257-31-3	2-Naphthalenol, 1-[[4-(phenylazo)phenyl]azo]-, ar-heptyl ar',ar''-Me derivs.	5.0 -10.0 %	

4. FIRST AID MEASURES

Emergency and First Aid Procedures: IF ON SKIN:
Wash with plenty of soap and water.

In Case of Inhalation: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

In Case of Skin Contact: Wash with soap and water. Get medical attention if irritation develops or persists.

In Case of Eye Contact: In case of contact with eyes, flush with copious amounts of water for at least 15 minutes.

In Case of Ingestion: If swallowed, do NOT induce vomiting. Get medical attention immediately.

5. FIRE FIGHTING MEASURES

Flash Pt: > 200.00 C

Explosive Limits: LEL: UEL:

Autoignition Pt:

Suitable Extinguishing Media: Dry chemical or CO2.

Fire Fighting Instructions:

Flammable Properties and Hazards:

Hazardous Combustion Products:

6. ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled: Take up with sand or other non-combustible absorbent material and place into containers for later disposal.

7. HANDLING AND STORAGE

Precautions To Be Taken in Handling: Check container for leaks. Keep from freezing. Keep in a dry place.

Precautions To Be Taken in Storing: Store in a cool, dry place. Keep from freezing.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

CAS #	Partial Chemical Name	OSHA TWA	ACGIH TWA	Other Limits
67784-80-9	Soybean oil, Me ester {Soybean oil, methyl esters}			
92257-31-3	2-Naphthalenol, 1-[[4-(phenylazo)phenyl]azo]-, ar-heptyl ar',ar''-Me derivs.			

Respiratory Equipment (Specify Type):

Eye Protection: Goggles.

Protective Gloves: Impervious gloves.

Other Protective Clothing: Wear appropriate protective clothing to prevent skin exposure.

Engineering Controls (Ventilation etc.):

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical States: [ ] Gas [X] Liquid [ ] Solid

Appearance and Odor: orange.
fatty acid odor.

pH:

Melting Point:

Boiling Point:

Flash Pt: > 200.00 C

Evaporation Rate:

Flammability (solid, gas):

Explosive Limits: LEL: UEL:

Vapor Pressure (vs. Air or mm Hg):

Vapor Density (vs. Air = 1):

Specific Gravity (Water = 1):

Solubility in Water:

Octanol/Water Partition Coefficient:

Autoignition Pt:

Decomposition Temperature:

Viscosity:

10. STABILITY AND REACTIVITY

Stability: Unstable [ ] Stable [X]

Conditions To Avoid - Instability:

Incompatibility - Materials To Avoid:

Hazardous Decomposition or Byproducts:

Possibility of Hazardous Reactions: Will occur [ ] Will not occur [X]

Conditions To Avoid - Hazardous Reactions:

11. TOXICOLOGICAL INFORMATION

Toxicological Information:

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

12. ECOLOGICAL INFORMATION

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method: Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste.

14. TRANSPORT INFORMATION

LAND TRANSPORT (US DOT):

DOT Proper Shipping Name: Not regulated as a hazardous material.
DOT Hazard Class:
UN/NA Number:

LAND TRANSPORT (Canadian TDG):

TDG Shipping Name: Not regulated as a hazardous material.

15. REGULATORY INFORMATION

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

CAS #	Hazardous Components (Chemical Name)	S. 302 (EHS)	S. 304 RQ	S. 313 (TRI)
67784-80-9	Soybean oil, Me ester {Soybean oil, methyl esters}	No	No	No
92257-31-3	2-Naphthalenol, 1-[[4-(phenylazo)phenyl]azo]-, ar-heptyl ar',ar''-Me derivs.	No	No	No

CAS #	Hazardous Components (Chemical Name)	Other US EPA or State Lists
67784-80-9	Soybean oil, Me ester {Soybean oil, methyl esters}	CAA HAP,ODC: No CWA NPDES: No TSCA: Yes - Inventory CA PROP.65: No MA Oil/HazMat: No MI CMR, Part 5: No NC TAP: No NJ EHS: No NY Part 597: No PA HSL: No SC TAP: No WI Air: No
92257-31-3	2-Naphthalenol, 1-[[4-(phenylazo)phenyl]azo]-, ar-heptyl ar',ar''-Me derivs.	CAA HAP,ODC: No CWA NPDES: No TSCA: Yes - Inventory CA PROP.65: No MA Oil/HazMat: No MI CMR, Part 5: No NC TAP: No NJ EHS: No NY Part 597: No PA HSL: No SC TAP: No WI Air: No

CAS #	Hazardous Components (Chemical Name)	International Regulatory Lists
67784-80-9	Soybean oil, Me ester {Soybean oil, methyl esters}	Canadian DSL: Yes Mexico INSQ: No Australia ICS: Yes New Zealand IOC: Yes China IECSC: Yes Japan ENCS: Yes - 2-798 Japan ISHL: No Korea ECL: Yes - KE-31749 Philippines ICCS: No Taiwan TCSCA: Yes Singapore HSL: No Israel HSL: No Germany WHCS: Yes - 834: WGK 1 Switzerland Giftliste 1: No REACH: Yes - (P)
92257-31-3	2-Naphthalenol, 1-[[4-(phenylazo)phenyl]azo]-, ar-heptyl ar',ar''-Me derivs.	Canadian DSL: Yes Mexico INSQ: No Australia ICS: Yes New Zealand IOC: Yes China IECSC: Yes Japan ENCS: Yes Japan ISHL: No Korea ECL: Yes - KE-28300 Philippines ICCS: Yes Taiwan TCSCA: Yes Singapore HSL: No Israel HSL: No Germany WHCS: No Switzerland Giftliste 1: No REACH: Yes - 01-2120753600-62: Full, (P)

16. OTHER INFORMATION

Revision Date: 02/19/2019

Additional Information About This Product:

Company Policy or Disclaimer: The above information is believed to be correct based on the present state of our knowledge, but does not purport to be all inclusive and shall be used only as a guide. This information does not represent any guarantee of the properties of the product.

The manufacture makes no warranties, expressed or implied, as the accuracy of the information contained herein. Sunbelt Corporation assumes no legal responsibility for the use or reliance upon these data.

Safety Data Sheet

Material Name: OXYGEN, COMPRESSED GAS **SDS ID: MAT12831**

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name
OXYGEN, COMPRESSED GAS

Synonyms
MTG MSDS 71; OXYGEN; DIOXYGEN; MOLECULAR OXYGEN; OXYGEN MOLECULE; PURE OXYGEN; UN 1072; LOX; HYPEROXIA; O2

Chemical Family
inorganic, Gas

Product Use
industrial.

Restrictions on Use
None known.

Details of the supplier of the safety data sheet
MATHESON TRI-GAS, INC.
150 Allen Road, Suite 302
Basking Ridge, NJ 07920
General Information: 1-800-416-2505
Emergency #: 1-800-424-9300 (CHEMTREC)
Outside the US: 703-527-3887 (Call collect)

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.
Oxidizing Gases - Category 1
Gases Under Pressure - Compressed gas
Specific Target Organ Toxicity - Single Exposure - Category 3

GHS Label Elements

Symbol(s)

Signal Word
Danger

Hazard Statement(s)

May cause or intensify fire; oxidizer.
Contains gas under pressure; may explode if heated.

Precautionary Statement(s)

Prevention
Keep away from clothing and other combustible materials.
Keep reduction valves free from grease and oil.

Response
In case of fire: stop leak if safe to do so.

Storage
Protect from sunlight. Store in a well-ventilated place.

Disposal
Dispose in accordance with all applicable regulations.

Other Hazards
Rapid release of compressed gas may cause frostbite.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component Name	Percent
7782-44-7	OXYGEN, COMPRESSED GAS	100

Section 4 - FIRST AID MEASURES

Inhalation
If adverse effects occur, remove to uncontaminated area. Get medical attention.

Skin
If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

Eyes
Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Ingestion
If swallowed, get medical attention.

Most Important Symptoms/Effects

Acute
frostbite

Delayed
no information on significant adverse effects.

Note to Physicians
Treat symptomatically and supportively.

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media
carbon dioxide, regular dry chemical, Large fires: Use water spray, fog or regular foam.

Unsuitable Extinguishing Media
None known.

Special Hazards Arising from the Chemical
Negligible fire hazard. Oxidizer. May ignite or explode on contact with combustible materials. Containers may rupture or explode if exposed to heat.

Hazardous Combustion Products
miscellaneous decomposition products

Fire Fighting Measures
Move container from fire area if it can be done without risk. Do not direct water at source of leak or safety devices; icing may occur. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Use extinguishing agents appropriate for surrounding fire. Cool containers with water. Apply water from a protected location or from a safe distance.

Special Protective Equipment and Precautions for Firefighters
Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures
Wear personal protective clothing and equipment, see Section 8.

Methods and Materials for Containment and Cleaning Up
Avoid contact with combustible materials. Do not touch or walk through spilled material. Stop leak if possible without personal risk. Do not direct water at spill or source of leak. Keep unnecessary people away, isolate hazard area and deny entry. Isolate area until gas has dispersed. Ventilate closed spaces before entering.

Environmental Precautions

Avoid release to the environment.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling
Keep away from clothing and other combustible materials. Keep reduction valves free from grease and oil.

Conditions for Safe Storage, Including any Incompatibilities
Protect from sunlight. Store in a well-ventilated place.
Store in accordance with all current regulations and standards. Protect from sunlight. Store in a well-ventilated area. Protect from physical damage. Avoid heat, flames, sparks and other sources of ignition. Store in a clean, cool, dry place. Store below 52 C. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Keep separated from incompatible substances.

Incompatible Materials
combustible materials, halo carbons, metals, bases, reducing agents, amines, metal salts, oxidizing materials

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

EU - Occupational Exposure (98/24/EC) - Binding Biological Limit Values and Health Surveillance Measures
There are no biological limit values for any of this product's components.

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)
There are no biological limit values for any of this product's components.

Engineering Controls
Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

Individual Protection Measures, such as Personal Protective Equipment

Eye/face protection
For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin Protection
For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.

Respiratory Protection
Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use. Any

supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode. Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Glove Recommendations
Wear insulated gloves.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance	colorless gas	Physical State	gas
Odor	odorless	Color	colorless
Odor Threshold	Not available	pH	Not available
Melting Point	-218.4 °C (-361 °F)	Boiling Point	-182.96 °C (-297 °F)
Freezing point	Not available	Evaporation Rate	Not available
Boiling Point Range	Not available	Flammability (solid, gas)	Not available
Autoignition	Not available	Flash Point	(Non-flammable)
Lower Explosive Limit	Not available	Decomposition	Not available
Upper Explosive Limit	Not available	Vapor Pressure	760 mmHg at -183 °C
Vapor Density (air=1)	1.43	Specific Gravity (water=1)	1.14 at -183 °C
Water Solubility	3.2 % (@ 25 °C)	Partition coefficient: n-octanol/water	Not available
Viscosity	0.02075 cp	Solubility (Other)	Not available
Density	1.309 g/L at 25 °C	Physical Form	gas
Taste	tasteless	Molecular Formula	O2
Molecular Weight	31.9988		

Solvent Solubility

Soluble
alcohol

Section 10 - STABILITY AND REACTIVITY

Reactivity
No reactivity hazard is expected.

Chemical Stability
Stable at normal temperatures and pressure.

Possibility of Hazardous Reactions
Will not polymerize.

Conditions to Avoid
Avoid contact with combustible materials. Protect from physical damage and heat. Containers may rupture or explode if exposed to heat.

Incompatible Materials
combustible materials, halo carbons, metals, bases, reducing agents, amines, metal salts, oxidizing materials

Hazardous decomposition products
miscellaneous decomposition products

Section 11 - TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation
irritation, changes in body temperature, nausea, difficulty breathing, irregular heartbeat, chest pain, lung damage, dizziness, Disorientation, hallucinations, mood swings, pain in extremities, tremors, lung congestion, convulsions, cough

Skin Contact
frostbite, blisters

Eye Contact
irritation, blurred vision

Ingestion
ingestion of a gas is unlikely

Acute and Chronic Toxicity

Component Analysis - LD50/LC50
The components of this material have been reviewed in various sources and no selected endpoints have been identified

Immediate Effects
frostbite

Delayed Effects
no information on significant adverse effects.

Irritation/Corrosivity Data
No data available.

Respiratory Sensitization
No data available.

Dermal Sensitization
No data available.

Component Carcinogenicity
None of this product's components are listed by ACGIH, IARC, NTP, DFG or OSHA

Germ Cell Mutagenicity
No data available.

Tumorigenic Data
No data available

Reproductive Toxicity
No data available.

Specific Target Organ Toxicity - Single Exposure
No data available.

Specific Target Organ Toxicity - Repeated Exposure
No data available.

Aspiration hazard
Not expected to be an aspiration hazard.

Medical Conditions Aggravated by Exposure
No data available.

Section 12 - ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity
No LOLI ecotoxicity data are available for this product's components

Persistence and Degradability
No data available.

Bioaccumulative Potential
No data available.

Mobility
No data available.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods
Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.

Component Waste Numbers
The U.S. EPA has not published waste numbers for this product's components

Section 14 - TRANSPORT INFORMATION

US DOT Information:
Shipping Name:Oxygen, compressed
Hazard Class: 2.2
UN/NA #: UN1072
Required Label(s): 2.2

IMDG Information:
Shipping Name:Oxygen, compressed
Hazard Class: 2.2
UN#: UN1072
Required Label(s): 2.2 5.1

Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations
None of this products components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

SARA Section 311/312 (40 CFR 370 Subparts B and C)
Acute Health: Yes Chronic Health: No Fire: Yes Pressure: Yes Reactivity: No

U.S. State Regulations
The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
OXYGEN, COMPRESSED GAS	7782-44-7	No	Yes	No	Yes	Yes

Not listed under California Proposition 65

Canadian WHMIS Ingredient Disclosure List (IDL)
The components of this product are either not listed on the IDL or are present below the threshold limit listed on the IDL.

WHMIS Classification
A,, C.

Component Analysis - Inventory
OXYGEN, COMPRESSED GAS (7782-44-7)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX	TW
Yes	DSL	EIN	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes

Section 16 - OTHER INFORMATION

NFPA Ratings
Health: 0 Fire: 0 Reactivity: 0 Other:
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Summary of Changes
Updated: 05/01/2015

Key / Legend
ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of LIsts™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States.

Other Information

Disclaimer:
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property or other damages of any nature, whether compensatory, consequential, exemplary, or otherwise, resulting from any publication, use or reliance upon the information herein.

4. P&C SAMPLE SAFETY DATA SHEET (SDS)

NOTE: Samples will not be accepted without SDS or completion of this form or similar.

Project and Contact Details	
Sample name/ number /designation	
Company Name	
Person responsible for shipment	Tel. Number:
P&C Project Number	

Composition and Identification	
Material / Chemical Name	
Description	
Chemical Composition & Admixtures	

Physical and Chemical Properties	
Physical State	
Appearance, color & odor	

Health Hazards	
Reactivity	
Explosion or fire hazards	
Health hazards (poisons, carcinogens, pathogens)	

Personal Protective Equipment Required	
Respiratory protection	
Eye protection	

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Personal Protective Equipment Required	
Skin protection	

Notes

Sample Return
Return Sample to the following address:

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Safety Data Sheet

Issue Date: 14-Mar-2012 **Revision Date:** 07-Nov-2018 **Version** 2

1. IDENTIFICATION

Product identifier
Product Name PC Metal Epoxy Putty

Other means of identification
SDS # 130606-24R

Recommended use of the chemical and restrictions on use
Recommended Use Adhesives.

Details of the supplier of the safety data sheet
Supplier Address
Protective Coatings Co.
221 S Third St.
Allentown, PA 18102 USA

Emergency telephone number
Company Phone Number 610-432-3543 / 800-220-2103
Emergency Telephone INFOTRAC 1-352-323-3500 (International)
1-800-535-5053 (North America)

2. HAZARDS IDENTIFICATION

Appearance Aluminum stick **Physical state** Solid **Odor** Mercaptan

Classification

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2
Skin sensitization	Category 1

Signal Word
Warning

Hazard statements
Causes skin irritation
Causes serious eye irritation
May cause an allergic skin reaction

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Avoid breathing dust/fume/gas/mist/vapors/spray
Contaminated work clothing must not be allowed out of the workplace

Precautionary Statements - Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
IF ON SKIN: Wash with plenty of water and soap
Take off contaminated clothing and wash before reuse
If skin irritation or rash occurs: Get medical advice/attention

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other hazards
Toxic to aquatic life with long lasting effects

Unknown Acute Toxicity
NOTE: Acute Toxicity classifications / calculations are approximates

3. COMPOSITION/INFORMATION ON INGREDIENTS

Please also refer to subsequent sections of this SDS for additional information regarding the components of this product.

Chemical name	CAS No	Weight-%
Talc	14807-96-6	30-60
Glass Beads	65997-17-3	10-30
Bisphenol A - Epichlorohydrin polymer	25068-38-6	10-30
Crystalline silica	14808-60-7	0.1-1.0

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of first aid measures

General Advice Provide this SDS to medical personnel for treatment.

Eye Contact Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Skin Contact Wash with soap and water. Remove and wash contaminated clothing before reuse. Get medical attention if irritation occurs.

Inhalation Remove exposed individual(s) to fresh air for 20 minutes. Consult a physician/poison center if individual's condition declines or if symptoms persist.

Ingestion Clean mouth with water and drink afterwards plenty of water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Seek medical advice.

Most important symptoms and effects, both acute and delayed

Symptoms Causes eye irritation. Causes skin irritation. May cause an allergic skin reaction. Direct contact may cause temporary redness and discomfort.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Skin and eye conditions may be aggravated by long term exposure.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Dry chemical, CO2 or water spray.

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical
Product is not flammable.

Hazardous combustion products Carbon monoxide, Carbon dioxide (CO2), Aldehydes,

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Wear positive pressure self-contained breathing apparatus (SCBA). Do not release runoff from fire control methods to sewers or waterways. NFPA Class IIIB.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Wear protective gloves/protective clothing and eye/face protection. Avoid breathing vapors, mist or gas. Remove any contaminated clothing and wash thoroughly before reuse.

For Emergency Responders Follow applicable OSHA regulations (29 CFR 1910.120).

Environmental precautions

Environmental precautions See Section 12 for additional Ecological Information.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up Dispose of contents/container to an approved waste disposal plant.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practice. Wear appropriate personal protective equipment. Avoid breathing dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product. Wash face, hands and any exposed skin thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Store contents under <90F (32C) . NFPA Class IIIB storage.

Incompatible Materials None known based on information supplied.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Talc 14807-96-6	TWA: 2 mg/m^3 particulate matter containing no asbestos and <1% crystalline silica, respirable particulate matter	(vacated) TWA: 2 mg/m^3 respirable dust <1% Crystalline silica, containing no Asbestos TWA: 20 mppcf if 1% Quartz or more;use Quartz limit	IDLH: 1000 mg/m^3 TWA: 2 mg/m^3 containing no Asbestos and <1% Quartz respirable dust
Glass Beads 65997-17-3	TWA: 1 fiber/cm3 respirable fibers: length >5 µm, aspect ratio >=3:1, as determined by the membrane filter method at 400-450X magnification [4-mm objective], using phase-contrast illumination TWA: 5 mg/m^3 inhalable particulate matter	-	-
Crystalline silica 14808-60-7	TWA: 0.025 mg/m^3 respirable particulate matter	TWA: 50 µg/m^3 TWA: 50 µg/m^3 excludes construction work, agricultural operations, and exposures that result from the processing of sorptive clays (vacated) TWA: 0.1 mg/m^3 respirable dust : (250)/(%SiO2 + 5) mppcf TWA respirable fraction : (10)/(%SiO2 + 2) mg/m^3 TWA respirable fraction	IDLH: 50 mg/m^3 respirable dust TWA: 0.05 mg/m^3 respirable dust

Other Information If product is sanded, appropriate respirator should be worn to avoid breathing dust. Pre-existing respiratory disorders may be aggravated by exposure. If sanded, this material may generate silica dust. Inhaled silica has been classified by IARC as a human carcinogen (see section 11).

Appropriate engineering controls

Engineering Controls Provide general or local exhaust ventilation if product is sanded or ground.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Chemical safety goggles/faceshield. Refer to 29 CFR 1910.133 for eye and face protection regulations.

Skin and Body Protection Chemical resistant protective gloves. Wear suitable protective clothing. Reference Wiley's "Quick Selection Guide to Chemical Protective Clothing". Refer to 29 CFR 1910.138 for appropriate skin and body protection.

Respiratory Protection Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash contaminated clothing before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Solid		
Appearance	Aluminum stick	**Odor**	Mercaptan
Color	Not determined	**Odor Threshold**	Not determined

Property	**Values**	**Remarks • Method**
pH	>8	
Melting point / freezing point	Not determined	
Boiling point / boiling range	Not determined	
Flash point	Not available	
Evaporation Rate	Not determined	
Flammability (Solid, Gas)	Not determined	
Flammability Limit in Air		
Upper flammability or explosive limits	Not determined	
Lower flammability or explosive limits	Not determined	
Vapor Pressure	Not determined	
Vapor Density	Not determined	
Relative Density	2.18 @ 4°C (39.2°F)	
Water Solubility	Insoluble in water	
Solubility in other solvents	Not determined	
Partition Coefficient	Not determined	
Autoignition temperature	Not determined	
Decomposition temperature	Not determined	
Kinematic viscosity	Not determined	
Dynamic Viscosity	Not determined	
Explosive Properties	Not determined	
Oxidizing Properties	Not determined	

Other information

VOC Content (%) <1%

10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
None under normal processing.

Hazardous Polymerization Hazardous polymerization does not occur.

Conditions to Avoid
Keep out of reach of children.

Incompatible materials
None known based on information supplied.

Hazardous decomposition products
None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact Causes serious eye irritation.

Skin Contact May cause an allergic skin reaction. Causes skin irritation.

Inhalation Under normal conditions of intended use, this material is not expected to be an inhalation hazard.

Ingestion May cause discomfort if swallowed.

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Bisphenol A - Epichlorohydrin polymer 25068-38-6	= 11400 mg/kg (Rat)	20000 mg/kg (rabbit)	-
Ferrosilicon 8049-17-0	-	> 20 g/kg (Rabbit)	-

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization May cause an allergic skin reaction.

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen. However, the product as a whole has not been tested. Crystalline Silica is considered to be a human carcinogen when in respirable form (dust / powder).

Chemical name	ACGIH	IARC	NTP	OSHA
Talc 14807-96-6		Group 3		X
Glass Beads 65997-17-3		Group 3		
Crystalline silica 14808-60-7	A2	Group 1	Known	X

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)
A2 - Suspected Human Carcinogen
IARC (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 3 IARC components are "not classifiable as human carcinogens"
NTP (National Toxicology Program)
Known - Known Carcinogen
OSHA (Occupational Safety and Health Administration of the US Department of Labor)
X - Present

Numerical measures of toxicity

The following values are calculated based on chapter 3.1 of the GHS document .

Unknown Acute Toxicity NOTE: Acute Toxicity classifications / calculations are approximates.

Oral LD50 38,000.00 mg/kg

Dermal LD50 66,733.30 mg/kg

12. ECOLOGICAL INFORMATION

Ecotoxicity
Toxic to aquatic life with long lasting effects.

Component Information

Chemical name	Algae/aquatic plants	Fish	Crustacea
Talc 14807-96-6		100: 96 h Brachydanio rerio g/L LC50 semi-static	

Persistence/Degradability
Not determined.

Bioaccumulation
There is no data for this product.

Mobility
Not determined

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

Note Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

DOT Not regulated

IATA Not regulated

IMDG Not regulated

15. REGULATORY INFORMATION

International Inventories

Chemical name	TSCA	DSL/NDSL	EINECS/ELINCS	ENCS	IECSC	KECL	PICCS	AICS
Talc	X	X	X	X	X	X	X	X
Bisphenol A - Epichlorohydrin polymer	X	X	X	X	X	X	X	X
Glass Beads	X	X	X	X	X	X	X	X
Ferrosilicon		X					X	
Mercaptan terminated polymer	X	X			X	X	X	X
Nepheline Syenite		X			X			

Crystalline silica	X	X	X	X	X	X	X	X

Legend:

TSCA *- United States Toxic Substances Control Act Section 8(b) Inventory*

DSL/NDSL *- Canadian Domestic Substances List/Non-Domestic Substances List*

EINECS/ELINCS *- European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances*

ENCS *- Japan Existing and New Chemical Substances*

IECSC *- China Inventory of Existing Chemical Substances*

KECL *- Korean Existing and Evaluated Chemical Substances*

PICCS *- Philippines Inventory of Chemicals and Chemical Substances*

AICS *- Australian Inventory of Chemical Substances*

US Federal Regulations

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

SARA 313

Not determined

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals.

Chemical name	California Proposition 65
Crystalline silica - 14808-60-7	Carcinogen

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Talc 14807-96-6	X	X	X
Ferrosilicon 8049-17-0	X		
Crystalline silica 14808-60-7	X	X	X

16. OTHER INFORMATION

NFPA	**Health Hazards**	**Flammability**	**Instability**	**Special Hazards**
	1	1	0	Not determined
HMIS	**Health Hazards**	**Flammability**	**Physical hazards**	**Personal Protection**
	1	1	0	B- Safety Glasses, Gloves

Issue Date: 14-Mar-2012
Revision Date: 07-Nov-2018
Revision Note: Formula update

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

Permatex, Inc.
10 Columbus Blvd.
Hartford, CT 06106 USA
Telephone: 1-87-Permatex
(877) 376-2839
Emergency: 800-255-3924 (ChemTel)
International Emergency: +01-813-248-0585

Material Safety Data Sheet

1. PRODUCT IDENTIFICATION

Product Name: **FAST ORANGE PUMICE LOTION 1 GAL**
Item No: **25218**
Product Type: **Waterless hand cleaner**

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	Weight%	ACGIH; TLV-TWA	OSHA PEL
WATER 7732-18-5	>75	Not listed	Not listed
PUMICE 1332-09-8	<10	10 mg/m^3 (inhal); 3 mg/m^3 (resp) ACGIH	Not listed
POLYMER EMULSION (PROPRIETARY)	<5	Not listed	Not listed
ETHOXYLATED C11-C16 ALCOHOL 127036-24-2	<5	Not listed	Not listed
CASTOR OIL 8001-79-4	<5	Not listed	Not listed
TRIETHANOLAMINE 102-71-6	<5	5 mg/m^3	Not listed

3. HAZARDS IDENTIFICATION

Toxicity: May irritate the eyes. May cause skin sensitization.
Primary Routes of Entry: Eye and skin contact, ingestion, inhalation
Signs and Symptoms of Exposure: None under normal conditons of use.

Component	Weight%	NTP	ACGIH Carcinogens	IARC Carcinogen
TRIETHANOLAMINE 102-71-6	<5	male rat-equivocal evidence; female rat-no evidence; male mice-inadequate; female mice-inadequate		Group 3; Monograph 77, 2000

Aggravated Medical Condition: None known.

4. FIRST AID MEASURES

Ingestion: If swallowed, DO NOT induce vomiting. Keep individual calm. Obtain medical attention.
Inhalation: Immediate medical attention is not required.
Skin Contact: Flush with water.
Eye Contact: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

5. FIRE FIGHTING MEASURES

Flash Point °F(C°): >200°F CC
Recommended Extinguishing Media: Carbon dioxide, Water, dry chemical
Special Fire-Fighting Procedures: No special procedures.
Hazardous Products of Combustion: None anticipated
Unusual Fire/Explosion Hazards: None.

Lower Explosive Limit: N/D
Upper Explosive Limit: N/D

6. ACCIDENTAL RELEASE MEASURES

Spill Procedures: Rinse away with water or wipe up with a towel.

7. HANDLING AND STORAGE

Storage: Hand cleaner should be stored at temperatures between 40 degrees F. and 100 degrees F. Do not allow freezing.

Handling: Follow all general safety precautions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eyes: Not required.
Skin: Not required.
Ventilation: Not required under normal use.
Respiratory Protection: Not required under normal use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: White lotion with pumice
Odor: Orange
Boiling Point: >200°F / >93°C
pH: 6.0-8.0
Solubility in Water: Soluble
Specific Gravity: 1.05
VOC(Wt.%): <1%
Vapor Pressure: N/D
Vapor Density (Air=1): >1
Evaporation Rate: <1 (butyl acetate = 1)

10. STABILITY AND REACTIVITY

Chemical Stability: Stable at normal conditions
Hazardous Polymerization: Will not occur
Incompatabilities: None known
Conditions to Avoid: Freezing.
Hazardous Products of Combustion: None anticipated

11. TOXICOLOGICAL INFORMATION

See Section 3

12. ECOLOGICAL INFORMATION

No data available

13. DISPOSAL CONSIDERATIONS

Recommended Method of Disposal: Dispose of uncontaminated material through sewer system with permission of the authority responsible for that system.

US EPA Waste Number: NH - Not a RCRA Hazardous Waste Material

14. TRANSPORTATION INFORMATION

DOT (49CFR 172)

U.S. Department of Transportation - DOT - 49 CFR (Ground)

DOT Shipping Name: Not regulated
Hazard Class: None
UN/ID Number: None

IATA (Air)

Proper Shipping Name: Not regulated
Class or Division: None
UN/ID Number: None

IMDG (Vessel)

Proper Shipping Name: Not regulated
Hazard Class: None
UN Number: None

Marine Pollutant: None

15. REGULATORY INFORMATION

SARA 313 Chemicals: The following component(s) is listed as a SARA Section 313 Toxic Chemical.

None

California Proposition 65: No California Prop 65 chemicals are known to be present.

TSCA Inventory Status: All components of this product are listed (or exempt) on the EPA TSCA inventory.

16. OTHER INFORMATION

Estimated NFPA Rating: HEALTH 1, FLAMMABILITY 1 , REACTIVITY 0.
Estimated HMIS Classification: HEALTH 1, FLAMMABILITY 1, PHYSICAL HAZARD 0
(NFPA is a registered trademark of the National Fire Protection Association)
HMIS is a registered trademark of the National Paint and Coatings Association

Prepared By: Denise Boyd, Manager-Environmental, Health & Safety
Company: Permatex. Inc. 10 Columbus Blvd. Hartford, CT USA 06106
Telephone No.: 1-87-Permatex (877) 376-2839

Revision Date: September 12, 2011
Revision Number: 1

MATERIAL SAFETY DATA SHEET

Current Revision: 06/21/10

Reference: F-23304/23301
M-90805
SR-0218-01

210 Plastic Cleaner/Polish
Sumner Labs.

01. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: 210 Plastic Cleaner Polish
PRODUCT DESCRIPTION: Aerosol plastic cleaner polish
PRODUCT CODE: FG I# 23304; Mix I# 90805;

MANUFACTURER:
Shield Packaging Co., Inc.
50 Oxford Ave. Dudley, MA 01571

24 HR. EMERGENCY TELEPHONE NUMBER
CHEMTREC 800-424-9300

02. COMPOSITION

CAS #	CHEMICAL NAME	%
8030-30	Petroleum Spirits	25 - 30
106-97-8	Butane	4 - 8
74-98-6	Propane	3 - 7

03. HAZARD IDENTIFICATION

Do not use or store near heat, sparks, open flame or any other source of ignition.

POTENTIAL HEALTH EFFECTS

EYES: May cause temporary irritation, tearing and blurred vision.

SKIN:
Can cause skin irritation. Prolonged or frequent skin contact may cause allergic reactions in some individuals.

INGESTION:
May be harmful if swallowed. Small amounts of this product aspirated into the respiratory system during ingestion or vomiting may cause mild to severe lung injury.

INHALATION: Excessive inhalation may be irritation to the respiratory tract.

CHRONIC: None known

04. FIRST AID MEASURES

EYES:
Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing the eye. Call a poison control center or doctor for treatment advice.

SKIN:
Remove contaminated clothing. Rinse skin immediately with soap and water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

INGESTION:
If swallowed, IMMEDIATELY call a poison control center or doctor for treatment advice. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

INHALATION:
Remove affected person to fresh air. If person is not breathing call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth if possible. Call a poison control center or doctor for treatment advice.

05. FIRE FIGHTING MEASURES

FLASHPOINT AND METHOD: N/A Aerosol

FLAMMABLE CLASS: N/A

EXTINGUISHING MEDIA:
Carbon Dioxide – Dry Chemical – Foam. Use water to cool material stored in vicinity of fire.

HAZARDOUS COMBUSTION PRODUCTS:
Under fire conditions this product may decompose to give off toxic gasses such as carbon monoxide, carbon dioxide and nitrogen oxides.

FIREFIGHTING PROCEDURES: Under fire conditions. Keep aerosol cans cool with a water stream.

SENSITIVE TO STATIC DISCHARGE: No.

06. ACCIDENTAL RELEASE MEASURES

SMALL SPILL:
Remove all sources of ignition. Dike or contain release. Isolate and control access to the release area. Absorb with appropriate absorbent. Clean spill area of residues and absorbent.

LARGE SPILL:
Remove all sources of ignition. Dike or contain release. Isolate and control access to the release area. Absorb with appropriate absorbent. Clean spill area of residues and absorbent.

ENVIRONMENTAL PRECAUTIONS:
Remove all sources of ignition. Contaminated absorbent and wash water should be disposed of according to local, state and federal regulations.

07. HANDLING AND STORAGE

GENERAL PROCEDURES: Do NOT use or store near heat, sparks, open flame or other ignition source

HANDLING:
Avoid contact with skin, eyes and clothing. Avoid breathing vapors or spray mists of this product. Mechanical ventilation should be used when handling this product in enclosed spaces. Do not contaminate water, feed or food by storage, handling or disposal. Read and observe all precautions on the label.

STORAGE:
Store in a cool, dry area. Do **NOT** use or store near heat, open flame, ignition source or near strong acids, bases and oxidizers. Empty containers may retain product residues.

KEEP OUT OF THE REACH OF CHILDREN

08. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE GUIDELINES:

OSHA HAZARDOUS COMPONENTS (29 CFR 1910.1200)

CAS #	CHEMICAL NAME	COMMON NAME	%	OSHA (PEL)	ACGIH (TLV)	OTHER (LIMITS)
74-98-6	Propane		<15	1000	1000	None
106-97-8	n-Butane		<15	800	800	None

ENGINEERING CONTROLS:
Mechanical ventilation should be used when handling this product in enclosed spaces.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Take precautions to avoid contact with eyes.

SKIN: Take precautions to avoid contact with skin and clothing.

RESPIRATORY:
Use in well ventilated areas. Take precautions to avoid breathing vapors or spray mist of this product.

DO NOT SMOKE, EAT, OR DRINK WHILE SPRAYING THIS PRODUCT

WASH HANDS THOROUGHLY AFTER USING THIS PRODUCT

09. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid in pressurized aerosol can
BOILING POINT (F):	Not determined for aerosol
FREEZING POINT:	Not determined for aerosol
COLOR:	Clear Liquid
SPECIFIC GRAVITY (H2O = 1):	0.89
pH:	N/A
VAPOR PRESSURE (mm H):	Not determined for aerosol
VOLATILE BY VOLUME - %:	N/A
VAPOR DENSITY (AIR=1):	> 1
EVAPORATION RATE (water = 1):	>1
APPEARANCE AND ODOR:	Clear aerosol spray, slight solvent odor
SOLUBILITY IN WATER:	Insoluble
VISCOSITY:	Not determined for aerosol
VOC:	27%

10. STABILITY AND REACTIVITY

STABLE: Yes

HAZARDOUS POLYMERIZATION: Will NOT occur.

CONDITIONS TO AVOID: Avoid heat, sparks, open flames and other sources of ignition.

HAZARDOUS DECOMPOSITION PRODUCTS:
Carbon monoxide, carbon dioxide and non-combusted hydrocarbons.

11. TOXICOLOGICAL INFORMATION

ACUTE

DERMAL LD_{50}: N/D

ORAL LD_{50}: N/D

INHALATION LC_{50}: N/D

EYE EFFECTS: Minimally irritating.

SKIN EFFECTS: Mildly irritating.

SENSITIZATION: N/D

COMMENTS:
None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as being carcinogens.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA: Environmental data is not available for this product.

ECOTOXICOLOGICAL INFORMATION:
This product may be toxic to fish or other aquatic organisms. Do **NOT** discharge effluent containing this product into sewer systems without previously notifying the local sewage treatment plant authority, Contact your State Water Board or Regional Office of the EPA for guidance.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD:
Wastes resulting from the use of this product must be disposed of at an approved waste disposal facility.

EMPTY CONTAINER:
Do **NOT** puncture or incinerate empty aerosol cans. Dispose of in accordance with procedures approved by State and Local authorities.

RCRA/EPA WASTE INFORMATION:
None of the ingredients in this product appear on the RCRA lists (40 CFR 261.24, 40 CFR 251.33) or CERCLA Hazardous Substance list (40 CFR Part 302 Table 302.4).

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)
PROPER SHIPPING NAME: N/D

PRIMARY HAZARD CLASS/DIVISION: N/D

OTHER SHIPPING INFORMATION: N/D

AIR (ICAO/IATA)
PROPER SHIPPING NAME: N/D

PRIMARY HAZARD CLASS/DIVISION: N/D

VESSEL (IMO/IMDG)
PROPER SHIPPING NAME: N/D

15. REGULATORY INFORMATION

U.S. FEDERAL, STATE and LOCAL REGULATORY INFORMATION:

This product and/or its constituents listed herein are on the EPA TSCA inventory. Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/or local reporting requirements. This product and/or its constituents may also be subject to other federal, state or local regulations. Consult those regulations applicable to your operation.

CLEAN WATER ACT:

Any spill or release of this product to "navigable waters" (essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion must be reported immediately to the National Response Center (800-424-8802) as required by U.S. Federal Law. Also contact appropriate state and local regulatory agencies as required.

SARA SECTION 311/312 HAZARD CATEGORIES:

ACUTE HEALTH	CHRONIC HEALTH	FIRE	SUDDEN RELEASE OF PRESSURE	REACTIVITY
YES	YES	YES	YES	NO

SARA SECTION 313 REPORTABLE INGREDIENTS:

This product contains no toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) 0f 1986 and 49 CFR 372.

COMPONENT	CAS #	MAX %
None	None	0

SARA SECTION 302/304 EMERGENCY PLANNING

EMERGENCY PLAN:
There are no SARA Title III Section 302 extremely hazardous substances present in this product (40 CFR 355)

VOLATILE ORGANIC COMPOUNDS (VOC): This product contains 27% VOC's

16. OTHER INFORMATION

None

REVISION HISTORY:

06/21/10 – Original Issue

The information contained in this Material Safety Data Sheet is furnished without warranty of any kind, expressed or implied. Information in this Data Sheet has been assembled by the manufacturer based on its own studies and on the work of others and is believed to be correct as of the date issued. However, no warranty of any kind is expressed or implied as to the accuracy, completeness, or adequacy of the information obtained herein. The Manufacturer shall not be liable, regardless of fault, to the vendee, the vendee's employees, or anyone for any direct, special or consequential damages arising out of, or in connection with, the accuracy, completeness, or adequacy of the information obtained herein. It is intended to assist in the normal safe usage of the product.

Newell Rubbermaid Brands That Matter | Office Products Group

MATERIAL SAFETY DATA SHEET

MSDS # 33811

Section One: Identification

Sanford, L.P.
2707 Butterfield Road
Oak Brook, IL 60523 USA
800-323-0749 or 630-481-2000

EMERGENCY MEDICAL NUMBER:
888-786-0972

Product Name: PaperMate Write Bros. Stick Pen, Write Bros. Grip Pen, PMOP

Colors: Black, Red, Blue, Violet, Green, Orange

Section Two: Hazard Identification

This product is considered safe under normal use conditions.

Section Three: Composition

Glycols (122-99-6,111-90-0,25265-71-8,107-41-5), alcohol (100-51-6), resins, dyes, additives

Section Four: First Aid Measures

Inhalation: Not an inhalation hazard

Skin Contact: Wash with soap and water.

Eye Contact: Flush with clear, tepid water.

Ingestion: The mouth may be cleansed with a soap and water solution.
If a large amount is ingested (several pens), consult a physician.

Section Five: Fire Fighting Measures

Flash Point: Greater than 200F

Flammability Limits (% by volume): Lower: Not applicable Upper: Not applicable

Extinguishing Media: Dry chemical, foam, carbon dioxide, water fog.

Special Fire Fighting Measures: If fires involving large quantities, use self-contained breathing appartus and other protective equipment.

Unusual Fire and Explosion Hazards: Hazardous decomposition products may be produced in a fire situation.

Section Six: Accidental Release Measures

In Case of Spill or Accidental Release: Wipe up with absorbent material.

Section Seven: Handling and Storage

Handling: Do not shake pen.

Storage: Keep cap on pen when not in use.

Section Eight: Exposure Controls and Personal Protection

Eye Protection: None under normal use conditions.

Clothing: None under normal use conditions.

Respirator: None under normal use conditions.

Ventilation: None under normal use conditions.

Section Nine: Physical and Chemical Properties

For ink unless otherwise specified:

Boiling Point:	Not available
Specific Gravity:	~1.1
Vapor Pressure:	Not available
Solubility in Water:	Slightly soluble
Evaporation Rate:	Not available
Appearance/Odor:	Colored liquid; no odor

Section Ten: Stability and Reactivity

Stability:	Stable
Conditions to Avoid:	None known
Chemical Incompatibility:	None known
Hazardous Decomposition:	May produce oxides of carbon, nitrogen, and various hydrocarbons in fire.
Hazardous Polymerization:	Will not occur

Section Eleven: Toxicological Information

See Section Two: Hazard Identification for any hazards

Section Twelve: Ecological Information

Not available

Section Thirteen: Disposal Considerations

Dispose in accordance with Federal, State, and Local Regulations.

Section Fourteen: Transport Information

DOT:	Not regulated
IATA:	Not regulated
IMO:	Not regulated

Section Fifteen: Regulatory Information

TSCA: The product listed on this Material Safety Data Sheet is not listed on the Toxic Substances Control Act Inventory. All ingredients used to manufacture this product are listed on the TSCA Inventory

Section Sixteen: Other Information

HMIS Code	
Health	N/A
Flammability	N/A
Reactivity	N/A
Personal Protection	N/A

0=Minimal / 4 = Severe

NewellRubbermaid, Inc (Sanford L.P) has been advised by Counsel that the OSHA Hazard Communication Standard and the Health Canada Workplace Hazardous Materials Information Standard do not apply to the product described in this Material Safety Data Sheet. The reasons for the exemptions are contained in 29 CFR 1910.1200(b)(6)(ix) as amended Sept 14, 2009 per the Code of Federal Regulations and also Canadian Hazardous Products Act part 12 section (f) as amended June 1, 2009. The information contained in this MSDS is forwarded to you for your information, but is not meant to imply that the product is covered by nor is this MSDS meant to comply with all requirements of the hazard communication standards.

Safety data sheet

based on ordinance (EC) No. 1907/2006

rath's

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier: rath's pr88 - Skin Protection Cream

Company:

Ursula Rath GmbH
Messingweg 11
D-48308 Senden

Tel.: +49 2597 9624-0
Fax: +49 2597 9624-50
Email: info@rath.de

Emergency telephone number

Ursula Rath GmbH (Mon - Fri 8:00 - 16:30)
Tel. +49 2597 9624-0

Information centre in case of poisoning
Tel. +49 761 19240

SECTION 2: HAZARDS IDENTIFICATION

This product is not expected to prove hazardous if used for its intended purpose as a cosmetic product to protect the skin (avoid eye contact).

SECTION 3: COMPOSITION / INFORMATION OF INGREDIENTS

Chemical characterisation: Aqueous mixture of active cosmetic ingredients
Oil/water emulsion

Ingredients: (Declaration acc. Cosmetics Ordinance acc. INCI)

Aqua (Water)
Glycerin
Sodium Silicate
Sodium Tallowate
Ceteareth-25
Paraffin
Sodium Cocoate
Sodium Hydroxide
Sodium Chloride
Tetrasodium Glutamate Diacetate
Sodium Thiosulfate
Parfum (Fragrance)

SECTION 4: FIRST AID MEASURES

In case of eye contact: Rinse affected eye(s) open immediately with plenty of water - consult a doctor if necessary.

In case of ingestion: Rinse mouth out and drink plenty of water - consult a doctor if necessary.

SECTION 5: FIREFIGHTING MEASURES

Suitable extinguishing agent: Water only as jet spray. Foam, powder, CO_2.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Procedures for cleaning / collection: Collect in a container. clean up any remaining product using suitable materials or water to avoid slipping.

SECTION 7: HANDLING AND STORAGE

Handling/storage: Keep the packages closed. Do not store at temperatures below -15 °C or over +35 °C.
Storage stability in unopened, original packages at room temperature (approx. 20 °C) > 30 months.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Skin protection agent for use before work and for rinsing off with water after work.
The product is classified as personal protective equipment.

Avoid contact with the eyes.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Form:	Foam/cream/paste
Colour:	White
Smell:	Like almonds
pH-value:	Approx. 9.0 (1g/l H2O) (20 °C)
Melting temperature:	Approx. 40 °C
Ignition temperature:	n.a.
Flash point:	n.a.; in closed jar
Explosion limits:	not available
Density:	(20 °C) approx. 0.4 g/cm^3
Vapour pressure:	not available
Viscosity:	Structurally viscous
Solubility in water:	Emulsifiable

SECTION 10: STABILITY AND REACTIVITY

Stability: When handled correctly, the product is stable in storage.

SECTION 11: TOXICOLOGICAL INFORMATION

All ingredients are raw materials intended for the production of cosmetic products. The product has been subjected to a safety assessment acc. the Cosmetics Ordinance and has been judged not hazardous to health if used for its intended purpose. The product skin compatibility has been dermatologically confirmed as very good.

SECTION 12: ECOLOGICAL INFORMATION

Biological degradability: The product is biologically degradable.

SECTION 13: DISPOSAL CONSIDERATIONS

Product: Disposal acc. the local authority regulations.

Packaging: If not specified otherwise by the authorities, empty packaging can be treated as normal household waste or recycled.

SECTION 14: TRANSPORT INFORMATION

This product is not a hazardous material acc. GGVSE/ADR (GGVSE = German ordinance on "Carriage of Dangerous Goods by Road and Rail"), GGVSee/IMDG (GGGVSee = German ordinance on "Carriage of Dangerous Goods by Sea), IATA-DGR; the product has not been classified acc. ADNR/GGVBinSch. (ADNR = Regulation of Dangerous Goods on the Rhine / GGVBinSch = CDR Inland Waterway Shipping

SECTION 15: REGULATORY INFORMATION

The product is subject to the Cosmetics Ordinance and is therefore excluded from the marking regulations acc. GefStoffV (German Hazardous Substances Ordinance)

Water hazard class: 1 (Classification acc. VwVwS (German Administrative Regulation Regarding Water Pollutants)

SECTION 16: OTHER INFORMATION

This information is based on our current knowledge and relates to the product in delivery condition. It is intended to provide criteria for safe use and does not represent an assurance on certain characteristics.

As a skin protection agent, the product is subject to the legal regulations stipulated in the Cosmetics Ordinance. The legislators expressly exclude safety data sheets for cosmetics (Ordinance (EC) No. 1907/2006).

You are receiving this data sheet because you have expressly requested it; this data sheet cannot serve to classify our product as a hazardous substance or a hazardous preparation.

n.a. = Not applicable

PRC 033-C

Part B

MATERIAL SAFETY DATA SHEET
PRC-DeSoto International

Trade Name: PR-1422 B-1/2, Part B
Product Identifier: FM4104 Preparation Date: 01/24/03

SECTION I - MANUFACTURER AND PRODUCT INFORMATION

Supplier : PRC-DeSoto International
A PPG Industries Company
5676 Timberlea Blvd.
Mississauga, ON
L4W 4M6

Telephone : (905) 629-7999
Emergency Only : (613) 996-6666

Trade Name: PR-1422 B-1/2, Part B
Product Identifier: FM4104
Product Use: Fuel Tank Sealant-Base
MSDS ID Number: FM4104-00
Other Names: None

Manufacturer: PRC-DeSoto International, Inc.
A PPG Industries Company
5430 San Fernando Road
P.O. Box 1800
Glendale CA 91209

Information Phone: (818) 240-2060
Emergency Phone : (800) 228-5635

SECTION II - COMPOSITION

HAZARDOUS INGREDIENTS

INGREDIENT	CAS NUMBER	Wt %
Liquid Polysulphide Polymer with Thiol End Groups	068611-50-7	60 - 100
Amorphous Fumed Silica	067762-90-7	1 - 5
Formaldehyde polymer w/ 3-Chloro-1-Propene & Phenol	028470-78-2	1 - 5
Toluene	000108-88-3	1 - 5
Modified polysulfide polymer	REF00000006	1 - 5
Bisphenol A/Epichlorohydrin Based Epoxy Resin	025036-25-3	0.5-1.5

Continued

Trade Name: PR-1422 B-1/2, Part B
Product Identifier: FM4104 Preparation Date: 01/24/03

INGREDIENT	CAS NUMBER	EXPOSURE LIMITS (ppm) ACGIH TLVs TWA	ACGIH TLVs STEL	OSHA PELs TWA	OSHA PELs STEL	
Liquid Polysulphide Polymer with Thiol End Groups	068611-50-7	N/E	N/E	N/E	N/E	
Amorphous Fumed Silica	067762-90-7	10 mg/m3	N/E	N/E	N/E	S
Formaldehyde polymer w/ 3-Chloro-1-Propene & Phenol	028470-78-2	N/E	N/E	N/E	N/E	
Toluene	000108-88-3	50	N/E	100	N/E	S
Modified polysulfide polymer	REF00000006	N/E		N/E		
Bisphenol A/Epichlorohydrin Based Epoxy Resin	025036-25-3	10 mg/m3	N/E	15 mg/m3	N/E	S

Footnotes
(M) Maximum Exposure Limit
(S) Occupational Exposure Standard
(R) Supplier's Recommended Limit

N/Av = Not Available = X N/Ap = Not Applicable
N/E = Not Established

SECTION III - HEALTH HAZARD DATA

Permissible Exposure Limits for Product:
Not established for product. See Section II.

ROUTE OF ENTRY AND EFFECTS OF OVER-EXPOSURE

EYE CONTACT :
May cause irritation.

SKIN CONTACT :
Substance can cause moderate irritation.

INHALATION:
Nose and throat irritation.

Continued

INGESTION :
May cause gastrointestinal upset.

OTHER HEALTH EFFECTS:
This material contains no ingredient known or suspected to be a carcinogen, teratogen, mutagen or reproductive toxin unless indicated below. No synergistic materials known unless indicated below.

SECTION IV - FIRST AID MEASURES

EYE CONTACT:
Flush with luke-warm water for 15 minutes. If irritation persists, consult a physician.

SKIN CONTACT :
Wash affected area with soap and water. If irritation persists, consult a physician.

INHALATION:
Remove victim from exposure to fresh air. If irritation persists, consult a physician.

INGESTION:
Consult a physician

SECTION V - FIRE AND EXPLOSION HAZARD IDENTIFICATION

FLASHPOINT:	158 F	69.99 C	Method:	PMCC
LEL (%):	N/Av			
UEL (%):	N/Av			
AUTO-IGNITION TEMPERATURE:	N/Av			

CONDITIONS OF FLAMMABILITY:
Material will burn on exposure to flame.

Continued

Trade Name: PR-1422 B-1/2, Part B
Product Identifier: FM4104 Preparation Date: 01/24/03

EXTINGUISHING MEDIA:
CO2, dry chemical, foam
SPECIAL FIRE FIGHTING PROCEDURES AND UNUSUAL FIRE HAZARDS:
Decomposition and combustion products may be hazardous. Wear an air-supplied respirator and complete personal protection. High temperatures may cause pressure built-up in closed containers. Use water to cool heat exposed containers.
EXPLOSION DATA:
Not sensitive to mechanical impact or to static discharge.

SECTION VI - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS SPILLED OR RELEASED:
Cover with absorbent. Scoop into containers. Clean up residue with a suitable cleaning solvent.

SECTION VII - HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:
Store in closed containers in an area away from any incompatible materials. Wash thoroughly before eating, drinking or smoking.

SECTION VIII - EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:
General ventilation to maintain vapours below TWA.
RESPIRATORY PROTECTION:
Not normally required.
EYE PROTECTION:
Safety Glasses.

Continued

Trade Name: PR-1422 B-1/2, Part B
Product Identifier: FM4104 Preparation Date: 01/24/03

SKIN PROTECTION:
Chemically resistant gloves.
OTHER PROTECTIVE EQUIPMENT:
During spray applications, complete skin protection should be worn.

SECTION IX - PHYSICAL CHARACTERISTICS

Low Boiling Point:	N/Av
High Boiling Point:	N/Av
Odour Threshold (ppm):	N/Av
Vapour Density:	Heavier than air.
Evaporation Rate:	Slower than n-butyl acetate
Vapour Pressure (mm Hg):	N/Av
Freezing Point:	N/Av
% Volatiles by volume:	3.4
Specific Gravity:	1.381
Appearance and Odour:	Brown Thixotropic Paste
Coefficient of water/oil:	N/Av
VOC (GR/L):	104 Combined
pH:	N/Av
Physical State:	Paste

SECTION X - STABILITY AND REACTIVITY

STABILITY:
Stable.
INCOMPATIBILITY AND CONDITIONS TO AVOID:
Avoid contact with strong oxidizing agents.
HAZARDOUS DECOMPOSITION PRODUCTS:
Decomposes on combustion producing oxides of carbon and nitrogen, SO2, traces of H2S.

Continued

Trade Name: PR-1422 B-1/2, Part B
Product Identifier: FM4104 Preparation Date: 01/24/03

SECTION XI - TOXICOLOGICAL PROPERTIES

INGREDIENT	CAS NUMBER	LD50	LC50
Liquid Polysulphide Polymer with Thiol End Groups	068611-50-7	5000 mg/kg,oral,rat	N/AV.
Amorphous Fumed Silica	067762-90-7	5000 mg/kg,oral,rat	4.9 mg/L,rat,4hr.
Formaldehyde polymer w/ 3-Chloro-1-Propene & Phenol	028470-78-2	N/AV.	N/AV.
Toluene	000108-88-3	2600 mg/kg,oral,rat	8800 ppm,rat,4hr.
Modified polysulfide polymer	REF00000006		
Bisphenol A/Epichlorohydrin Based Epoxy Resin	025036-25-3	3000 mg/kg,oral,rat	800 mg/m3,rat,4hr.

NOTICE:
There are no data available for the product itself.

SECTION XII - ECOLOGICAL INFORMATION

NOTICE:
There are no data available for the product itself.

SECTION XIII - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD:
Dispose of in compliance with local provincial regulations.

Continued

Trade Name: PR-1422 B-1/2, Part B
Product Identifier: FM4104 Preparation Date: 01/24/03

SECTION XIV - TRANSPORT INFORMATION

TRANSPORT CANADA DANGEROUS GOODS SHIPPING INFORMATION

PROPER SHIPPING NAME : Not considered "Dangerous Goods"

UN Number : N/Ap

Class : N/Ap

Packing Group : N/Ap

SECTION XV - REGULATORY INFORMATION

CEPA DOMESTIC SUBSTANCE LIST STATUS:
Contains components not listed on the DSL or NDSL.

WHMIS CLASS(ES):
D2B

NOTICE:
This MSDS has been prepared in accordance with Canadian Legislation and contains all items required by the Controlled Products Regulations.

Continued

Trade Name: PR-1422 B-1/2, Part B
Product Identifier: FM4104 Preparation Date: 01/24/03

SECTION XVI - PREPARATION AND OTHER INFORMATION

Prepared by: Health & Safety Department
Preparation Date: 01/24/03
Revision Reason:
New MSDS

The information provided herein is, to the best of the manufacturer's knowledge, current, accurate, and complete, based on information reasonably available.

End of Document

NewellRubbermaid Brands That Matter | Office Products Group

MATERIAL SAFETY DATA SHEET

MSDS # 03602

Section One: Identification

Sanford, L.P.
2707 Butterfield Road
Oak Brook, IL 60523 USA
800-323-0749 or 630-481-2000

EMERGENCY MEDICAL NUMBER:

888-786-0972

Product Name: Prismacolor Premier Colored Pencils

Colors: All Colors

NewellRubbermaid, Inc (Sanford L.P.) is a member of The Art and Creative Materials Institute, Inc. This product is certified by the Institute to be labeled in accordance with the voluntary chronic hazard labeling standard ASTM D-4236 and is labeled with the AP Non Toxic Seal. Products bearing the AP Approved Product Seal of The Art and Creative Materials Institute, Inc. are certified in a program of toxicological evaluation by a medical expert, subject to review by the Institute Toxicology Advisory Board, to contain no materials in sufficient quantities to be toxic or injurious to humans, or to cause acute toxicity or chronic health problems.

Section Two: Hazard Identification

This product is considered safe under normal use conditions.

Section Three: Composition

This product does not contain Hazardous Material as defined in 29 CFR 1910.1200

Section Four: First Aid Measures

Inhalation: This product is considered safe under normal use conditions.

Skin Contact: This product is considered safe under normal use conditions.

Eye Contact: This product is considered safe under normal use conditions.

Ingestion: This product is considered safe under normal use conditions.

Section Five: Fire Fighting Measures

Flash Point: Not available

Flammability Limits (% by volume): Lower: Not available Upper: Not available

Extinguishing Media: As appropriate for surrounding area.

Special Fire Fighting Measures: Pencil products stored in bulk are subject to ignition by fire and may, in the case of fire, release toxic and other irritating gases. A self-contained breathing apparatus should be used when there is a potential exposure to combustion products of pencils burning in bulk.

Unusual Fire and Explosion Hazards: None

Section Six: Accidental Release Measures

In Case of Spill or Accidental Release: Normal clean up

Section Seven: Handling and Storage

Handling: No special handling requirements.

Storage: No special storage requirements.

Section Eight: Exposure Controls and Personal Protection

Eye Protection: None under normal use conditions.

Clothing: None under normal use conditions.

Respirator: None under normal use conditions.

Ventilation: None under normal use conditions.

Section Nine: Physical and Chemical Properties

Boiling Point:	Not available
Specific Gravity:	Not available
Vapor Pressure:	Not determined
Solubility in Water:	Not determined
Evaporation Rate:	Not determined
Appearance/Odor:	Colored core; no odor

Section Ten: Stability and Reactivity

Stability:	Stable
Conditions to Avoid:	High heat and open flames
Chemical Incompatibility:	None known
Hazardous Decomposition:	None known
Hazardous Polymerization:	Will not occur

Section Eleven: Toxicological Information

See Section Two: Hazard Identification for any hazards

Section Twelve: Ecological Information

Not available

Section Thirteen: Disposal Considerations

Dispose in accordance with Federal, State, and Local Regulations.

Section Fourteen: Transport Information

DOT:	Not regulated
IATA:	Not regulated
IMO:	Not regulated

Section Fifteen: Regulatory Information

TSCA: The product listed on this Material Safety Data Sheet is not listed on the Toxic Substances Control Act Inventory. All ingredients used to manufacture this product are listed on the TSCA Inventory

Section Sixteen: Other Information

HMIS Code	
Health	N/A
Flammability	N/A
Reactivity	N/A
Personal Protection	N/A

0=Minimal / 4 = Severe

NewellRubbermaid, Inc (Sanford L.P) has been advised by Counsel that the OSHA Hazard Communication Standard and the Health Canada Workplace Hazardous Materials Information Standard do not apply to the product described in this Material Safety Data Sheet. The reasons for the exemptions are contained in 29 CFR 1910.1200(b)(6)(ix) as amended Sept 14, 2009 per the Code of Federal Regulations and also Canadian Hazardous Products Act part 12 section (f) as amended June 1, 2009. The information contained in this MSDS is forwarded to you for your information, but is not meant to imply that the product is covered by nor is this MSDS meant to comply with all requirements of the hazard communication standards.

MSDS - Propylene Glycol

Issued September 4, 2011

Section 1. Product Information

Product Name: PGUSP - Propylene Glycol - USP

Distributed by Pestell Minerals & Ingredients, New Hamburg, ON Canada

24 Hour Emergency Telephone (Canutec): 613-996-6666

Section 2. Composition/Information on Ingredients

1,2-propanediol 100% CAS #57-55-6

Section 3. Hazard Identification

Appearance: Colorless mobile liquid

Odor: Mild

Warning Statement

Caution: Aspiration hazard if swallowed. Can enter lungs and cause damage

Attention: This product is not to be used to produce fogs or mists in theatrical, musical or other entertainment performances.

Potential Health Effects

Primary Route of Exposure: Eyes, Skin, Inhalation

Effects of Overexposure

Eyes: May cause minimal irritation, experienced as temporary discomfort

Skin: Brief contact is not irritating. Prolonged contact, as with clothing wetted with material, may cause defatting or skin or irritation, seen as local redness with possible mild discomfort. Other than the potential skin irritation effects noted above, acute (short term) adverse effects are not expected from brief skin contact; see other effects below and Section 11 for information regarding potential long term effects.

Inhalation: Vapors or mist, in excess of permissible concentrations, or in unusually high concentrations generated from spraying, heating the material or as from exposure in poorly ventilated areas or confined spaces, may cause irritation of the nose and throat, headache, nausea, and drowsiness.

Ingestion: If more than several mouthfuls are swallowed, abdominal discomfort, nausea and diarrhea may occur. Aspiration may occur during swallowing or vomiting resulting in lung damage.

Sensitization Properties: Unknown

Chronic: No adverse effects have been documented in humans as a result of chronic exposure. Section 11 may contain applicable animal data.

Medical Conditions Aggravated by Exposure: There is no evidence that this product aggravates an existing medical condition.

Section 4. First Aid Measures

Eyes: Flush eyes with plenty of water for several minutes. Get medical attention if eye irritation persists.

Skin: Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.

Ingestion: If person is conscious and can swallow, give two glasses of water (16 oz) but do not induce vomiting. If vomiting occurs, give fluids again. Have medical personnel determine if evacuation of stomach or induction of vomiting is necessary. Do not give anything by mouth to an unconscious or convulsing person.

Inhalation: If irritation, headache, nausea or drowsiness occurs, remove to fresh air. Get medical attention if breathing becomes difficult or respiratory irritation persists.

Other Instructions: Aspiration of this product during induced emesis may result in severe lung injury. If evacuation of stomach is necessary, use method least likely to cause aspiration, such as gastric lavage after endotracheal intubation. Contact a Poison Center for additional treatment information.

Section 5. Fire Fighting Measures

Ignition Temperature: 371.1^{o}C (700^{o}F)

Flash Point: 100^{o}C (212^{o}F)

Flammable Limits % (Lower-Upper): Lower: 2.6 Upper: 12.5

Recommended Fire Extinguishing Agents and Special Procedures: Use water spray, dry chemical foam, or carbon dioxide to extinguish flames. Use water spray to cool fire exposed containers.

Unusual or Explosive Hazards: None

Special Protective Equipment for Firefighters: No special equipment or procedures required.

Section 6. Accidental Release Measures

Procedures in Case of Accidental Release, Breakage or Leakage

Contain spill if possible, contain with absorbent materials such as clay or soil, and shovel up. Avoid skin and eye contact.

Section 7. Handling and Storage

Precautions to be Taken in Handling: Minimum feasible handling temperatures should be maintained.

Precautions to be Taken in Storage: Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.

Section 8. Exposure Controls/Personal Protections

Protective Equipment (Type)

Eye/Face Protection: Safety glasses, chemical goggles, or face shield recommended to prevent eye contact.

Skin Protection: Workers should wash exposed skin several times daily with soap and water. Soiled work clothing should be laundered or dry-cleaned.

Respiratory Protection: Airborne concentrations should be kept to lowest levels possible. If vapor, mist or dust is generated and the occupational exposure limit of the product or any component of the product is exceeded, use appropriate NIOSH or MSHA approved air purifying or air supplied respirator after determining the airborne concentration of the contaminant. Air supplied respirators should always be worn when airborne concentration of the

contaminant or oxygen content is unknown.

Ventilation: Local exhaust ventilation recommended if generating vapor, dust or mist. If exhaust ventilation is not available or inadequate, use MSHA or NIOSH approved respirator as appropriate.

Exposure Limit for the Total Product: None established for product

Section 9. Physical and Chemical Properties

Appearance: Colorless mobile liquid

Odor: Mild

Boiling Point: 187.2C (369F)

Melting/Freezing Point: <-60 (<-76F)

Specific Gravity: 1.0381

pH: 6

Vapor Pressure: <1 mm Hg at 25C (77F)

Viscosity: <20 cSt at 40C (104F)

VOC Content: 28% by ASTM D 2369

Vapor Density (Air=1): 2.6

Solubility in Water %: >10

Section 10. Stability and Reactivity

Products evolved when subjected to heat or combustion: Toxic levels of carbon monoxide, irritating aldehydes and ketones.

Hazardous Polymerization: Will not occur

Section 11. Toxicological Information

Oral: LD50> 5.00 g/kg (rat) practically non-toxic

Dermal: LD50> 2.00 g/kg (rabbit) practically non-toxic

Inhalation: Believed to be practically non-toxic

Irritation Indes, Estimation of Irritation (Species)

Eyes: (Draize) Believed to be <15.00/110 (rabbit) no appreciable effects

Ski: (Draize) Believed to be <.50/8.0 (rabbit) no appreciable effects

Section 12. Disposal Considerations

Waste Disposal Method: This product has been evaluated for RCRA characteristics and does not meet the criteria of a hazardous waste if discarded in its purchased form. Under RCRA, it is the responsibility of the user of the product to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixtures, processes, etc. may render the resulting materials hazardous.

Section 13. Transport Information

DOT/TDG

Proper Shipping Name: Not regulated

Hazard Class: Not regulated

Identification Number: Not regulated

Label Requirement: Not regulated

Environmental Information

Aquatic Toxicity: LC50-96hr Aquatic toxicity rating is believed to be >100.00 mg/liter practically non toxic

Mobility: Not determined

Persistence and Biodegradability: This product is reported to have a moderate (>=30%) rate of biodegradation in a test for ready biodegradation.

Potential to Bioaccumulate: This product is reported to have a low potential to bioconcentrate.

Disclaimer

This information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. Pestell Minerals & Ingredients makes no warranty of any kind, expressed or implied, concerning the safe use of this material in your process or combination with any other substances. Effects can be aggravated by other materials and/or this material may aggravate or add to the effects of other materials. This material may be released from gas, liquid or solid materials made directly or indirectly from it. User has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards.

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MATERIAL SAFETY DATA SHEET

ABC Fire Extinguisher

Issue Date: 04-13-2011

1. Product and Company Identification

Material name	**ABC Fire Extinguisher**
Version #	02
Revision date	04-13-2011
CAS #	Mixture
Product use	Fire Extinguisher
Manufacturer / Importer / Supplier	
Name	Tyco Fire Protection Products
Address	One Stanton Street Marinette, WI 54143-2542
Phone	715-732-3465
Internet	http://www.pyrochem.com
Emergency Phone Number	CHEMTREC 800-424-9300 or 703-527-3887

2. Hazards Identification

Emergency overview	WARNING Irritating to eyes and skin. Prolonged exposure may cause chronic effects.
Potential health effects	
Routes of exposure	Eye contact. Skin contact. Inhalation. Ingestion.
Eyes	Contact with eyes may cause irritation.
Skin	Avoid contact with the skin. May cause skin irritation.
Inhalation	Inhalation of dusts may cause respiratory irritation.
Ingestion	Not a likely route of entry.
Target organs	Eyes. Respiratory system. Skin.
Signs and symptoms	Irritation of eyes and mucous membranes.

3. Composition / Information on Ingredients

Non-hazardous components	CAS #	Percent
AMMONIUM HYDROGEN SULFATE	7783-20-2	10 - 30
Other components below reportable levels		> 60

4. First Aid Measures

First aid procedures	
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation persists after washing.
Skin contact	Wash off with warm water and soap. Get medical attention if irritation develops and persists.
Inhalation	Move to fresh air.
Ingestion	Rinse mouth. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
General advice	If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire Fighting Measures

Extinguishing media

Suitable extinguishing media	This product is not flammable. Use extinguishing agent suitable for type of surrounding fire.

Protection of firefighters

Specific hazards arising from the chemical	None known.
Protective equipment for firefighters	None known.
Special protective equipment for fire-fighters	None known.

Explosion data

Sensitivity to mechanical impact	Not available.
Sensitivity to static discharge	Not available.
Hazardous combustion products	Carbon monoxide and carbon dioxide.

6. Accidental Release Measures

Personal precautions	Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Avoid inhalation of dust from the spilled material. Wear a dust mask if dust is generated above exposure limits.
Environmental precautions	Do not contaminate water.
Methods for containment	If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. Prevent entry into waterways, sewer, basements or confined areas.
Methods for cleaning up	Should not be released into the environment. Sweep up or vacuum up spillage and collect in suitable container for disposal. Collect dust using a vacuum cleaner equipped with HEPA filter. Avoid the generation of dusts during clean-up. Clean up in accordance with all applicable regulations. Following product recovery, flush area with water.
Other information	Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling	Minimize dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Do not breathe dust. Avoid contact with eyes. Wash thoroughly after handling. Wear personal protective equipment.
Storage	Guard against dust accumulation of this material. Use care in handling/storage.

8. Exposure Controls / Personal Protection

Personal protective equipment

Eye / face protection	Wear safety glasses with side shields (or goggles).
Skin protection	Wear chemical protective equipment that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
Respiratory protection	In the case of respirable dust and/or fumes, use self-contained breathing apparatus.

9. Physical & Chemical Properties

Appearance

Form	Powder.
Color	Yellow.
Odor	Odorless.
Physical state	Solid.
pH	Not available.
Melting point	Not available.
Freezing point	Not available.
Boiling point	Not available.
Flash point	Not available.

Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Specific gravity	Not available.
Relative density	Not available.
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.

10. Chemical Stability & Reactivity Information

Chemical stability	Material is stable under normal conditions.
Incompatible materials	Strong acids.
Hazardous decomposition products	Carbon oxides.

11. Toxicological Information

Toxicological information	The toxicity of this product has not been tested.
Chronic effects	Prolonged inhalation may be harmful. Not expected to be hazardous by WHMIS criteria.

12. Ecological Information

Ecotoxicological data

Components	Test Results
AMMONIUM HYDROGEN SULFATE (7783-20-2)	EC50 Water flea (Ceriodaphnia dubia): 52 - 67 mg/l 48.00 hours LC50 Pink salmon (Oncorhynchus gorbuscha): 0.068 mg/l 96.00 hours

Ecotoxicity	This material is not expected to be harmful to aquatic life.
Environmental effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Persistence and degradability	Not available.
Partition coefficient (n-octanol/water)	Not available

13. Disposal Considerations

Disposal instructions	Dispose of contents/container in accordance with local/regional/national/international regulations. Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.
Waste from residues / unused products	Dispose of in accordance with local regulations.

14. Transport Information

TDG

Not regulated as dangerous goods.

15. Regulatory Information

Canadian regulations	This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.
WHMIS status	Controlled
WHMIS classification	A - Compressed Gas

WHMIS labeling

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

Further information
HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings
Health: 1*
Flammability: 0
Physical hazard: 0

NFPA ratings
Health: 1
Flammability: 0
Instability: 0

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Issue date
04-13-2011

1. PRODUCT AND COMPANY IDENTIFICATION

Company

Arkema Inc.
900 First Avenue
King of Prussia, Pennsylvania 19406

Fluorochemicals

Customer Service Telephone Number: (800) 245-5858
(Monday through Friday, 8:00 AM to 5:00 PM EST)

Emergency Information

Transportation: CHEMTREC: (800) 424-9300
(24 hrs., 7 days a week)
Medical: Rocky Mountain Poison Center: (866) 767-5089
(24 hrs., 7 days a week)

Product Information

Product name: FORANE® 410A
Synonyms: R-410A, HFC 410A, FORANE FX 41
Molecular formula: Mixture
Chemical family: Hydrofluorocarbon
Molecular weight: 72.59 g/mol
Product use: Refrigerant

2. HAZARDS IDENTIFICATION

Emergency Overview
Color: Clear - colourless
Physical state: gaseous
Form: Liquefied gas
Odor: Slightly ether-like

***Classification of the substance or mixture:**
Gases under pressure, Liquefied gas, H280

*For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labelling

Hazard pictograms:

Signal word: **Warning**

Hazard statements:

H280 : Contains gas under pressure; may explode if heated.

Supplemental Hazard Statements:

Overheating or overpressurizing may cause gas release or violent cylinder bursting. May decompose on contact with flames or extremely hot metal surfaces to produce toxic and corrosive products. May cause frostbite. May cause headache, nausea, dizziness, drowsiness, loss of consciousness. May cause cardiac sensitization/cardiac arrhythmia. May displace oxygen and cause rapid suffocation.

Precautionary statements:

Storage:

P403 : Store in a well-ventilated place.
P410 : Protect from sunlight.

Supplemental information:

Potential Health Effects:

Liquid : Contact with liquid or refrigerated gas can cause cold burns and frostbite. Vapor: Vapor is heavier than air and can cause suffocation by reducing oxygen available for breathing. Central nervous system effects: headache, nausea, dizziness, drowsiness, loss of consciousness.
Stress induced heart effects: irregular heart beat, rapid heart beat, (severity of effects depends on extent of exposure).

Medical conditions aggravated by overexposure:

Heart disease or compromised heart function.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Wt/Wt	GHS Classification**
Ethane, pentafluoro-	354-33-6	50 %	H280
Methane, difluoro-	75-10-5	50 %	H220, H280
Ethane, pentafluoro-	354-33-6	>= 30 - < 60 %	H280

Methane, difluoro-	75-10-5	>= 30 - < 60 %	H220, H280

**For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

Inhalation:
If inhaled, remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Skin:
If on skin, flush exposed skin with lukewarm water (not hot), or use other means to warm skin slowly. Get medical attention if frostbitten by liquid or if irritation occurs. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eyes:
Immediately flush eye(s) with plenty of water.

Ingestion:
Ingestion is not applicable - product is a gas at ambient temperatures.

Notes to physician:
Do not give drugs from adrenaline-ephedrine group.

5. FIREFIGHTING MEASURES

Extinguishing media (suitable):
Use extinguishing measures to suit surroundings.

Protective equipment:
Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand / NIOSH approved or equivalent).
Fire fighting equipment should be thoroughly decontaminated after use.

Further firefighting advice:
Fight fire with large amounts of water from a safe distance.
Stop the flow of gas if possible.
Water mist should be used to reduce vapor concentrations in air.
Cool closed containers exposed to fire with water spray.
Closed containers of this material may explode when subjected to heat from surrounding fire.
After a fire, wait until the material has cooled to room temperature before initiating clean-up activities.
Fire fighting equipment should be thoroughly decontaminated after use.

Fire and explosion hazards:

May decompose on contact with flames or extremely hot metal surfaces to produce toxic and corrosive products.
Liquid and gas under pressure, overheating or overpressurizing may cause gas release and/or violent cylinder bursting.
Container may explode if heated due to resulting pressure rise.
Some mixtures of HCFCs and/or HFCs, and air or oxygen may be combustible if pressurized and exposed to extreme heat or flame.
When burned, the following hazardous products of combustion can occur:
Hydrogen fluoride
Carbonyl halides
Carbon oxides

6. ACCIDENTAL RELEASE MEASURES

In case of spill or leak:
Prevent further leakage or spillage if you can do so without risk. Evacuate area of all unnecessary personnel. Eliminate all ignition sources. Use Halogen leak detector or other suitable means to locate leaks or check atmosphere. Keep upwind. Evacuate enclosed spaces and disperse gas with floor-level forced-air ventilation. Avoid breathing leaked material. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

7. HANDLING AND STORAGE

Handling

General information on handling:
Avoid breathing gas.
Avoid contact with skin, eyes and clothing.
Keep away from heat, sparks and flames.
Wear cold-insulating gloves/face shield/eye protection.
Do NOT change or force fit connections.
Keep container closed.
Use only with adequate ventilation.
Do not change or force fit connections.
Use equipment rated for cylinder pressure.
Use a backflow preventative device in piping.
Wash thoroughly after handling.
Close valve after each use and when empty.
Do not enter confined spaces unless adequately ventilated.
DO NOT CUT, DRILL, GRIND, OR WELD ON OR NEAR THIS CONTAINER.
Emptied container retains vapor and product residue.
Improper disposal or reuse of this container may be dangerous and/or illegal.

Storage

General information on storage conditions:
Keep away from direct sunlight. Keep cylinders restrained. Store in cool, dry, well ventilated area away from sources of ignition such as flame, sparks and static electricity.

Storage stability – Remarks:
Do not apply direct flame to cylinder. Do not store cylinder in direct sun or expose it to heat above 120 F (48.9 C.).
Do not drop or refill this cylinder.

Storage incompatibility – General:
Store separate from: Finely divided metals (aluminium, magnesium, zinc...)

Strong bases

Alkali metals

Alkaline earth metals

Strong oxidizing agents

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne Exposure Guidelines:

Ethane, pentafluoro- (354-33-6)

US. OARS. WEELs Workplace Environmental Exposure Level Guide

Time weighted average	1,000 ppm (4,900 mg/m3)
Remarks:	Listed

Methane, difluoro- (75-10-5)

US. OARS. WEELs Workplace Environmental Exposure Level Guide

Time weighted average	1,000 ppm (2,200 mg/m3)
Remarks:	Listed

Only those components with exposure limits are printed in this section. Limits with skin contact designation above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required. Limits with a sensitizer designation above mean that exposure to this material may cause allergic reactions.

Engineering controls:
Investigate engineering techniques to reduce exposures below airborne exposure limits or to otherwise reduce exposures. Provide ventilation if necessary to minimize exposures or to control exposure levels to below airborne exposure limits (if applicable see above).If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Monitor carbon monoxide and oxygen levels in tanks and enclosed spaces.

Respiratory protection:
Avoid breathing gas. Where airborne exposure is likely or airborne exposure limits are exceeded (if applicable, see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components (full facepiece recommended). Consult respirator manufacturer to determine appropriate type equipment for a given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure or where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs

must comply with 29 CFR § 1910.134.

Skin protection:
Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Rinse immediately if skin is contaminated. Wash contaminated clothing and clean protective equipment before reuse. Wash thoroughly after handling.

Eye protection:
Use good industrial practice to avoid eye contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Clear - colourless
Physical state:	gaseous
Form:	Liquefied gas
Odor:	Slightly ether-like
Odor threshold:	No data available
Flash point	Not applicable
Auto-ignition temperature:	No data available
Lower flammable limit (LFL):	None.
Upper flammable limit (UFL):	None.
pH:	Not applicable
Density:	No data available
Specific Gravity (Relative density):	1.06 (77 °F(25 °C))Water=1 (liquid)
Vapor pressure:	11,061 mmHg (70.0 °F (21.1 °C))
Vapor density:	2.52 kg/m3
Boiling point/boiling range:	-63.0 °F (-52.8 °C)
Freezing point:	No data available
Melting point:	No data available
Evaporation rate:	No data available

Solubility in water:	No data available
% Volatiles:	100 %
Molecular weight:	72.59 g/mol
Oil/water partition coefficient:	Not applicable
Thermal decomposition	Not applicable
Flammability:	See GHS Classification in Section 2

10. STABILITY AND REACTIVITY

Stability:
This material is chemically stable under normal and anticipated storage, handling and processing conditions.

Materials to avoid:
Strong oxidizing agents
Strong acids
Alkaline materials

Conditions / hazards to avoid:
Heat

Hazardous decomposition products:
Thermal decomposition giving toxic and corrosive products :
Hydrogen fluoride
Carbonyl halides
Carbon oxides

11. TOXICOLOGICAL INFORMATION

Data on this material and/or its components are summarized below.

Data for Ethane, pentafluoro- (354-33-6)

Acute toxicity

Inhalation:
Practically nontoxic. (Rat) 4 h LC50 > 800000 ppm. (Gas)

Sensitization:
Causes cardiac sensitization. inhalation. (Dog) Stress induced heart effects: irregular heart beat, rapid heart beat, in some cases, sudden death (Reaction may occur in response to stress (natural adrenaline release) or administration of epinephrine.)

Repeated dose toxicity
Subchronic inhalation administration to Rat / No adverse systemic effects reported.

Genotoxicity

Assessment in Vitro:
No genetic changes were observed in laboratory tests using: bacteria, animal cells, human cells

Genotoxicity

Assessment in Vivo:
No genetic changes were observed in laboratory tests using: mice

Developmental toxicity

Exposure during pregnancy. inhalation (rat and rabbit) / No birth defects were observed.

Data for Methane, difluoro- (75-10-5)

Acute toxicity

Inhalation:
Practically nontoxic. (Rat) 4 h LC50 > 520000 ppm. signs: anesthetic effects, central nervous system depression

Sensitization:
Cardiac sensitization not observed. inhalation. (Dog) tremors

Repeated dose toxicity
Subchronic inhalation administration to Rat / No adverse effects reported.

Genotoxicity

Assessment in Vitro:
No genetic changes were observed in laboratory tests using: bacteria, animal cells, human cells

Genotoxicity

Assessment in Vivo:
No genetic changes were observed in a laboratory test using: mice

Developmental toxicity

Exposure during pregnancy. inhalation (rat and rabbit) / No birth defects were observed.

12. ECOLOGICAL INFORMATION

Chemical Fate and Pathway
Data on this material and/or its components are summarized below.

Data for Ethane, pentafluoro- (354-33-6)

Biodegradation:
Not readily biodegradable. (Closed Bottle test, 28 d) biodegradation 5 %

Octanol Water Partition Coefficient:
log Pow = 1.48

Global Warming Potential:
GWP 0.84 (Halocarbon global warming potential; HGWP; (R-11 = 1))
GWP 3,450 (Global warming potential with respect to CO2 (time horizon 100 years))

Ozone Depletion Potential:
ODP 0.001 (Ozone depletion potential; ODP; (R-11 = 1))

Data for Methane, difluoro- (75-10-5)

Biodegradation:
Not readily biodegradable. (28 d) biodegradation 5 %

Octanol Water Partition Coefficient:
log Pow = 0.21

Global Warming Potential:
GWP 543 (Global warming potential with respect to CO2 (time horizon 100 years))

Ozone Depletion Potential:
ODP 0 (Ozone depletion potential; ODP; (R-11 = 1))

Ecotoxicology
No data are available.

13. DISPOSAL CONSIDERATIONS

Waste disposal:
Do not vent the container contents, or product residuals, to the atmosphere. Recover and reclaim unused contents or residuals as appropriate. Recovered/reclaimed product can be returned to an approved certified reclaimer or back to the seller depending on the material. Completely emptied disposable containers can be disposed of as recyclable steel. Returnable cylinders must be returned to seller. Dispose of in accordance with federal, state and local regulations. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

14. TRANSPORT INFORMATION

US Department of Transportation (DOT)

UN Number	:	3163
Proper shipping name	:	Liquefied gas, n.o.s.
Technical name	:	(Pentafluoroethane, Difluoromethane)
Class	:	2.2
Marine pollutant	:	no

International Maritime Dangerous Goods Code (IMDG)

UN Number	:	3163
Proper shipping name	:	LIQUEFIED GAS, N.O.S.
Technical name	:	(PENTAFLUOROETANO, DIFLUOROMETHANE)
Class	:	2.2
Marine pollutant	:	no

15. REGULATORY INFORMATION

Chemical Inventory Status

EU. EINECS	EINECS	Conforms to
US. Toxic Substances Control Act	TSCA	The components of this product are all on the TSCA Inventory.
Australia. Industrial Chemical (Notification and Assessment) Act	AICS	Conforms to
Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL)	DSL	All components of this product are on the Canadian DSL.
Japan. Kashin-Hou Law List	ENCS (JP)	Conforms to
Korea. Existing Chemicals Inventory (KECI)	KECI (KR)	Conforms to
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	PICCS (PH)	Conforms to
China. Inventory of Existing Chemical Substances	IECSC (CN)	Conforms to

United States – Federal Regulations

SARA Title III – Section 302 Extremely Hazardous Chemicals:

The components in this product are either not SARA Section 302 regulated or regulated but present in negligible concentrations.

SARA Title III - Section 311/312 Hazard Categories:
Acute Health Hazard, Sudden Release of Pressure Hazard

SARA Title III – Section 313 Toxic Chemicals:
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - Reportable Quantity (RQ):

The components in this product are either not CERCLA regulated, regulated but present in negligible concentrations, or regulated with no assigned reportable quantity.

United States – State Regulations

New Jersey Right to Know

Chemical Name	CAS-No.
Methane, difluoro-	75-10-5

Pennsylvania Right to Know

Chemical Name	CAS-No.
Ethane, pentafluoro-	354-33-6
Methane, difluoro-	75-10-5

Pennsylvania Right to Know – Environmentally Hazardous Substance(s)

Chemical Name	CAS-No.
Methane, difluoro-	75-10-5

California Prop. 65
This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive defects.

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

H220 Extremely flammable gas.
H280 Contains gas under pressure; may explode if heated.

Miscellaneous:

Other information: A significant new activity notice (SNAC notice) has been issued for Difluoromethane (HFC-32). It is the responsibility of the users of the substance to be aware of and comply with the SNAC notice and to submit a SNAC notification to Environment Canada prior to the commencement of a significant new activity associated with the substance.

Latest Revision(s):

Reference number: 000000057865
Date of Revision: 05/09/2015
Date Printed: 05/09/2015

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Safety Data Sheet

Issuing Date 16-Oct-2009 **Revision Date** *13-May-2011* **Revision Number** *1*

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND THE COMPANY/UNDERTAKING

Product Name Rhodamine B

Product Code(s) 0278

Recommended Use For Further Manufacturing Use Only
Not for Human or Animal Drug Use

Synonyms ACID BRILLIANT PINK B * ADC RHODAMINE B * AIZEN RHODAMINE BH *AKIRIKU RHODAMINE B * AIZEN RHODAMINE BHC * BASIC VIOLET 10 * BRILLIANT PINK B * CALCOZINE RED BX * CALCOZINE RHODAMINE BXP * 9-O- CARBOXYPHENYL-6-DIETHYLAMINO-3-ETHYLIMINO-3-ISOXANTHENE, 3-ETHOCHLORIDE * (9-(O-CARBOXYPHENYL)-6-(DIETHYLAMINO)-3H-XANTHEN-3- YLIDENE) DIETHYLAMMONIUM CHLORIDE * CERISE TONER X1127 * C.I. 749 * C. I. 45170 * C.I. BASIC VIOLET 10 * C.I. FOOD RED 15 * COGILOR RED 321. 10 * COSMETIC BRILLIANT PINK BLUISH D CONC * D & C RED NO.19 *DIABASIC RHODAMINE B * EDICOL SUPRA ROSE B * EDICOL SUPRA ROSE BS * ELCOZINE RHODAMINE B * ERIOSIN RHODAMINE B * FD&C RED NO. 19 * FOODRED 15 * GERANIUM LAKE N * HEXACOL RHODAMINE B EXTRA * IKADARHODAMINE B * IRAGEN RED L-U * MITSUI RHODAMINE BX * 11411 RED * RED NO. 213 * RHEONINE B * RHODAMINE B * RHODAMINE B 20-7470 * RHODAMINEBA * RHODAMINE BA EXPORT * RHODAMINE B CHLORIDE * RHODAMINE B EXTRA * RHODAMINE B EXTRA M 310 * RHODAMINE B EXTRA S * RHODAMINE BF *RHODAMINE B500 * RHODAMINE B500 HYDROCHLORIDE * RHODAMINE BN * RHODAMINE BS * RHODAMINE BX * RHODAMINE BXL * RHODAMINE BXP *RHODAMINE FB * RHODAMINE LAKE RED B * RHODAMINE O * RHODAMINE,TETRAETHYL- * RHODAMINE S (RUSSIAN) * SICILIAN CERISE TONER A-7127 * SYMULEX MAGENTA F * SYMULEX PINK F * SYMULEX RHODAMINE B TONER F *TAKAOKA RHODAMINE B * TETRAETHYLDIAMINO-O-CARBOXYPHENYL XANTHENYLCHLORIDE * TETRAETHYLRHODAMINE * VIOLET ZASADITA 10 (CZECH) *

Company
AMRESCO, LLC
6681 Cochran Road
Solon, Ohio 44139

Emergency Telephone Number Chemtrec 1-800-424-9300

Company Phone Number 1-800-448-4442
E-mail Address info@amresco-inc.com

2. HAZARDS IDENTIFICATION

GHS - Classification

Classification Skin Irritant 2 Eye Irritant 2 Carcinogen 1B

Signal Word Danger

Hazard Statements H315 - Causes skin irritation H319 - Causes serious eye irritation H335 - May cause respiratory irritation H350 - May cause cancer

Precautionary Statements P280 - Wear protective gloves/protective clothing/eye protection/face protection P302+ P352 - IF ON SKIN: Wash with plenty of soap and water P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	EC No.	REACH Reg. No.	CAS-No	Weight %	Classification
C.I. Food red 15	EEC No. 201-383-9	Not available	81-88-9	95-100	-

4. FIRST AID MEASURES

Eye Contact Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician

Skin Contact Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes

Inhalation Move to fresh air. If breathing becomes difficult, give oxygen

Ingestion Clean mouth with water and afterwards drink plenty of water

Notes to Physician Treat symptomatically

5. FIRE-FIGHTING MEASURES

Flammable Properties Not flammable

Flash Point Not determined

Suitable Extinguishing Media Dry chemical, CO2, water spray or regular foam

Hazardous Combustion Products Carbon oxides, Nitrogen oxides (NOx), Hydrogen Chloride gas.

Explosion Data

Sensitivity to Mechanical Impact Not sensitive

Sensitivity to Static Discharge Not sensitive

Protective Equipment and Precautions for Firefighters As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions Avoid contact with skin, eyes and clothing. Use personal protective equipment. Ensure adequate ventilation

Methods for Containment Prevent further leakage or spillage if safe to do so

Methods for Cleaning Up Avoid dust formation. Pick up and transfer to properly labeled containers. Ventilate area and wash spill site after material pickup is complete.

7. HANDLING AND STORAGE

Handling Handle in accordance with good industrial hygiene and safety practice. Strong dye.

Storage Keep containers tightly closed in a dry, cool and well-ventilated place

Incompatible Products Strong oxidizing agents.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
C.I. Food red 15 81-88-9			

Engineering Measures Showers
Eyewash stations
Ventilation systems

Personal Protective Equipment

Eye/Face Protection Tightly fitting safety goggles

Skin and Body Protection Wear protective gloves/clothing

Respiratory Protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Green	
Odor	No information available	
Odor Threshold	No information available	
Decomposition Temperature °C	No information available	
Freezing Point	No information available	
Initial Boiling Point	No information available	
Physical State	Crystals	
pH	No data available	
Flash Point	Not determined	
Autoignition Temperature	No data available	
Boiling Point/Range	No data available	
Melting Point/Range	210-211 °C	
Flammability Limits in Air	**Upper** No data available	**Lower** No data available
Explosive Properties	No information available	
Oxidizing Properties	No information available	
Evaporation Rate	No data available	
MMHG @ 37.8 C	No data available	
Vapor Density	No data available	
Specific Gravity	No data available	
Solubility	No information available	
Partition Coefficient (n-octanol/water)	No data available	
Viscosity	No information available	

10. STABILITY AND REACTIVITY

Stability Stable under recommended storage conditions

Incompatible Products Strong oxidizing agents.

Conditions to Avoid None known based on information supplied

Hazardous Decomposition Products Carbon oxides. Nitrogen oxides (NOx). Hydrogen chloride gas.

Hazardous Polymerization Hazardous polymerization does not occur

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Product Information Causes skin, eye and respiratory tract irritation.

Chronic Toxicity

Chronic Toxicity Suspected carcinogen.

Target Organ Effects Liver

12. ECOLOGICAL INFORMATION

Ecotoxicity
The environmental impact of this product has not been fully investigated

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method Dispose of material in accordance with all federal, state, and local regulations

Contaminated Packaging Dispose of in accordance with all federal, state and local regulations

14. TRANSPORT INFORMATION

IATA Not regulated

DOT Not regulated

15. REGULATORY INFORMATION

REACH Title VII Restrictions No information available.

Chemical Name	Dangerous Substances	Organic Solvents	Harmful Substances Whose Names Are to be Indicated on the Label	Pollution Release and Transfer Registry (Class II):	Pollution Release and Transfer Registry (Class I):	Poison and Deleterious Substances Control Law:
C.I. Food red 15	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

Component	ISHA - Harmful Substances Prohibited for Manufacturing, Importing, Transferring, or Supplying	ISHA - Harmful Substances Requiring Permission	Toxic Chemical Classification Listing (TCCL) - Toxic Chemicals	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
C.I. Food red 15 81-88-9 (95-100)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

International Inventories

TSCA Complies
EINECS/ELINCS Complies

ENCS	Complies
IECSC	Complies
KECL	Complies
PICCS	Complies
AICS	Complies

U.S. Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	CAS-No	Weight %	SARA 313 - Threshold Values %
C.I. Food red 15	81-88-9	95-100	1.0

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)
This product does not contain any substances regulated as hazardous air pollutants (HAPS) under Section 112 of the Clean Air Act Amendments of 1990

CERCLA

U.S. State Regulations

California Proposition 65
This product contains the following Proposition 65 chemicals

Chemical Name	CAS-No	California Prop. 65
C.I. Food red 15	81-88-9	Carcinogen

Chemical Name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
C.I. Food red 15	X	X	X		

International Regulations

Mexico - Grade No information available.

Canada

WHMIS Hazard Class
D2A Very toxic materials
D2B Toxic materials

16. OTHER INFORMATION

Issuing Date 16-Oct-2009

Revision Date 13-May-2011

Revision Note
No information available.

Recommended Restrictions No information available

Disclaimer
The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS

Material Safety Data Sheet

ROYCO 555 DOD-PRF-85734

Version: 1.1 | Revision Date: 01/03/2011 | Print Date: 09/12/2011

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name: *ROYCO 555 DOD-PRF-85734*

Product Use Description: Lubricant

Company: Anderol Specialty Lubricants, a division of Chemtura Corporation
215 Merry Lane
East Hanover, NJ
07936
United States of America

Telephone: 973-887-7410

Emergency telephone number: CHEMTREC: (24 hours) 800-424-9300
: 703-527-3887

For additional emergency telephone numbers see section 16 of the Safety Data Sheet.

Prepared by: Product Safety Department
(US) +1 866-430-2775

+011-886-2-2712-5668 MSDSRequest@chemtura.com

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

CAUTION!

Form: liquid Colour: amber

Hazard Summary : May cause eye and skin irritation.

OSHA Hazards : THIS MATERIAL IS NOT HAZARDOUS UNDER THE CRITERIA OF THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD 29CFR 1910.1200.

Potential Health Effects

Primary Routes of Entry	:	Eye contact Skin contact
Aggravated Medical Condition	:	Skin disorders
Inhalation	:	May cause respiratory tract irritation.
Skin	:	May cause skin irritation. Prolonged or repeated contact may dry skin and cause irritation.
Eyes	:	May cause eye irritation.
Ingestion	:	May be harmful if swallowed. Aspiration hazard if swallowed - can enter lungs and cause damage.
Symptoms of Overexposure	:	No information available.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components

No ingredients are hazardous according to HCS criteria.

SECTION 4. FIRST AID MEASURES

First aid procedures

Inhalation	:	If inhaled Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of bluish discoloration (lips, ear lobes, fingernails), give oxygen as quickly as possible. If symptoms persist, call a physician.
Skin contact	:	In case of skin contact Wash off with soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing before re-use. Get medical attention if irritation develops and persists.
Eye contact	:	In case of eye contact Rinse thoroughly with plenty of water, also under the eyelids.

If eye irritation persists, consult a specialist.

Ingestion : If swallowed, DO NOT induce vomiting.
Consult a physician if necessary.

Notes to physician

Symptoms : No information available.

Treatment : No information available.

SECTION 5. FIRE-FIGHTING MEASURES

Flammable properties

Flash point : 505 °F (263 °C)
Method: open cup

Ignition temperature : Remarks: not determined

Lower explosion limit : Remarks: no data available

Upper explosion limit : Remarks: no data available

Fire fighting

Suitable extinguishing media : Carbon dioxide (CO2)
Dry powder
Foam
Alcohol-resistant foam
Water mist

Unsuitable extinguishing media : Water

Further information : In the event of fire, cool tanks with water spray.

Protective equipment and precautions for firefighters

Specific hazards during fire fighting : Burning produces noxious and toxic fumes.

Special protective equipment for fire-fighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Use personal protective equipment.

Ensure adequate ventilation.

Environmental precautions	:	Should not be released into the environment. Do not contaminate water. Do not flush into surface water or sanitary sewer system.
Methods for containment / Methods for cleaning up	:	Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).
Additional advice	:	Forms slippery/greasy layers with water.

SECTION 7. HANDLING AND STORAGE

Handling

Handling procedures	:	Handle in accordance with good industrial hygiene and safety practice. Keep container closed when not in use. Do not use pressure to empty drums. Ensure all equipment is electrically grounded before beginning transfer operations.

Storage

Requirements for storage areas and containers	:	Keep container tightly closed in a dry and well-ventilated place.
Other data	:	Stable under recommended storage conditions.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

We are not aware of any national exposure limit.

Engineering measures

Personal protective equipment

Eye protection	:	Safety glasses with side-shields Tightly fitting safety goggles
Hand protection	:	Neoprene gloves
Skin and body protection	:	impervious clothing
Respiratory protection	:	Breathing apparatus needed only when aerosol or mist is formed. In the case of vapour formation use a respirator with an approved filter.

Hygiene measures	:	Avoid contact with skin, eyes and clothing. Provide adequate ventilation. Do not breathe dust or spray mist.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	:	liquid
Colour	:	amber

Safety data

Flash point	:	505 °F (263 °C) Method: open cup
Ignition temperature	:	Remarks: not determined
Lower explosion limit	:	Note: no data available
Upper explosion limit	:	Note: no data available
pH	:	Note: not applicable
Vapour pressure	:	Note: no data available
Specific Gravity	:	0.99 at
Water solubility	:	Note: slightly soluble

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid	:	Remarks: Heat.
Materials to avoid	:	Remarks: Strong acids and strong bases
Hazardous decomposition products	:	Note: Carbon oxides
Hazardous reactions	:	Hazardous polymerisation does not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute inhalation toxicity : Remarks: Not classified due to lack of data.

Acute dermal toxicity :
Remarks: Not classified due to lack of data.

Skin irritation : Remarks: Not classified due to lack of data.

Eye irritation : Remarks: Not classified due to lack of data.

Sensitisation : Remarks: Not classified due to lack of data.

Toxicology Assessment

CMR effects : Carcinogenicity:
Not classified due to lack of data.
Mutagenicity:
Not classified due to lack of data.
Reproductive toxicity:
Not classified due to lack of data.

Further information : There is no data available for this product.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Toxicity to fish :
Remarks:
no data available

Toxicity to daphnia and other aquatic invertebrates. : EC50: > 100 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
Remarks:
Information given is based on data obtained from similar substances.

Toxicity to algae : Remarks:
no data available

Elimination information (persistence and degradability)

Bioaccumulation	:	Remarks: no data available
Mobility	:	Remarks: no data available
Biodegradability	:	Result: no data available

Further information on ecology

Ecotoxicology Assessment

Results of PBT assessment
This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

Additional ecological information	:	There is no data available for this product.

SECTION 13. DISPOSAL CONSIDERATIONS

Further information	:	In accordance with local and national regulations.
Contaminated packaging	:	Do not burn, or use a cutting torch on, the empty drum.

SECTION 14. TRANSPORT INFORMATION

DOT
Not dangerous goods

TDG
Not dangerous goods

IATA
Not dangerous goods

IMDG
Not dangerous goods

RID
Not dangerous goods

SECTION 15. REGULATORY INFORMATION

OSHA Hazards : This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

SARA 311/312 Hazards : No SARA Hazards

The components of this product are reported in the following inventories:

TSCA On TSCA Inventory

DSL This product contains one or several components listed in the Canadian NDSL list.

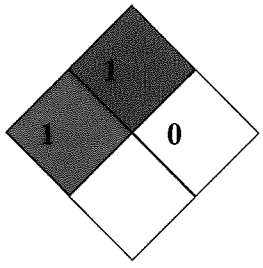
IECSC On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

Further information

HMIS Classification : Health hazard: 1
Flammability: 1
Reactivity: 0

NFPA Classification : Health hazard: 1
Fire Hazard: 1
Reactivity Hazard: 0



Other Emergency Phone Number

Latin America:	Brazil	+52 113 711 91 44
	All other countries	+44 (0)208 762 8322
Mexico:		+52 555 004 87 63

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Material Safety Data Sheet

ROYCO 756 MIL-PRF-5606H

Version: 1.4 | Revision Date: 07/25/2012 | Print Date: 03/06/2013

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name:	*ROYCO 756 MIL-PRF-5606H*
Product Use Description:	Lubricant
Chemical nature:	Lubricant
Company:	Manufacturer Anderol Specialty Lubricants, a division of Chemtura Corporation 215 Merry Lane East Hanover, NJ 07936 United States of America Telephone: 973-887-7410
Emergency telephone number:	CHEMTREC: (24 hours) 800-424-9300 : : 703-527-3887 For additional emergency telephone numbers see section 16 of the Safety Data Sheet.
Prepared by: 07/25/2012	Product Safety Department (US) +1 866-430-2775 MSDSRequest@chemtura.com

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Caution

Form: liquid Colour: red Odour: aromatic

Hazard Summary	: May cause eye irritation. May cause skin irritation.
OSHA Hazards	: THIS MATERIAL IS NOT HAZARDOUS UNDER THE CRITERIA OF THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD 29CFR 1910.1200.

Potential Health Effects

Primary Routes of Entry	:	Skin contact Eye contact
Aggravated Medical Condition	:	Dermatitis
Inhalation	:	May cause respiratory tract irritation.
Skin	:	May cause skin irritation.
Eyes	:	May cause eye irritation.
Ingestion	:	May cause: Diarrhoea Aspiration hazard if swallowed - can enter lungs and cause damage.
Symptoms of Overexposure	:	Aspiration may cause pulmonary oedema and pneumonitis.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components

No ingredients are hazardous according to OSHA criteria.

SECTION 4. FIRST AID MEASURES

First aid procedures

Inhalation	:	If inhaled Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of bluish discoloration (lips, ear lobes, fingernails), give oxygen as quickly as possible. Call a physician or poison control centre immediately.
Skin contact	:	In case of skin contact Wash off with soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing before re-use. Get medical attention if irritation develops and persists.
Eye contact	:	In case of eye contact Flush with plenty of water. If eye irritation persists, consult a specialist.
Ingestion	:	If swallowed, DO NOT induce vomiting. Call a physician or poison control centre immediately.

Notes to physician

Symptoms	:	Aspiration may cause pulmonary oedema and pneumonitis.

Treatment	:	For specialist advice physicians should contact the Poisons Information Service.

SECTION 5. FIREFIGHTING MEASURES

Flammable properties

Flash point	:	> 199 °F (93 °C) Method: ASTM D 93
Ignition temperature	:	Remarks: no data available
Lower explosion limit	:	Remarks: no data available
Upper explosion limit	:	Remarks: no data available

Fire fighting

Suitable extinguishing media	:	Carbon dioxide (CO2) Dry powder Foam Alcohol-resistant foam Water mist
Unsuitable extinguishing media	:	Water
Further information	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use a water spray to cool fully closed containers.

Protective equipment and precautions for firefighters

Specific hazards during firefighting	:	Burning produces noxious and toxic fumes.
Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Use personal protective equipment. Ensure adequate ventilation.
Environmental precautions	:	Do not contaminate water. Do not flush into surface water or sanitary sewer system. Discharge into the environment must be avoided.
Methods for containment / Methods for cleaning up	:	Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).
Additional advice	:	Clean contaminated surface thoroughly. Material can create slippery conditions.

SECTION 7. HANDLING AND STORAGE

Handling

Handling procedures : Keep container closed when not in use.

Storage

Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

We are not aware of any national exposure limit.

Engineering measures

Engineering measures : Ensure that eyewash stations and safety showers are close to the workstation location.
Effective exhaust ventilation system

Personal protective equipment

Eye protection : Safety glasses with side-shields
or
Tightly fitting safety goggles

Hand protection : Neoprene gloves

Skin and body protection : impervious clothing

Respiratory protection : not required under normal use
When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hygiene measures : Avoid contact with skin, eyes and clothing.
Handle in accordance with good industrial hygiene and safety practice.
Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form : liquid
Colour : red

Odour : aromatic

Safety data

Flash point	:	> 199 °F (93 °C) Method: ASTM D 93
Ignition temperature	:	Remarks: no data available
Lower explosion limit	:	Note: no data available
Upper explosion limit	:	Note: no data available
pH	:	Note: not applicable
Pour point	:	< -76 °F (-60 °C)
Vapour pressure	:	no data available
Specific Gravity	:	ca. 0.86 at
Viscosity, kinematic	:	13.9 mm2/s at 104 °F (40 °C)

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid	:	Remarks: Heat, flames and sparks. Contamination
Materials to avoid	:	Remarks: Strong acids and strong bases Oxidizing agents
Hazardous decomposition products	:	Note: Carbon oxides
Hazardous reactions	:	Hazardous polymerisation does not occur. Note: Stable under normal conditions.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	:	Remarks: Not classified due to lack of data.
Acute inhalation toxicity	:	Remarks: Not classified due to lack of data.
Skin irritation	:	Remarks: Not classified due to lack of data.
Eye irritation	:	Remarks: Not classified due to lack of data.
Sensitisation	:	Remarks: Not classified due to lack of data.

Aspiration toxicity : May be fatal if swallowed and enters airways.

Toxicology Assessment

CMR effects : Carcinogenicity:
Not classified due to lack of data.
Mutagenicity:
Not classified due to lack of data.
Reproductive toxicity:
Not classified due to lack of data.

Further information : No data is available on the product itself.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Toxicity to fish :
Remarks:
no data available

Elimination information (persistence and degradability)

Bioaccumulation : Remarks:
no data available

Mobility : Remarks:
no data available

Biodegradability : Result: no data available

Further information on ecology

Ecotoxicology Assessment

Results of PBT assessment
This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).
Additional ecological information : The product itself has not been tested.

SECTION 13. DISPOSAL CONSIDERATIONS

Further information : Dispose of waste material in compliance with all federal, state, and local regulations.

Contaminated packaging : Do not burn, or use a cutting torch on, the empty drum.

SECTION 14. TRANSPORT INFORMATION

DOT
Not dangerous goods

TDG
Not dangerous goods

IATA
Not dangerous goods

IMDG
Not dangerous goods

RID
Not dangerous goods

SECTION 15. REGULATORY INFORMATION

OSHA Hazards : This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

SARA 311/312 Hazards : No SARA Hazards

The components of this product are reported in the following inventories:

US.TSCA	On TSCA Inventory
DSL	All components of this product are on the Canadian DSL list.
AICS	On the inventory, or in compliance with the inventory
NZIoC	Not in compliance with the inventory
ENCS	On the inventory, or in compliance with the inventory
KECI	On the inventory, or in compliance with the inventory

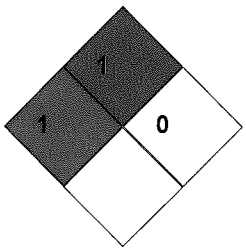
PICCS	On the inventory, or in compliance with the inventory
IECSC	On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

Further information

HMIS Classification : Health hazard: 1
Flammability: 1
Reactivity: 0

NFPA Classification : Health hazard: 1
Fire Hazard: 1
Reactivity Hazard: 0



Other Emergency Phone Number

Latin America:	Brazil	+55 113 711 9144
	All other countries	+44 (0) 1235 239 670
Mexico:		+52 555 004 8763

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Safety Data Sheet

RUST-OLEUM CORPORATION
* Trusted Quality Since 1921 *
www.rustoleum.com

1. Identification

Product Name: UNVRSL +6X340GM GLOSS CARDINAL RED

Revision Date: 8/6/2015

Product Identifier: 246437

Supercedes Date: New SDS

Product Use/Class: Topcoat/Aerosol

Supplier: Rust-Oleum Consumer Brands Canada (RCBC)
200 Confederation Parkway
Concord, ON L4K 4T8
Canada

Manufacturer: Rust-Oleum Consumer Brands Canada (RCBC)
200 Confederation Parkway
Concord, ON L4K 4T8
Canada

Preparer: Regulatory Department

Emergency Telephone: 24 Hour Hotline: 847-367-7700

2. Hazard Identification

Classification

Symbol(s) of Product

Signal Word
Danger

GHS HAZARD STATEMENTS

Flammable Aerosol, category 1	H222	Extremely flammable aerosol.
Eye Irritation, category 2	H319	Causes serious eye irritation.
STOT, single exposure, category 3, NE	H336	May cause drowsiness or dizziness.
Germ Cell Mutagenicity, category 1B	H340	May cause genetic defects. Classified as mutagenic Category 1 if one ingredient is present at or above 0.1%. Applies to liquids, solids (w/w units) and gases (v/v). The substance may also have its own exposure limit. Routes of exposure are dependent on ingredient form.
Carcinogenicity, category 1B	H350	May cause cancer. Classified as carcinogenic Category 1 on the basis of epidemiological and/or animal data. Mixtures are classified as carcinogenic when at least 1 ingredient has been classified as carcinogenic and is present at 0.1% or above Routes of exposure are dependent on ingredient form.

GHS LABEL PRECAUTIONARY STATEMENTS

P201	Obtain special instructions before use.
P211	Do not spray on an open flame or other ignition source.
P251	Do not pierce or burn, even after use.
P261	Avoid breathing dust, fumes, gases, mists, vapors, or spray.
P281	Use personal protective equipment as required.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308+P313	IF exposed or concerned: Get medical advice/attention.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P337+P313	If eye irritation persists: Get medical advice/attention.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P410+P412	Protect from sunlight. Do not expose to temperatures exceeding 50°C / 122°F.

3. Composition/Information On Ingredients

HAZARDOUS SUBSTANCES

Chemical Name	CAS-No.	Wt.% Range	GHS Symbols	GHS Statements
Acetone	67-64-1	25-50	GHS02-GHS07	H225-319-336
Propane	74-98-6	10-25	No Information	No Information
n-Butyl Acetate	123-86-4	10-25	GHS02-GHS07	H226-336
n-Butane	106-97-8	2.5-10	No Information	No Information
Solvent Naphtha, Light Aromatic	64742-95-6	2.5-10	GHS07-GHS08	H304-332-340-350
1,2,4-Trimethylbenzene	95-63-6	1.0-2.5	GHS02-GHS07	H226-315-319-332-335
Propylene Glycol Monobutyl Ether	5131-66-8	1.0-2.5	GHS07	H302-315-319
Titanium Dioxide	13463-67-7	0.1-1.0	No Information	No Information
Stoddard Solvent	8052-41-3	0.1-1.0	GHS08	H304-340-350-372
Ethylbenzene	100-41-4	0.1-1.0	GHS02-GHS07	H225-332

4. First-aid Measures

FIRST AID - EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes holding eyelids open. Get medical attention. Do NOT allow rubbing of eyes or keeping eyes closed.

FIRST AID - SKIN CONTACT: Wash skin with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists.

FIRST AID - INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention. Do NOT use mouth-to-mouth resuscitation. If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical assistance immediately.

FIRST AID - INGESTION: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. Get immediate medical attention. If swallowed, get medical attention.

5. Fire-fighting Measures

EXTINGUISHING MEDIA: Alcohol Film Forming Foam, Carbon Dioxide, Dry Chemical, Dry Sand, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: FLASH POINT IS LESS THAN 20°F. EXTREMELY FLAMMABLE LIQUID AND VAPOR!Water spray may be ineffective. Closed containers may explode when exposed to extreme heat due to buildup of steam. Closed containers may explode when exposed to extreme heat. Vapors may form explosive mixtures with air. Vapors can travel to a source of ignition and flash back. Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Perforation of the pressurized container may cause bursting of the can. No unusual fire or explosion hazards noted.

SPECIAL FIREFIGHTING PROCEDURES: Water may be used to cool closed containers to prevent pressure buildup and possible autoignition or explosion. Full protective equipment including self-contained breathing apparatus should be used. Evacuate area and fight fire from a safe distance. Use water spray to keep fire-exposed containers cool. Containers may explode when heated.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Contain spilled liquid with sand or earth. DO NOT use combustible materials such as sawdust. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Remove all sources of ignition, ventilate area and remove with inert absorbent and non-sparking tools. Dispose of according to local, state (provincial) and federal regulations. Do not incinerate closed containers. Ventilate area, isolate spilled material, and remove with inert absorbent. Dispose of contaminated absorbent, container, and unused contents in accordance with local, state, and federal regulations.

7. Handling and Storage

HANDLING: Wash thoroughly after handling. Wash hands before eating. Remove contaminated clothing and launder before reuse. Use only with adequate ventilation. Follow all MSDS/label precautions even after container is emptied because it may retain product residues. Avoid breathing fumes, vapors, or mist. Avoid contact with eyes, skin and clothing.

STORAGE: Store in a dry, well ventilated place. Keep container tightly closed when not in use. Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Contents under pressure. Do not store above 120 ° F. Store large quantities in buildings designed and protected for storage of NFPA Class I flammable liquids. Keep away from heat, sparks, flame and sources of ignition. Avoid excess heat. Product should be stored in tightly sealed containers and protected from heat, moisture, and foreign materials.

8. Exposure Controls/Personal Protection

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL-CEILING
Acetone	67-64-1	30.0	500 ppm	750 ppm	1000 ppm	N.E.
Propane	74-98-6	20.0	1000 ppm	N.E.	1000 ppm	N.E.
n-Butyl Acetate	123-86-4	15.0	150 ppm	200 ppm	150 ppm	N.E.
n-Butane	106-97-8	10.0	N.E.	1000 ppm	N.E.	N.E.
Solvent Naphtha, Light Aromatic	64742-95-6	5.0	N.E.	N.E.	N.E.	N.E.
1,2,4-Trimethylbenzene	95-63-6	5.0	N.E.	N.E.	N.E.	N.E.
Propylene Glycol Monobutyl Ether	5131-66-8	5.0	N.E.	N.E.	N.E.	N.E.
Titanium Dioxide	13463-67-7	1.0	10 mg/m3	N.E.	15 mg/m3	N.E.
Stoddard Solvent	8052-41-3	1.0	100 ppm	N.E.	500 ppm	N.E.
Ethylbenzene	100-41-4	1.0	20 ppm	N.E.	100 ppm	N.E.

PERSONAL PROTECTION

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof ventilation equipment. Provide general dilution of local exhaust ventilation in volume and pattern to keep TLV of hazardous ingredients below acceptable limits. Prevent build-up of vapors by opening all doors and windows to achieve cross-ventilation.

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. A NIOSH/MSHA approved air purifying respirator with organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

SKIN PROTECTION: Use gloves to prevent prolonged skin contact. Nitrile or Neoprene gloves may afford adequate skin protection.

EYE PROTECTION: Use safety eyewear designed to protect against splash of liquids.

OTHER PROTECTIVE EQUIPMENT: Refer to safety supervisor or industrial hygienist for further guidance regarding types of personal protective equipment and their applications.

HYGIENIC PRACTICES: Wash thoroughly with soap and water before eating, drinking or smoking. Remove contaminated clothing immediately and launder before reuse.

9. Physical and Chemical Properties

Appearance:	Aerosolized Mist	**Physical State:**	Liquid
Odor:	Solvent Like	**Odor Threshold:**	N.E.
Relative Density:	0.771	**pH:**	N.A.
Freeze Point, °C:	N.D.	**Viscosity:**	N.D.
Solubility in Water:	Slight	**Partition Coefficient, n-octanol/water:**	N.D.
Decompostion Temp., °C:	N.D.		
Boiling Range, °C:	-24 - 170	**Explosive Limits, vol%:**	1.0 - 13.0
Flammability:	Supports Combustion	**Flash Point, °C:**	-96
Evaporation Rate:	Faster than Ether	**Auto-ignition Temp., °C:**	N.D.
Vapor Density:	Heavier than Air	**Vapor Pressure:**	N.D.

(See "Other information" Section for abbreviation legend)

10. Stability and Reactivity

CONDITIONS TO AVOID: Avoid temperatures above 120°F (49°C). Avoid contact with strong acid and strong bases. Avoid all possible sources of ignition.

INCOMPATIBILITY: Incompatible with strong oxidizing agents, strong acids and strong alkalies.

HAZARDOUS DECOMPOSITION: By open flame, carbon monoxide and carbon dioxide. When heated to decomposition, it emits acrid smoke and irritating fumes. Contains solvents which may form carbon monoxide, carbon dioxide, and formaldehyde.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

11. Toxicological information

EFFECTS OF OVEREXPOSURE - EYE CONTACT: Causes Serious Eye Irritation

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: May cause skin irritation. Allergic reactions are possible.

EFFECTS OF OVEREXPOSURE - INHALATION: Harmful if inhaled. High gas, vapor, mist or dust concentrations may be harmful if inhaled. Avoid breathing fumes, spray, vapors, or mist. High vapor concentrations are irritating to the eyes, nose, throat and lungs. Prolonged or excessive inhalation may cause respiratory tract irritation.

EFFECTS OF OVEREXPOSURE - INGESTION: Harmful if swallowed.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. High concentrations may lead to central nervous system effects (drowsiness, dizziness, nausea, headaches, paralysis, and blurred vision) and/or damage. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. IARC lists Ethylbenzene as a possible human carcinogen (group 2B). Contains Titanium Dioxide. Titanium Dioxide is listed as a Group 2B-"Possibly carcinogenic to humans" by IARC. No significant exposure to Titanium Dioxide is thought to occur during the use of products in which Titanium Dioxide is bound to other materials, such as in paints during brush application or drying. Risk of overexposure depends on duration and level of exposure to dust from repeated sanding of surfaces or spray mist and the actual concentration of Titanium Dioxide in the formula. (Ref: IARC Monograph, Vol. 93, 2010)

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

ACUTE TOXICITY VALUES

The acute effects of this product have not been tested. Data on individual components are tabulated below:

CAS-No.	Chemical Name	Oral LD50	Dermal LD50	Vapor LC50
67-64-1	Acetone	N.I.	N.I.	50.1 mg/L Rat
74-98-6	Propane	N.I.	N.I.	658 mg/L Rat
123-86-4	n-Butyl Acetate	N.I.	>17600 mg/kg Rabbit	N.I.
106-97-8	n-Butane	N.I.	N.I.	658 mg/L Rat
64742-95-6	Solvent Naphtha, Light Aromatic	N.I.	>2000 mg/kg Rabbit	N.I.
95-63-6	1,2,4-Trimethylbenzene	3280 mg/kg Rat	>3160 mg/kg Rabbit	18 mg/L Rat
5131-66-8	Propylene Glycol Monobutyl Ether	1900 mg/kg Rat	N.I.	N.I.
13463-67-7	Titanium Dioxide	>10000 mg/kg Rat	N.I.	N.I.
100-41-4	Ethylbenzene	3500 mg/kg Rat	15354 mg/kg Rabbit	17.2 mg/L Rat

N.I. - No Information

12. Ecological Information

ECOLOGICAL INFORMATION: Product is a mixture of listed components.

13. Disposal Information

DISPOSAL INFORMATION: Dispose of material in accordance to local, state, and federal regulations and ordinances. Do not allow to enter waterways, wastewater, soil, storm drains or sewer systems.

14. Transport Information

	Domestic (USDOT)	International (IMDG)	Air (IATA)	TDG (Canada)
UN Number:	N.A.	1950	1950	N.A.
Proper Shipping Name:	Paint Products in Limited Quantities	Aerosols	Aerosols	Paint Products in Limited Quantities
Hazard Class:	N.A.	2.1	2.1	N.A.
Packing Group:	N.A.	N.A.	N.A.	N.A.
Limited Quantity:	Yes	Yes	Yes	Yes

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Fire Hazard, Pressure Hazard, Acute Health Hazard, Chronic Health Hazard

Sara Section 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

Chemical Name	CAS-No.
1,2,4-Trimethylbenzene	95-63-6
Ethylbenzene	100-41-4

Toxic Substances Control Act:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(b) if exported from the United States:

No TSCA 12(b) components exist in this product.

16. Other Information

HMIS RATINGS

Health: 2* **Flammability:** 4 **Physical Hazard:** 0 **Personal Protection:** X

NFPA RATINGS

Health: 2 **Flammability:** 4 **Instability** 0

VOLATILE ORGANIC COMPOUNDS, g/L: 523

SDS REVISION DATE: 8/6/2015

REASON FOR REVISION:

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

Rust-Oleum Consumer Brands Canada believes, to the best of its knowledge, information and belief, the information contained herein to be accurate and reliable as of the date of this safety data sheet. However, because the conditions of handling, use, and storage of these materials are beyond our control, we assume no responsibility or liability for personal injury or property damage incurred by the use of these materials. Rust-Oleum Consumer Brands Canada makes no warranty, expressed or implied, regarding the accuracy or reliability of the data or results obtained from their use. All materials may present unknown hazards and should be used with caution. The information and recommendations in this material safety data sheet are offered for the users' consideration and examination. It is the responsibility of the user to determine the final suitability of this information and to comply with all applicable international, federal, state, and local laws and regulations.

Safety Data Sheet

RUST-OLEUM CORPORATION
* Trusted Quality Since 1921 *
www.rustoleum.com

1. Identification

Product Name: HPERF LSPR 6PK MARK HI-VIS YELLOW

Revision Date: 8/6/2018

Product Identifier: V2344838

Supercedes Date: 3/14/2018

Recommended Use: Inverted Marking Paint/Aerosol

Supplier:
Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Manufacturer:
Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Preparer: Regulatory Department

Emergency Telephone: 24 Hour Hotline: 847-367-7700

2. Hazard Identification

Classification

Symbol(s) of Product

Signal Word
Danger

Possible Hazards
39% of the mixture consists of ingredient(s) of unknown acute toxicity.

GHS HAZARD STATEMENTS

Flammable Aerosol, category 1	H222	Extremely flammable aerosol.
Compressed Gas	H280	Contains gas under pressure; may explode if heated.
Carcinogenicity, category 2	H351	Suspected of causing cancer.
STOT, single exposure, category 3, NE	H336	May cause drowsiness or dizziness.
Eye Irritation, category 2	H319	Causes serious eye irritation.

GHS LABEL PRECAUTIONARY STATEMENTS

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P211	Do not spray on an open flame or other ignition source.
P251	Do not pierce or burn, even after use.
P410+P412	Protect from sunlight. Do not expose to temperatures exceeding 50°C / 122°F.
P410+P403	Protect from sunlight. Store in a well-ventilated place.
P201	Obtain special instructions before use.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local, regional and national regulations.
P261	Avoid breathing dust/fume/gas/mist/vapors/spray.
P271	Use only outdoors or in a well-ventilated area.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P264	Wash hands thoroughly after handling.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313	If eye irritation persists: Get medical advice/attention.

3. Composition / Information On Ingredients

HAZARDOUS SUBSTANCES

Chemical Name	CAS-No.	Wt.% Range	GHS Symbols	GHS Statements
Acetone	67-64-1	25-50	GHS02-GHS07	H225-319-332-336
Propane	74-98-6	10-25	GHS04	H280
Naphtha, Petroleum, Hydrotreated Light	64742-49-0	10-25	GHS08	H304
n-Butane	106-97-8	2.5-10	GHS04	H280
Titanium Dioxide	13463-67-7	2.5-10	Not Available	Not Available

Xylenes (o-, m-, p- isomers)	1330-20-7	2.5-10	GHS02-GHS07	H226-315-319-332
Hydrous Magnesium Silicate	14807-96-6	2.5-10	Not Available	Not Available
n-Butyl Acetate	123-86-4	2.5-10	GHS02-GHS07	H226-336
Dimethyl Carbonate	616-38-6	1.0-2.5	GHS02	H225
Ethylbenzene	100-41-4	0.1-1.0	GHS02-GHS07-GHS08	H225-304-332-351-373
Ethylene Glycol Monobutyl Ether	111-76-2	0.1-1.0	GHS07	H302-312-315-319-332

4. First-Aid Measures

FIRST AID - EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes holding eyelids open. Get medical attention. Do NOT allow rubbing of eyes or keeping eyes closed.

FIRST AID - SKIN CONTACT: Wash skin with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists.

FIRST AID - INHALATION: If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical assistance immediately. Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention. Do NOT use mouth-to-mouth resuscitation.

FIRST AID - INGESTION: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. Get immediate medical attention. If swallowed, get medical attention.

5. Fire-Fighting Measures

EXTINGUISHING MEDIA: Dry Chemical, Dry Sand, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: FLASH POINT IS LESS THAN 20°F. EXTREMELY FLAMMABLE LIQUID AND VAPOR!Water spray may be ineffective. Closed containers may explode when exposed to extreme heat. Vapors may form explosive mixtures with air. Vapors can travel to a source of ignition and flash back. Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Perforation of the pressurized container may cause bursting of the can. Closed containers may explode when exposed to extreme heat due to buildup of steam. No unusual fire or explosion hazards noted.

SPECIAL FIREFIGHTING PROCEDURES: Evacuate area and fight fire from a safe distance. Full protective equipment including self-contained breathing apparatus should be used. Water may be used to cool closed containers to prevent pressure buildup and possible autoignition or explosion. Use water spray to keep fire-exposed containers cool. Containers may explode when heated.

Special Fire and Explosion Hazard (Combustible Dust): No Information

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Contain spilled liquid with sand or earth. DO NOT use combustible materials such as sawdust. Remove all sources of ignition, ventilate area and remove with inert absorbent and non-sparking tools. Dispose of according to local, state (provincial) and federal regulations. Do not incinerate closed containers. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Ventilate area, isolate spilled material, and remove with inert absorbent. Dispose of contaminated absorbent, container, and unused contents in accordance with local, state, and federal regulations.

7. Handling and Storage

HANDLING: Wash thoroughly after handling. Wash hands before eating. Use only in a well-ventilated area. Follow all SDS and label precautions even after container is emptied because it may retain product residues. Avoid breathing fumes, vapors, or mist. Remove contaminated clothing and launder before reuse. Use only with adequate ventilation. Avoid contact with eyes, skin and clothing.

STORAGE: Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Contents under pressure. Do not store above 120 ° F. Store large quantities in buildings designed and protected for storage of flammable aerosols. Contents under pressure. Do not expose to heat or store above 120 ° F. Product should be stored in tightly sealed containers and protected from heat, moisture, and foreign materials. Store in a dry, well ventilated place. Keep container tightly closed when not in use. Keep away from heat, sparks, flame and sources of ignition. Avoid excess heat.

Advice on Safe Handling of Combustible Dust: No Information

8. Exposure Controls / Personal Protection

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL-CEILING
Acetone	67-64-1	30.0	250 ppm	500 ppm	1000 ppm	N.E.
Propane	74-98-6	15.0	N.E.	N.E.	1000 ppm	N.E.
Naphtha, Petroleum, Hydrotreated Light	64742-49-0	15.0	N.E.	N.E.	N.E.	N.E.
n-Butane	106-97-8	10.0	N.E.	1000 ppm	N.E.	N.E.
Titanium Dioxide	13463-67-7	10.0	10 mg/m3	N.E.	15 mg/m3	N.E.
Xylenes (o-, m-, p- isomers)	1330-20-7	5.0	100 ppm	150 ppm	100 ppm	N.E.
Hydrous Magnesium Silicate	14807-96-6	5.0	2 mg/m3	N.E.	N.E.	N.E.
n-Butyl Acetate	123-86-4	5.0	50 ppm	150 ppm	150 ppm	N.E.
Dimethyl Carbonate	616-38-6	5.0	N.E.	N.E.	N.E.	N.E.
Ethylbenzene	100-41-4	1.0	20 ppm	N.E.	100 ppm	N.E.
Ethylene Glycol Monobutyl Ether	111-76-2	1.0	20 ppm	N.E.	50 ppm	N.E.

PERSONAL PROTECTION

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof ventilation equipment. Prevent build-up of vapors by opening all doors and windows to achieve cross-ventilation. Provide general dilution of local exhaust ventilation in volume and pattern to keep TLV of hazardous ingredients below acceptable limits.

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. A NIOSH/MSHA approved air purifying respirator with organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

SKIN PROTECTION: Use impervious gloves to prevent skin contact and absorption of this material through the skin. Nitrile or Neoprene gloves may afford adequate skin protection. Use gloves to prevent prolonged skin contact.

EYE PROTECTION: Use safety eyewear designed to protect against splash of liquids.

OTHER PROTECTIVE EQUIPMENT: Refer to safety supervisor or industrial hygienist for further information regarding personal protective equipment and its application. Refer to safety supervisor or industrial hygienist for further guidance regarding types of personal protective equipment and their applications.

HYGIENIC PRACTICES: Wash thoroughly with soap and water before eating, drinking or smoking. Remove contaminated clothing immediately and launder before reuse.

Engineering Measures for Combustible Dust: No Information

9. Physical and Chemical Properties

Appearance:	Aerosolized Mist	**Physical State:**	Liquid
Odor:	Solvent Like	**Odor Threshold:**	N.E.
Relative Density:	0.828	**pH:**	N.A.
Freeze Point, °C:	N.D.	**Viscosity:**	N.D.
Solubility in Water:	Slight	**Partition Coefficient, n-octanol/water:**	N.D.
Decompostion Temp., °C:	N.D.		
Boiling Range, °C:	-37 - 537	**Explosive Limits, vol%:**	0.9 - 13.0
Flammability:	Supports Combustion	**Flash Point, °C:**	-96
Evaporation Rate:	Faster than Ether	**Auto-ignition Temp., °C:**	N.D.
Vapor Density:	Heavier than Air	**Vapor Pressure:**	N.D.

(See "Other information" Section for abbreviation legend)

10. Stability and Reactivity

CONDITIONS TO AVOID: Avoid temperatures above 120°F (49°C). Avoid all possible sources of ignition.

INCOMPATIBILITY: Incompatible with strong oxidizing agents, strong acids and strong alkalies.

HAZARDOUS DECOMPOSITION: By open flame, carbon monoxide and carbon dioxide. When heated to decomposition, it emits acrid smoke and irritating fumes. Contains solvents which may form carbon monoxide, carbon dioxide, and formaldehyde.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

11. Toxicological Information

EFFECTS OF OVEREXPOSURE - EYE CONTACT: Causes Serious Eye Irritation

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: Substance may cause slight skin irritation. Prolonged or repeated contact may cause skin irritation. May cause skin irritation. Allergic reactions are possible.

EFFECTS OF OVEREXPOSURE - INHALATION: Harmful if inhaled. High gas, vapor, mist or dust concentrations may be harmful if inhaled. Avoid breathing fumes, spray, vapors, or mist. High vapor concentrations are irritating to the eyes, nose, throat and lungs. Prolonged or excessive inhalation may cause respiratory tract irritation.

EFFECTS OF OVEREXPOSURE - INGESTION: Aspiration hazard if swallowed; can enter lungs and cause damage. Harmful if swallowed.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: Overexposure to xylene in laboratory animals has been associated with liver abnormalities, kidney, lung, spleen, eye and blood damage as well as reproductive disorders. Effects in humans, due to chronic overexposure, have included liver, cardiac abnormalities and nervous system damage. IARC lists Ethylbenzene as a possible human carcinogen (group 2B). Contains Titanium Dioxide. Titanium Dioxide is listed as a Group 2B-"Possibly carcinogenic to humans" by IARC. No significant exposure to Titanium Dioxide is thought to occur during the use of products in which Titanium Dioxide is bound to other materials, such as in paints during brush application or drying. Risk of overexposure depends on duration and level of exposure to dust from repeated sanding of surfaces or spray mist and the actual concentration of Titanium Dioxide in the formula. (Ref: IARC Monograph, Vol. 93, 2010)May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. High concentrations may lead to central nervous system effects (drowsiness, dizziness, nausea, headaches, paralysis, and blurred vision) and/or damage.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Inhalation, Skin Absorption, Skin Contact

ACUTE TOXICITY VALUES

The acute effects of this product have not been tested. Data on individual components are tabulated below:

CAS-No.	Chemical Name	Oral LD50	Dermal LD50	Vapor LC50
67-64-1	Acetone	5800 mg/kg Rat	>15700 mg/kg Rabbit	50.1 mg/L Rat
64742-49-0	Naphtha, Petroleum, Hydrotreated Light	>5000 mg/kg Rat	>3160 mg/kg Rabbit	>4951 mg/L Rat
106-97-8	n-Butane	N.E.	N.E.	658 mg/L Rat
13463-67-7	Titanium Dioxide	>10000 mg/kg Rat	2500 mg/kg	N.E.
1330-20-7	Xylenes (o-, m-, p- isomers)	3500 mg/kg Rat	>4350 mg/kg Rabbit	29.08 mg/L Rat
14807-96-6	Hydrous Magnesium Silicate	6000	N.E.	30
123-86-4	n-Butyl Acetate	10768 mg/kg Rat	>17600 mg/kg Rabbit	> 21 mg/L Rat
616-38-6	Dimethyl Carbonate	13000 mg/kg Rat	>5000 mg/kg Rabbit	140 mg/L Rat
100-41-4	Ethylbenzene	3500 mg/kg Rat	15400 mg/kg Rabbit	17.4 mg/L Rat
111-76-2	Ethylene Glycol Monobutyl Ether	470 mg/kg Rat	1,060 mg/kg Rabbit	11 mg/L

N.E. - Not Established

12. Ecological Information

ECOLOGICAL INFORMATION: Product is a mixture of listed components. Product is a mixture of listed components.

13. Disposal Information

DISPOSAL INFORMATION: Dispose of material in accordance to local, state, and federal regulations and ordinances. Do not allow to enter waterways, wastewater, soil, storm drains or sewer systems. This product as supplied is a USEPA defined ignitable hazardous waste. Dispose of unusable product as a hazardous waste (D001) in accordance with local, state, and federal regulation. Do not incinerate closed containers.

14. Transport Information

	Domestic (USDOT)	International (IMDG)	Air (IATA)	TDG (Canada)
UN Number:	N.A.	1950	1950	N.A.
Proper Shipping Name:	Paint Products in Limited Quantities	Aerosols	Aerosols	Paint Products in Limited Quantities
Hazard Class:	N.A.	2.1	2.1	N.A.
Packing Group:	N.A.	N.A.	N.A.	N.A.
Limited Quantity:	Yes	Yes	Yes	Yes

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Gas under pressure, Carcinogenicity, Serious eye damage or eye irritation, Specific target organ toxicity (single or repeated exposure)

Sara Section 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

Chemical Name	CAS-No.
Xylenes (o-, m-, p- isomers)	1330-20-7
Ethylbenzene	100-41-4
Ethylene Glycol Monobutyl Ether	111-76-2

Toxic Substances Control Act:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(b) if exported from the United States:

Chemical Name	CAS-No.
Castor oil, sulfated, sodium salt	68187-76-8

16. Other Information

HMIS RATINGS

Health:	2*	**Flammability:**	4	**Physical Hazard:**	0	**Personal Protection:**	X

NFPA RATINGS

Health:	2	**Flammability:**	4	**Instability**	0

SDS REVISION DATE: 8/6/2018

REASON FOR REVISION:

Substance Regulatory CAS Number Changed
Substance Hazardous Flag Changed
Substance Hazard Threshold % Changed
Substance and/or Product Properties Changed in Section(s):
02 - Hazard Identification
03 - Composition/Information on Ingredients
08 - Exposure Controls/Personal Protection
15 - Regulatory Information
16 - Other Information
Substance Chemical Name Changed
Revision Statement(s) Changed

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

Rust-Oleum Corporation believes, to the best of its knowledge, information and belief, the information contained herein to be accurate and reliable as of the date of this safety data sheet. However, because the conditions of handling, use, and storage of these materials are beyond our control, we assume no responsibility or liability for personal injury or property damage incurred by the use of these materials. Rust-Oleum Corporation makes no warranty, expressed or implied, regarding the accuracy or reliability of the data or results obtained from their use. All materials may present unknown hazards and should be used with caution. The information and recommendations in this material safety data sheet are offered for the users' consideration and examination. It is the responsibility of the user to determine the final suitability of this information and to comply with all applicable international, federal, state, and local laws and regulations.

29 CFR 1910.1200 (OSHA HazCom 2012)

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Trade name : Valvoline™ PREMIUM CONVENTIONAL SAE 5W-30 Motor Oil

Details of the supplier of the safety data sheet	**Emergency telephone number**
Valvoline LLC 100 Valvoline Way Lexington, KY 40509 United States of America (USA) 1-800-TEAMVAL	1-800-VALVOLINE (1-800-825-8654) **Regulatory Information Number** 1-800-TEAMVAL **Product Information** 1-800-TEAMVAL

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

This material is not considered hazardous under the OSHA Hazard Communication Standard (HazCom 2012).

GHS label elements

This material is not considered hazardous under the OSHA Hazard Communication Standard (HazCom 2012).

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Classification	Concentration (%)
Distillates (Petroleum), Hydrotreated Heavy Paraffinic	64742-54-7	Asp. Tox. 1; H304	36.003
HYDROTREATED LIGHT PARAFFINIC DISTILLATE	64742-55-8	Asp. Tox. 1; H304	6.8809
Benzenesulfonic acid, C10-60-alkyl derivs., sodium salts	90194-32-4	Eye Irrit. 2A; H319	6.2162

DISTILLATES (PETROLEUM), SOLVENT-DEWAXED HEAVY PARAFFINIC	64742-65-0	Asp. Tox. 1; H304	1.8862

SECTION 4. FIRST AID MEASURES

General advice	:	No hazards which require special first aid measures.
If inhaled	:	If breathed in, move person into fresh air. If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.
In case of skin contact	:	First aid is not normally required. However, it is recommended that exposed areas be cleaned by washing with soap and water.
In case of eye contact	:	Remove contact lenses. Protect unharmed eye.
If swallowed	:	Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.
Most important symptoms and effects, both acute and delayed	:	Acute aspiration of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Repeated aspiration of small quantities of mineral oil can produce chronic inflammation of the lungs (i.e. lipoid pneumonia) that may progress to pulmonary fibrosis. Symptoms are often subtle and radiological changes appear worse than clinical abnormalities. Occasionally, persistent cough, irritation of the upper respiratory tract, shortness of breath with exertion, fever, and bloody sputum occur. Inhalation exposure to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities. Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: acne stomach or intestinal upset (nausea, vomiting, diarrhea) irritation (nose, throat, airways)
Notes to physician	:	No hazards which require special first aid measures.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Water spray Foam Carbon dioxide (CO2) Dry chemical
Specific hazards during firefighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	:	carbon dioxide and carbon monoxide Hydrocarbons
Specific extinguishing methods	:	Product is compatible with standard fire-fighting agents.
Further information	:	Standard procedure for chemical fires.
Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.
Environmental precautions	:	Prevent further leakage or spillage if safe to do so.
Methods and materials for containment and cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.
Other information	:	Comply with all applicable federal, state, and local regulations.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling	:	Smoking, eating and drinking should be prohibited in the application area. For personal protection see section 8.
Materials to avoid	:	No materials to be especially mentioned.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
HYDROTREATED LIGHT PARAFFINIC DISTILLATE	64742-55-8	TWA	5 mg/m3 Mist	OSHA Z-1
		TWA	5 mg/m3 Inhalable fraction	ACGIH
		TWA	5 mg/m3 Mist	OSHA P0
		TWA	5 mg/m3 Mist	NIOSH REL
		ST	10 mg/m3 Mist	NIOSH REL
		PEL	5 mg/m3 particulate	CAL PEL

Hazardous components without workplace control parameters

Components	CAS-No.

Engineering measures : General room ventilation should be adequate for normal conditions of use. However, if unusual operating conditions exist, provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.

Personal protective equipment

Respiratory protection : No personal respiratory protective equipment normally required.

Eye protection : Not required under normal conditions of use. Wear splash-proof safety goggles if material could be misted or splashed into eyes.

Skin and body protection : Wear as appropriate:
Safety shoes
Wear resistant gloves (consult your safety equipment supplier).

Hygiene measures : General industrial hygiene practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	:	liquid
Odour	:	No data available
Odour Threshold	:	No data available
pH	:	No data available
Melting point/freezing point	:	No data available
Boiling point/boiling range	:	No data available
Flash point	:	> 390 °F / > 199 °C Method: Cleveland open cup
Evaporation rate	:	No data available
Flammability (solid, gas)	:	No data available
Upper explosion limit	:	6 %(V) Calculated Explosive Limit
Lower explosion limit	:	1 %(V) Calculated Explosive Limit
Vapour pressure	:	1.3333333 hPa (20 °C) Calculated Vapor Pressure
Relative vapour density	:	No data available
Relative density	:	0.876 (15.6 °C)
Density	:	0.8599 g/cm3 (15.6 °C)
Solubility(ies)		
Water solubility	:	No data available
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Thermal decomposition	:	No data available
Viscosity		
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	63 mm2/s (40 °C)

Oxidizing properties : No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity : No decomposition if stored and applied as directed.

Chemical stability : Stable under recommended storage conditions.

Possibility of hazardous reactions : Product will not undergo hazardous polymerization.

Conditions to avoid : excessive heat

Incompatible materials : Strong oxidizing agents

Hazardous decomposition products : carbon dioxide and carbon monoxide
Hydrocarbons

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Inhalation
Skin contact
Eye Contact
Ingestion

Acute toxicity
Not classified based on available information.
Components:
Distillates (Petroleum), Hydrotreated Heavy Paraffinic:
Acute oral toxicity : LD50 (Rat): > 15 g/kg

Acute dermal toxicity : LD50 (Rabbit): > 5 g/kg

DISTILLATES (PETROLEUM), SOLVENT-DEWAXED HEAVY PARAFFINIC:
Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

Skin corrosion/irritation
Not classified based on available information.
Components:
Distillates (Petroleum), Hydrotreated Heavy Paraffinic:
Result: Slight, transient irritation

HYDROTREATED LIGHT PARAFFINIC DISTILLATE:

Result: Slight, transient irritation

Benzenesulfonic acid, C10-60-alkyl derivs., sodium salts:
Result: No skin irritation

DISTILLATES (PETROLEUM), SOLVENT-DEWAXED HEAVY PARAFFINIC:
Result: Slight, transient irritation

Serious eye damage/eye irritation
Not classified based on available information.
Product:
Remarks: Unlikely to cause eye irritation or injury.

Components:
Distillates (Petroleum), Hydrotreated Heavy Paraffinic:
Result: No eye irritation

HYDROTREATED LIGHT PARAFFINIC DISTILLATE:
Result: Slight, transient irritation

Benzenesulfonic acid, C10-60-alkyl derivs., sodium salts:
Result: Irritating to eyes.

DISTILLATES (PETROLEUM), SOLVENT-DEWAXED HEAVY PARAFFINIC:
Result: Slight, transient irritation

Respiratory or skin sensitisation
Skin sensitisation: Not classified based on available information.
Respiratory sensitisation: Not classified based on available information.
Germ cell mutagenicity
Not classified based on available information.
Carcinogenicity
Not classified based on available information.
Reproductive toxicity
Not classified based on available information.
STOT - single exposure
Not classified based on available information.
STOT - repeated exposure
Not classified based on available information.
Aspiration toxicity
Not classified based on available information.
Product:
No aspiration toxicity classification

Components:
Distillates (Petroleum), Hydrotreated Heavy Paraffinic:
May be fatal if swallowed and enters airways.

HYDROTREATED LIGHT PARAFFINIC DISTILLATE:
May be fatal if swallowed and enters airways.

DISTILLATES (PETROLEUM), SOLVENT-DEWAXED HEAVY PARAFFINIC:
May be fatal if swallowed and enters airways.

Further information
Product:
Remarks: No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity
Product:
Ecotoxicology Assessment

Acute aquatic toxicity	:	Not classified based on available information.
Chronic aquatic toxicity	:	Not classified based on available information.

Components:
Distillates (Petroleum), Hydrotreated Heavy Paraffinic:

Toxicity to fish	:	LL50 (Fish): > 100 mg/l
Toxicity to daphnia and other aquatic invertebrates	:	EL50 (Aquatic invertebrates): > 10,000 mg/l
Toxicity to algae	:	EL50 (Algae, algal mat (Algae)): > 100 mg/l
Toxicity to fish (Chronic toxicity)	:	NOEC (Fish): 10 mg/l
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Aquatic invertebrates): 10 mg/l

Persistence and degradability
Components:
No data available
Bioaccumulative potential
Components:
No data available
Mobility in soil
Components:
No data available
Other adverse effects
No data available
Product:

Additional ecological information	:	No data available

Components:

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

General advice : Dispose of in accordance with all applicable local, state and federal regulations.

Contaminated packaging : Empty remaining contents.

SECTION 14. TRANSPORT INFORMATION

International transport regulations

REGULATION

ID NUMBER	PROPER SHIPPING NAME	*HAZARD CLASS	SUBSIDIARY HAZARDS	PACKING GROUP	MARINE POLLUTANT / LTD. QTY.

U.S. DOT - ROAD

Not dangerous goods

CFR_RAIL_C

Not dangerous goods

U.S. DOT - INLAND WATERWAYS

Not dangerous goods

TDG_ROAD_C

Not dangerous goods

TDG_RAIL_C

Not dangerous goods

TDG_INWT_C

Not dangerous goods

INTERNATIONAL MARITIME DANGEROUS GOODS

Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO

Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER

Not dangerous goods

MX_DG

Not dangerous goods

***ORM = ORM-D, CBL = COMBUSTIBLE LIQUID**

Marine pollutant		no

Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act
CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.
SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : No SARA Hazards

SARA 313 This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Prop 65 Proposition 65 warnings are not required for this product based on the results of a risk assessment.

The components of this product are reported in the following inventories:

DSL : All components of this product are on the Canadian DSL

AICS : On the inventory, or in compliance with the inventory

KECI : On the inventory, or in compliance with the inventory

IECSC : q (quantity restricted)

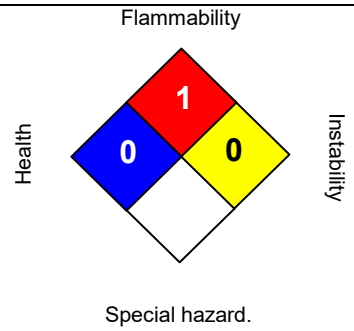
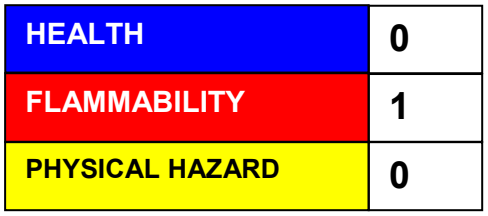
PICCS : On the inventory, or in compliance with the inventory

TSCA : On TSCA Inventory

Inventories
AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

SECTION 16. OTHER INFORMATION

Further information
Revision Date: 05/19/2017

NFPA:	HMIS III:
	

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

NFPA Flammable and Combustible Liquids Classification
Combustible Liquid Class IIIB

Full text of H-Statements

H304	May be fatal if swallowed and enters airways.
H319	Causes serious eye irritation.

Sources of key data used to compile the Safety Data Sheet
Valvoline internal data including own and sponsored test reports
The UNECE administers regional agreements implementing harmonised classification for labelling (GHS) and transport.

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This SDS has been prepared by Valvoline's Environmental Health and Safety Department (1-800-VALVOLINE).

List of abbreviations and acronyms that could be, but not necessarily are, used in this safety data sheet :
ACGIH : American Conference of Industrial Hygienists
BEI : Biological Exposure Index

CAS : Chemical Abstracts Service (Division of the American Chemical Society).
CMR : Carcinogenic, Mutagenic or Toxic for Reproduction
FG : Food grade
GHS : Globally Harmonized System of Classification and Labeling of Chemicals.
H-statement : Hazard Statement
IATA : International Air Transport Association.
IATA-DGR : Dangerous Goods Regulation by the “International Air Transport Association” (IATA).

ICAO : International Civil Aviation Organization
ICAO-TI (ICAO) : Technical Instructions by the “International Civil Aviation Organization”
IMDG : International Maritime Code for Dangerous Goods
ISO : International Organization for Standardization
logPow : octanol-water partition coefficient
LCxx : Lethal Concentration, for xx percent of test population
LDxx : Lethal Dose, for xx percent of test population.
ICxx : Inhibitory Concentration for xx of a substance
Ecxx : Effective Concentration of xx
N.O.S.: Not Otherwise Specified
OECD : Organization for Economic Co-operation and Development
OEL : Occupational Exposure Limit
P-Statement : Precautionary Statement
PBT : Persistent , Bioaccumulative and Toxic
PPE : Personal Protective Equipment
STEL : Short-term exposure limit
STOT : Specific Target Organ Toxicity
TLV : Threshold Limit Value
TWA : Time-weighted average
vPvB : Very Persistent and Very Bioaccumulative
WEL : Workplace Exposure Level

CERCLA : Comprehensive Environmental Response, Compensation, and Liability Act
DOT : Department of Transportation
FIFRA : Federal Insecticide, Fungicide, and Rodenticide Act
HMIRC : Hazardous Materials Information Review Commission
HMIS : Hazardous Materials Identification System
NFPA : National Fire Protection Association
NIOSH : National Institute for Occupational Safety and Health
OSHA : Occupational Safety and Health Administration
PMRA : Health Canada Pest Management Regulatory Agency
RTK : Right to Know
WHMIS : Workplace Hazardous Materials Information System

SAFETY DATA SHEET

SECTION 1 IDENTIFICATION

PRODUCT

Product Name: **2257 GEAR OIL 75W-90**
Product Description: Base Oil and Additives
SDS Number: 21276
Product Code: 202030101014
Intended Use: Gear oil

COMPANY IDENTIFICATION

Supplier: **Imperial Oil Downstream**
P.O. Box 2480, Station M
Calgary, ALBERTA T2P 3M9 Canada

24 Hour Emergency Telephone	1-866-232-9563
Transportation Emergency Phone Number	1-866-232-9563
Product Technical Information	1-800-268-3183
Supplier General Contact	1-800-567-3776

SECTION 2 HAZARD IDENTIFICATION

This material is considered to be NON-HAZARDOUS according to regulatory guidelines.

This product has been classified in accordance with hazard criteria of the Hazardous Products Regulations (HPR) SOR/2015-17 and the SDS contains all the information required by the HPR SOR/2015-17.

Other hazard information:

Health Hazards Not Otherwise Classified: None as defined under HPR SOR/2015-17.

Physical Hazards Not Otherwise Classified: None as defined under HPR SOR/2015-17.

PHYSICAL / CHEMICAL HAZARDS

No significant hazards.

HEALTH HAZARDS

High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.

ENVIRONMENTAL HAZARDS

Expected to be harmful to aquatic organisms.

NFPA Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0
HMIS Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a mixture.

Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*	GHS Hazard Codes
LUBRICATING OILS (PETROLEUM), HYDROTREATED NEUTRAL OIL-BASED	72623-86-0	1 - < 5%	H304
OLEFIN SULPHIDE	Confidential	1 - < 5%	H227
OLEYL AMINE	112-90-3	< 0.1%	H302, H314(1A), H400(M factor 10)
SEVERELY HYDROTREATED HEAVY PARAFFINIC DISTILLATE	64742-54-7	30 - < 40%	H304
SOLVENT DEWAXED HEAVY PARAFFINIC DISTILLATE	64742-65-0	30 - < 40%	H304
ZINC DITHIOPHOSPHATE	68649-42-3	0.1 - < 1%	H315, H318, H401, H411

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

SECTION 4 FIRST-AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight streams of water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Aldehydes, Incomplete combustion products, Oxides of carbon, Smoke, Fume, Sulphur oxides

FLAMMABILITY PROPERTIES

Flash Point [Method]: >165°C (329°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

PROTECTIVE MEASURES

Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: respiratory protection will be necessary only in special cases, e.g., formation of mists. Half-face or full-face respirator with filter(s) for dust/organic vapor or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to hydrocarbons are recommended. Gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do so without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do so without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dyke far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or earthing procedures. However, bonding and earthing may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator.

STORAGE

The type of container used to store the material may affect static accumulation and dissipation. Do not store in open or unlabelled containers. Keep away from incompatible materials.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Substance Name	Form	Limit/Standard			Note	Source
LUBRICATING OILS (PETROLEUM), HYDROTREATED NEUTRAL OIL-BASED	Inhalable fraction.	TWA	5 mg/m3			ACGIH
SEVERELY HYDROTREATED HEAVY PARAFFINIC DISTILLATE	Inhalable fraction.	TWA	5 mg/m3			ACGIH
SOLVENT DEWAXED HEAVY PARAFFINIC DISTILLATE	Inhalable fraction.	TWA	5 mg/m3			ACGIH

Exposure limits/standards for materials that can be formed when handling this product: When mists/aerosols can occur the following is recommended: 5 mg/m³ - ACGIH TLV (inhalable fraction).

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practise good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid
Colour: Amber
Odour: Characteristic
Odour Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 °C): 0.884
Flammability (Solid, Gas): N/A
Flash Point [Method]: >165°C (329°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: > 316°C (600°F)
Decomposition Temperature: N/D
Vapour Density (Air = 1): > 2 at 101 kPa
Vapour Pressure: < 0.013 kPa (0.1 mm Hg) at 20ºC
Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
Solubility in Water: Negligible
Viscosity: 74.72 cSt (74.72 mm2/sec) at 40ºC | 14 cSt (14 mm2/sec) at 100°C [ASTM D 445]
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/A
Pour Point: -40°C (-40°F)
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Negligible hazard at ambient/normal handling temperatures.
Ingestion	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin Corrosion/Irritation: No end point data for material.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
Eye	
Serious Eye Damage/Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.
Sensitisation	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: No end point data for material.	Not expected to be a skin sensitizer. Based on assessment of the components.
Aspiration: Data available.	Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: No end point data for material.	Not expected to be a germ cell mutagen. Based on assessment of the components.
Carcinogenicity: No end point data for material.	Not expected to cause cancer. Based on assessment of the components.
Reproductive Toxicity: No end point data for material.	Not expected to be a reproductive toxicant. Based on assessment of the components.
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: No end point data for material.	Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components.

OTHER INFORMATION

For the product itself:

Repeated and/or prolonged exposure may cause irritation to the skin, eyes, or respiratory tract.

Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitising in test animals.

CMR Status: None.

Chemical Name	CAS Number	List Citations

LUBRICATING OILS (PETROLEUM), HYDROTREATED NEUTRAL OIL-BASED	72623-86-0	4

--REGULATORY LISTS SEARCHED--

1 = IARC 1
2 = IARC 2A
3 = IARC 2B
4 = ACGIH ALL
5 = ACGIH A1
6 = ACGIH A2

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

ECOTOXICITY

Material -- Expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Protect the environment. Dispose of used oil at designated sites. Minimize skin contact. Do not mix used oils with solvents, brake fluids or coolants.

REGULATORY DISPOSAL INFORMATION

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (TDG): Not Regulated for Land Transport

LAND (DOT): Not Regulated for Land Transport

SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

Marine Pollutant: No

AIR (IATA): Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

CEPA: Contains one or more components that are on the NDSL and have been notified under CEPA.

Listed or exempt from listing/notification on the following chemical inventories (May contain substance(s) subject to notification to the EPA Active TSCA inventory prior to import to USA): AICS, ENCS, IECSC, KECI, PICCS, TSCA

Special Cases:

Inventory	Status
NDSL	Restrictions Apply

The Following Ingredients are Cited on the Lists Below: None.

--REGULATORY LISTS SEARCHED--

1 = TSCA 4
2 = TSCA 5a2
3 = TSCA 5e
4 = TSCA 6
5 = TSCA 12b
6 = NPRI

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):
H227: Combustible liquid; Flammable Liquid, Cat 4
H302: Harmful if swallowed; Acute Tox Oral, Cat 4
H304: May be fatal if swallowed and enters airways; Aspiration, Cat 1
H314(1A): Causes severe skin burns and eye damage; Skin Corr/Irritation, Cat 1A
H315: Causes skin irritation; Skin Corr/Irritation, Cat 2
H318: Causes serious eye damage; Serious Eye Damage/Irr, Cat 1
H400: Very toxic to aquatic life; Acute Env Tox, Cat 1
H401: Toxic to aquatic life; Acute Env Tox, Cat 2
H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Updates made in accordance with implementation of GHS requirements.

The information and recommendations contained herein are, to the best of Imperial Oil's knowledge and belief, accurate and reliable as of the date issued. Imperial Oil assumes no responsibility for accuracy of information unless the document is the most current available from an official Imperial Oil distribution system. The information and recommendations are offered for the user's consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use. If buyer repackages this product, legal counsel should be consulted to insure proper health, safety and other necessary information is included on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, republication or retransmission of this document, in whole or in part, is not permitted.

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SAFETY DATA SHEET

SECTION 1 : IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product name : PICAGOLD G Series
Product code : Activated Carbon.

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use as an adsorbent in industrial, professional and consumer setting.

1.3. Details of the supplier of the safety data sheet

Registered company name : Jacobi Carbons AG.
Address : Rheinweg 5 .CH-8200.Schaffhausen.Switzerland.
Telephone : +41 52 647 30 00. Fax : +41 52 647 30 09.
msds@jacobi.net
www.jacobi.net

Initial Supplier Identifier
Données relatives au fournisseur
Univar Solutions Canada Ltd.
64 Arrow Road
North York, ON M9M 2L9
Telephone: 1-866-686-4827

1.4. Emergency telephone number : CH : +41 44 251 51 51.

Association/Organisation : Tox Info Suisse.

SECTION 2 : HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

GHS compliant.

This substance does not present a physical hazard. Refer to the recommendations regarding the other products present on the site.

This substance does not present a health hazard with the exception of possible occupational exposure thresholds (see paragraphs 3 and 8).

This substance does not present an environmental hazard. No known or foreseeable environmental damage under standard conditions of use.

2.2. Label elements

GHS compliant.

No labelling requirements for this substance.

2.3. Other hazards

In the event of dust formed by mechanical action (sanding, sawing, etc..), this dust may cause irritation by inhalation and contact with eyes.

May cause CO and CO2 emanations in the event of a fire.

Wet Activated Carbon depletes oxygen from air and, therefore, dangerously low levels of oxygen may be encountered. Whenever workers enter a vessel containing activated carbon, the oxygen content should be determined and work procedures for potentially low oxygen areas should be followed.

According to the ECHA Guidance on chemical safety assessment, Chapter R11, section R11.1.2.1: "The PBT and vPvB criteria of Annex XIII to the Regulation do not apply to inorganic substances". As Activated Carbon - HDS type is to be considered as an inorganic substance, the PBT assessment is not applicable.

SECTION 3 : COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Composition :

Identification	GHS	Note	%
CAS: 7440-44-0 EC: 931-328-0 REACH: 01-2119488894-16-0013 ACTIVATED CARBON - HIGH DENSITY SKELETON (AC-HDS)		[1]	100%

Information on ingredients :

A porous, amorphous, high surface area adsorbent material composed largely of elemental carbon.
[1] Substance for which maximum workplace exposure limits are available.

SECTION 4 : FIRST AID MEASURES

As a general rule, in case of doubt or if symptoms persist, always call a doctor.
NEVER induce swallowing by an unconscious person.

4.1. Description of first aid measures

In the event of exposure by inhalation :

If breathing is irregular or has stopped, effect mouth-to-mouth resuscitation and call a doctor.
Fresh air, rest.
Obtain medical attention if cough or respiratory symptoms develop.

In the event of splashes or contact with eyes :

Wash thoroughly with fresh, clean water for 15 minutes holding the eyelids open.
If there is any redness, pain or visual impairment, consult an ophthalmologist.

In the event of splashes or contact with skin :

Watch out for any remaining product between skin and clothing, watches, shoes, etc.
Rince with water and soap.
Remove contaminated clothes.
Obtain medical attention if irritation becomes apparent.

In the event of swallowing :

Do not give the patient anything orally.
In the event of swallowing, if the quantity is small (no more than one mouthful), rinse the mouth with water and consult a doctor.
Seek medical attention immediately, showing the label.
Give at least 1/2 L of water to drink.
Obtain mediacl attention if gastrintestinal symptoms develop.
Do not induce vomiting.

4.2. Most important symptoms and effects, both acute and delayed

When large amounts are ingested orally, congestion may occur.

4.3. Indication of any immediate medical attention and special treatment needed

Specific and immediate treatment :

N/A

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Information for the doctor :

Medications efficiency can be reduced by the adsorbing power of the activated carbon.

SECTION 5 : FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable methods of extinction

In the event of a fire, use :
- sprayed water or water mist
- carbon dioxide (CO2)
- foam
- powder

Unsuitable methods of extinction

In the event of a fire, do not use :
- water jet

in the closed areas, in order to avoid the water contamination.

5.2. Special hazards arising from the substance or mixture

A fire will often produce a thick black smoke. Exposure to decomposition products may be hazardous to health.

Do not breathe in smoke.

In the event of a fire, the following may be formed :
- carbon monoxide (CO)
- carbon dioxide (CO2)
- other decomposition products for the saturated activated carbon.

After a fire, smoldering hotspots within the activated carbon may be present for a long time.

Activated Carbon which has been allowed to smolder for a long time in a confined space may accumulate carbon monoxide above its lower explosion limit.

5.3. Advice for firefighters

Due to the toxicity of the gas emitted on thermal decomposition of the products, fire-fighting personnel are to be equipped with autonomous insulating breathing apparatus.

SECTION 6 : ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Consult the safety measures listed under headings 7 and 8.

For first aid worker

First aid workers will be equipped with suitable personal protective equipment (See section 8).

6.2. Environmental precautions

Prevent any material from entering drains or waterways.

6.3. Methods and material for containment and cleaning up

Retrieve the product by mechanical means (sweeping/vacuuming).

6.4. Reference to other sections

See also sections 2 & 8

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SECTION 7 : HANDLING AND STORAGE

Requirements relating to storage premises apply to all facilities where the substance is handled.

7.1. Precautions for safe handling

Always wash hands after handling.

Prevent dust generation. Apply good working practices and engineering procedures during discharge.

See the exposure controls and personal protection measures in the section 8.

Fire prevention :

Prevent access by unauthorised personnel.

Prevent dust generation.

Keep away from heat sources.

Immediately retrieve the product in case of spilling

Recommended equipment and procedures :

For personal protection, see section 8.

Observe precautions stated on label and also industrial safety regulations.

Ensure containment and adequate ventilation.

Whenever workers enter a vessel containing activated carbon, the oxygen content should be determined and work procedures for potentially low oxygen areas should be followed.

Prohibited equipment and procedures :

No smoking, eating or drinking in areas where the substance is used.

7.2. Conditions for safe storage, including any incompatibilities

Keep away from any chemical (solvents and strong oxidisers).

Keep away from heat sources.

Store in a well-ventilated area.

Keep the container away from dampness

Storage

Store and keep away from any chemical (solvents and strong oxidisers).

Storage of wet activated carbon in a closed area can deplete oxygen from air.

Packaging

Always keep in packaging made of an identical material to the original.

Store in the closed, original packaging.

7.3. Specific end use(s)

No data available.

SECTION 8 : EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Occupational exposure limits :

- Non otherwise classified dusts : 10 mg/m3
- UK / WEL (Workplace exposure limits, EH40/2005, Fourth Edition 2020) :

CAS	TWA :	STEL :	Ceiling :	Definition :	Criteria :
7440-44-0	4 mg/m³				

Biological limits :

/

Derived no effect level (DNEL) or derived minimum effect level (DMEL):

ACTIVATED CARBON - HIGH DENSITY SKELETON (AC-HDS) (CAS: 7440-44-0)

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Final use:	**Workers.**
Exposure method:	Inhalation.
Potential health effects:	Short term local effects.
DNEL :	3 mg of substance/m3
Exposure method:	Inhalation.
Potential health effects:	Long term systemic effects.
DNEL :	3 mg of substance/m3

Final use:	**Consumers.**
Exposure method:	Inhalation.
Potential health effects:	Short term local effects.
DNEL :	0.5 mg of substance/m3
Exposure method:	Inhalation.
Potential health effects:	Long term systemic effects.
DNEL :	0.5 mg of substance/m3

8.2. Exposure controls

Appropriate engineering controls

Local exhaust ventilation is recommended.

For the use of Granular Activated Carbon, no risk management measures are mandatory, but only recommended.

Personal protection measures, such as personal protective equipment

Use personal protective equipment that is clean and has been properly maintained.

Store personal protective equipment in a clean place, away from the work area.

Never eat, drink or smoke during use. Remove and wash contaminated clothing before re-using. Ensure that there is adequate ventilation, especially in confined areas.

- Eye / face protection

Avoid contact with eyes.

Before handling powders or dust emission, wear mask goggles in accordance with standard EN166.

- Hand protection

Wear suitable protective gloves in the event of prolonged or repeated skin contact.

- Body protection

Work clothing worn by personnel shall be laundered regularly.

After contact with the product, all parts of the body that have been soiled must be washed.

- Respiratory protection

Avoid breathing dust.

Type of FFP mask :

Wear a disposable half-mask dust filter in accordance with standard EN149.

Category :

- FFP2

Particle filter according to standard EN143 :

- P (White)

Exposure controls linked to environmental protection

Local exhaust ventilation to remove material at source.

Contained storage.

Regulated waste disposal.

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SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

General information :

Physical state :	Solid in granules.
Odour:	None
Color:	Black

Important health, safety and environmental information

pH :	Not relevant.
pH (aqueous solution) :	7-11
Boiling point/boiling range :	Not specified.
Flash point interval :	Not relevant.
Explosive properties, lower explosivity limit (%) :	NA
Explosive properties, upper explosivity limit (%) :	NA
Vapour pressure (50°C) :	Not relevant.
Vapour density :	NA
Density :	200-700 kg/m3
	Method for determining the density :
ASTM D2854	
Miscibility :	NA
Water solubility :	Insoluble. 0
	Method for determining the water solubility :
	OCDE Guideline 105 (Water solubility).
Partition coefficient: n-octanol/water :	NA
Viscosity :	NA
Evaporation rate :	NA
Melting point/melting range :	Not specified.
Self-ignition temperature :	Not specified.
Decomposition point/decomposition range :	Not specified.

9.2. Other information

Physical and chemical properties of the saturated activated carbon may be different from the virgin material.

SECTION 10 : STABILITY AND REACTIVITY

10.1. Reactivity

This product shows no reactivity under the specified conditions of storage, shipment and use.

10.2. Chemical stability

This substance is stable under the recommended handling and storage conditions in section 7.

10.3. Possibility of hazardous reactions

In contact with solvents and strong oxidisers.

10.4. Conditions to avoid

Avoid :
- formation of dusts
- humidity
- heating
- heat

Dusts can form an explosive mixture with air.

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10.5. Incompatible materials

Keep away from :
- strong oxidising agents
- strong acids
- flammable material
- solvents

10.6. Hazardous decomposition products

The thermal decomposition may release/form :
- carbon monoxide (CO)
- carbon dioxide (CO2)

SECTION 11 : TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

In the event of dust formed by mechanical action (sanding, sawing, etc..), this dust may cause irritation by inhalation and contact with eyes.

11.1.1. Substances

Based on the physical and chemical properties of activated carbons, the absence of effects on toxicological studies and the therapeutic use of activated carbons as adsorbing agents for the treatment of acute poisoning and acute diarrhoea, it can be expected that Activated Carbon is not absorbed via the oral, dermal and inhalation routes.

Acute toxicity :

ACTIVATED CARBON - HIGH DENSITY SKELETON (AC-HDS) (CAS: 7440-44-0)

Oral route :	LD50 > 2000 mg/kg Species : Rat OECD Guideline 423 (Acute Oral toxicityAcute Toxic Class Method)
Inhalation route (Dusts/mist) :	LC50 > 64.4 mg/l Species : Rat OECD Guideline 403 (Acute Inhalation Toxicity)

Skin corrosion/skin irritation :

ACTIVATED CARBON - HIGH DENSITY SKELETON (AC-HDS) (CAS: 7440-44-0)

Corrosivity :	No observed effect. Species : Rabbit OECD Guideline 404 (Acute Dermal Irritation / Corrosion)

Serious damage to eyes/eye irritation :

ACTIVATED CARBON - HIGH DENSITY SKELETON (AC-HDS) (CAS: 7440-44-0)

Corneal haze :	Average score = 0.00 Species : Rabbit Duration of exposure : 72 h OECD Guideline 405 (Acute Eye Irritation / Corrosion)
Iritis :	Average score = 0.00 Species : Rabbit Duration of exposure : 72 h OECD Guideline 405 (Acute Eye Irritation / Corrosion)
Conjunctival redness :	Average score = 0.67 Species : Rabbit Duration of exposure : 72 h

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OECD Guideline 405 (Acute Eye Irritation / Corrosion)

Conjunctival oedema : Average score = 0.33
Species : Rabbit
Duration of exposure : 72 h
OECD Guideline 405 (Acute Eye Irritation / Corrosion)

Respiratory or skin sensitisation :

- Inhalation : No information available
- Skin : Not sensitising.

ACTIVATED CARBON - HIGH DENSITY SKELETON (AC-HDS) (CAS: 7440-44-0)

Local lymph node stimulation test : Non-Sensitiser.
Species : Mouse
OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)

Germ cell mutagenicity :

All the key studies indicate that the substance does not show any genotoxic potential. Therefore, it can be concluded that the substance is not mutagenic and does not need to be classified for mutagenicity according to the criteria outlined in Annex I of 1272/2008/EC (CLP / EU GHS) and Annex VI of 67/548/EEC (DSD/DPD).

ACTIVATED CARBON - HIGH DENSITY SKELETON (AC-HDS) (CAS: 7440-44-0)

Mutagenesis (in vitro) : Negative.
Species : Bacteria
OECD Guideline 471 (Bacterial Reverse Mutation Assay)

Ames test (in vitro) : Negative.
With or without metabolic activation.
Species : S. typhimurium TA1535

Carcinogenicity :

No data available

Reproductive toxicant :

No data available

Specific target organ systemic toxicity - single exposure :

ACTIVATED CARBON - HIGH DENSITY SKELETON (AC-HDS) (CAS: 7440-44-0)

Oral route : C > 2000 mg/kg bodyweight
Species : Rat

SECTION 12 : ECOLOGICAL INFORMATION

12.1. Toxicity

12.1.1. Substances

As Activated Carbon is insoluble in water, no toxicity is expected.

12.2. Persistence and degradability

Activated Carbon - HDS type is a refractory materail and not amenable to break down by any natural chemical or enzymatic processes.

AC - HDS cannot be rendered into a soluble form capable of being absorbed.

Therefore it cannot find its way to any cell site where it could be conceivably be biodegraded.

12.3. Bioaccumulative potential

The substance has a very low potential to bioaccumulate in aquatic species (e.g. fish), i.e. a BCF < 10.

The substance has no log Kow, the substance size will impede passing membranes (particles with size > 0.5µm) and is not soluble in water. The bioaccumulation study is thus infeasible.

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12.4. Mobility in soil

No data available, as the substance is insoluble.

12.5. Results of PBT and vPvB assessment

According to the ECHA Guidance on chemical safety assessment, Chapter R11, section R11.1.2.1: "The PBT and vPvB criteria of Annex XIII to the Regulation do not apply to inorganic substances". As Activated Carbon - HDS type is to be considered as an inorganic substance, the PBT assessment is not applicable.

12.6. Other adverse effects

No data available.

SECTION 13 : DISPOSAL CONSIDERATIONS

The appropriate waste management of the substance and/or its container must be determined in accordance with local regulations.

13.1. Waste treatment methods

Do not pour into drains or waterways.

Waste :

Waste management is carried out without endangering human health, without harming the environment and, in particular without risk to water, air, soil, plants or animals.

Recycle or dispose of waste in compliance with current legislation, preferably via a certified collector or company.

Do not contaminate the ground or water with waste, do not dispose of waste into the environment.

Soiled packaging :

Empty container completely. Keep label(s) on container.

Give to a certified disposal contractor.

SECTION 14 : TRANSPORT INFORMATION

Transport product in compliance with provisions of the ADR for road, RID for rail, IMDG for sea and ICAO/IATA for air transport (ADR 2019 - IMDG 2018 - ICAO/IATA 2020).

14.1. UN number

1362

14.2. UN proper shipping name

UN1362=CARBON, ACTIVATED

14.3. Transport hazard class(es)

- Classification :

4.2

- Exemption

ADR/RID: special provision 646

IMDG: special provision 925

> Steam activated carbon

IATA: special provision A3

> Does not meet the defined criteria, after having been submitted to the 4.2 test (UN Manual of Tests and Criteria (§ 33.3.1.3.3))

14.4. Packing group

III

14.5. Environmental hazards

-

14.6. Special precautions for user

ADR/RID	Class	Code	Pack gr.	Label	Ident.	LQ	Provis.	EQ	Cat.	Tunnel
	4.2	S2	III	4.2	40	0	646	E1	4	E
IMDG	Class	2°Label	Pack gr.	LQ	EMS	Provis.	EQ	Stowage Handling	Segregation	

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	4.2	-	III	0	F-A, S-J	223 925	E1	Category A SW1 H2	-
IATA	Class	2°Label	Pack gr.	Passager	Passager	Cargo	Cargo	note	EQ
	4.2	-	III	472	0.5 kg	472	0.5 kg	A3	E1
	4.2	-	III	Forbidden	Forbidden	-	-	A3	E1

For limited quantities, see part 2.7 of the OACI/IATA and chapter 3.4 of the ADR and IMDG.

For excepted quantities, see part 2.6 of the OACI/IATA and chapter 3.5 of the ADR and IMDG.

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

No data available.

SECTION 15 : REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

The following regulations have been used:

- Globally Harmonized System of Classification and Labelling of Chemicals (GHS), review no. 5 (2013)

- Container information:

No data available.

- Particular provisions :

No data available.

- Standardised American system for the identification of hazards presented by the product in view of emergency procedures (NFPA 704) :

NFPA 704, Labelling: Health=0 Inflammability=1 Instability/Reactivity=1 Specific Risk=none

15.2. Chemical safety assessment

No data available.

SECTION 16 : OTHER INFORMATION

Since the user's working conditions are not known by us, the information supplied on this safety data sheet is based on our current level of knowledge and on national and community regulations.

It is at all times the responsibility of the user to take all necessary measures to comply with legal requirements and local regulations.

The information in this safety data sheet must be regarded as a description of the safety requirements relating to the substance and not as a guarantee of the properties thereof.

Abbreviations :

DNEL : Derived No-Effect Level
STEL : Short-term exposure limit
TWA : Time Weighted Averages
TLV : Threshold Limit Value (exposure)
AEV : Average Exposure Value.
ADR : European agreement concerning the international carriage of dangerous goods by Road.
IMDG : International Maritime Dangerous Goods.
IATA : International Air Transport Association.
ICAO : International Civil Aviation Organisation
RID : Regulations concerning the International carriage of Dangerous goods by rail.
PBT: Persistent, bioaccumulable and toxic.
vPvB : Very persistent, very bioaccumulable.

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SAFETY DATA SHEET

Acetylene

Section 1. Identification

GHS product identifier : Acetylene

Chemical name : acetylene

Other means of identification : Ethyne; Ethine; Narcylen; C2H2; Acetylen; UN 1001; Vinylene

Product type : Gas.

Product use : Synthetic/Analytical chemistry.

Synonym : Ethyne; Ethine; Narcylen; C2H2; Acetylen; UN 1001; Vinylene

SDS # : 001001

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE GASES - Category 1
GASES UNDER PRESSURE - Compressed gas

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Extremely flammable gas.
Contains gas under pressure; may explode if heated.
May displace oxygen and cause rapid suffocation.
May form explosive mixtures with air.

Precautionary statements

General : Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Fusible plugs in top, bottom, or valve melt at 98°C to 107°C (208°F to 224°F). Do not discharge at pressures above 15psig (103kpa). Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Approach suspected leak area with caution.

Prevention : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Response : Leaking gas fire: Do not extinguish, unless leak can be stopped safely. In case of leakage, eliminate all ignition sources.

Storage : Protect from sunlight. Store in a well-ventilated place.

Disposal : Not applicable.

Hazards not otherwise classified : In addition to any other important health or physical hazards, this product may displace oxygen and cause rapid suffocation.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : acetylene

Other means of identification : Ethyne; Ethine; Narcylen; C2H2; Acetylen; UN 1001; Vinylene

Product code : 001001

CAS number/other identifiers

CAS number : 74-86-2

Ingredient name	%	CAS number
Acetylene	100	74-86-2

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : As this product is a gas, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.

Inhalation : No known significant effects or critical hazards.

Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : As this product is a gas, refer to the inhalation section.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Section 4. First aid measures

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. Extremely flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Accidental releases pose a serious fire or explosion hazard. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Large spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid breathing gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Use only non-sparking tools. Avoid contact with eyes, skin and clothing. Empty containers retain product residue and can be hazardous. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Eliminate all ignition sources. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Acetylene	**NIOSH REL (United States, 10/2016).** CEIL: 2662 mg/m³ CEIL: 2500 ppm **ACGIH TLV (United States, 3/2019). Oxygen Depletion [Asphyxiant]. Explosive potential.** **California PEL for Chemical Contaminants (*Table AC-1*) (United States). Oxygen Depletion [Asphyxiant].**

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 8. Exposure controls/personal protection

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Gas.

Color : Colorless.

Odor : Mild. Ethereal.

Odor threshold : Not available.

pH : Not available.

Melting point : -81°C (-113.8°F)

Boiling point : Not available.

Critical temperature : 35.25°C (95.5°F)

Flash point : Closed cup: -18.15°C (-0.67°F)

Evaporation rate : Not available.

Flammability (solid, gas) : Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and oxidizing materials.
Highly flammable in the presence of the following materials or conditions: heat.

Lower and upper explosive (flammable) limits : Lower: 2.5%
Upper: 100%

Vapor pressure : 635 (psig)

Vapor density : 0.907 (Air = 1)

Specific Volume (ft ^{3}/lb) : 14.7058

Gas Density (lb/ft ^{3}) : 0.0691

Relative density : Not applicable.

Solubility : Not available.

Solubility in water : 1.2 g/l

Partition coefficient: n-octanol/water : 0.37

Auto-ignition temperature : 305°C (581°F)

Section 9. Physical and chemical properties

Decomposition temperature : Not available.

Viscosity : Not applicable.

Flow time (ISO 2431) : Not available.

Molecular weight : 26.04 g/mole

Aerosol product

Heat of combustion : -48257522 J/kg

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

Incompatible materials : Oxidizers

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Not available.

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Section 11. Toxicological information

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.

Inhalation : No known significant effects or critical hazards.

Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.

Ingestion : As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Section 12. Ecological information

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Acetylene	0.37	-	low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1001	UN1001	UN1001	UN1001	UN1001
UN proper shipping name	ACETYLENE, DISSOLVED	ACETYLENE, DISSOLVED	ACETYLENE, DISSOLVED	ACETYLENE, DISSOLVED	ACETYLENE, DISSOLVED
Transport hazard class(es)	2.1	2.1	2.1	2.1	2.1
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Additional information

DOT Classification : **Limited quantity** Yes.
Quantity limitation Passenger aircraft/rail: Forbidden. Cargo aircraft: 15 kg.

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2).

Explosive Limit and Limited Quantity Index
0

Passenger Carrying Vessel Index
75

Passenger Carrying Road or Rail Index
Forbidden

Section 14. Transport information

Special provisions
38

IATA : **Quantity limitation** Passenger and Cargo Aircraft: Forbidden. Cargo Aircraft Only: 15 kg.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

Clean Air Act (CAA) 112 regulated flammable substances: acetylene

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

State regulations

Massachusetts : This material is listed.

New York : This material is not listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

Section 15. Regulatory information

UNECE Aarhus Protocol on POPs and Heavy Metals

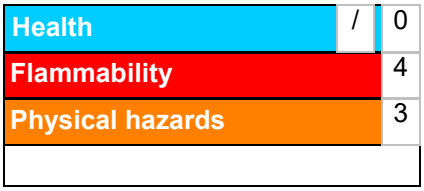
Not listed.

Inventory list

Australia	:	This material is listed or exempted.
Canada	:	This material is listed or exempted.
China	:	This material is listed or exempted.
Europe	:	This material is listed or exempted.
Japan	:	**Japan inventory (ENCS)**: This material is listed or exempted. **Japan inventory (ISHL)**: Not determined.
New Zealand	:	This material is listed or exempted.
Philippines	:	This material is listed or exempted.
Republic of Korea	:	This material is listed or exempted.
Taiwan	:	This material is listed or exempted.
Thailand	:	Not determined.
Turkey	:	This material is listed or exempted.
United States	:	This material is active or exempted.
Viet Nam	:	This material is listed or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)

Note: The instability hazard rating for acetylene, dissolved (stabilized acetylene) is 2.

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
FLAMMABLE GASES - Category 1 GASES UNDER PRESSURE - Compressed gas	Expert judgment According to package

Section 16. Other information

History

Date of printing : 6/21/2021

Date of issue/Date of revision : 6/21/2021

Date of previous issue : 11/11/2020

Version : 2.02

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET

Revision date: 09-Nov-2021

Revision Number 10

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product identifier

Product Name	AMMONIUM NITRATE
Product Code(s)	000022017701

Other means of identification

Proper shipping name	AMMONIUM NITRATE
UN number	1942
CAS No.	6484-52-2
Synonyms	Nitropril, Anopril, Marbyl, Ammonium nitrate prills, LDAN, Low density ammonium nitrate, PPAN, Porous prilled ammonium nitrate

Recommended use of the chemical and restrictions on use

Recommended use	Explosives manufacture. Restricted to professional users. This material is classified as a Security Sensitive Ammonium Nitrate (SSAN). Various government controls may apply to this material.
Uses advised against	No information available.

Supplier

Orica Australia Pty Ltd
ABN: 99 004 117 828
1 Nicholson Street
Melbourne 3000
Australia

Telephone Number: +61 3 9665 7111
Facsimile: +61 3 9665 7937

Emergency telephone number

Emergency telephone number — **AUSTRALIA: 1 800 033 111 (ALL HOURS)**
INTERNATIONAL AUSTRALIA: +61 3 9663 2130 (ALL HOURS)

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

2. HAZARDS IDENTIFICATION

GHS Classification

Classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG).

Classified as a hazardous chemical in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS).

Various regulations/controls/authorisations/licences may apply governing the manufacture, importation, exportation, use, handling, storage, sale/supply, transport and disposal of ammonium nitrate. Ammonium nitrate in Australia is considered a security sensitive material and loss, theft, attempted theft and unexplained discrepancies shall be reported to authorities. Record keeping and licensing of individuals shall be required and maintained.

Oxidizing solids	Category 3
Serious eye damage/eye irritation	Category 2

SIGNAL WORD
Warning

Label elements

Flame over circle
Exclamation mark

Hazard statements
H272 - May intensify fire; oxidizer
H319 - Causes serious eye irritation

Precautionary Statements - Prevention
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
Keep away from clothing and other combustible materials
Take any precaution to avoid mixing with combustibles
Wash hands thoroughly after handling
Wear protective gloves / protective clothing / eye protection / face protection
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
In case of fire: Use extinguishing media as outlined in Section 5 of this Safety Data Sheet to extinguish.
Precautionary Statements - Storage
No storage statements
Precautionary Statements - Disposal
Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

Other hazards which do not result in classification
AUH031 - Contact with acids liberates toxic gas
AUH044 - Risk of explosion if heated under confinement
Poisons Schedule (SUSMP) None allocated

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS No.	Weight-%
Ammonium nitrate	6484-52-2	>98% w/w
Other minor ingredients	-	<2% w/w

4. FIRST AID MEASURES

Description of first aid measures

General advice For advice, contact a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor. Show this safety data sheet to the doctor in attendance.

Emergency telephone number	Poisons Information Center, Australia: 13 11 26 Poisons Information Center, New Zealand: 0800 764 766
Inhalation	Remove to fresh air. If breathing is difficult, (trained personnel should) give oxygen. Immediately give oxygen if victim turns blue (lips, ears, fingernails). Give artificial respiration if victim is not breathing. Get medical attention immediately if symptoms occur.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get medical attention if irritation develops and persists.
Skin contact	Wash off immediately with soap and plenty of water for at least 15 minutes. Nitrates can be absorbed through cut, burnt or broken skin. Call a physician if symptoms occur. Take off contaminated clothing and wash before reuse.
Ingestion	Clean mouth with water and drink afterwards plenty of water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention.
Self-protection of the first aider	Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Use personal protective equipment as required. Avoid contact with skin, eyes, and clothing. Do not breathe dust. See section 8 for more information.

Most important symptoms and effects, both acute and delayed

Symptoms	Irritation. Nitrates can be absorbed through cut, burnt or broken skin.

Indication of any immediate medical attention and special treatment needed

Note to physicians

Treat symptomatically. Treat as for exposure to nitrates. May cause methemoglobinemia. Clinical findings: The smooth muscle relaxant effect of nitrate salts may lead to headache, dizziness and marked hypotension. Cyanosis is clinically detectable when approximately 15% of the haemoglobin has been converted to methaemoglobin (ferric iron).

Symptoms such as headache, dizziness, weakness and dyspnoea occur when methemoglobin concentrations are 30% to 40%; at levels of about 60% stupor, convulsions, coma and respiratory paralysis occur and the blood is a chocolate brown colour. At higher levels death may result. Spectrophotometric analysis can determine the presence and concentration of methemoglobin in the blood.

Treatment:
1. Give 100% oxygen.
2. In cases of (a) ingestion: use gastric lavage, (b) contamination of skin (unburnt or burnt): continue washing to remove salts.
3. Observe blood pressure and treat hypotension if necessary.
4. When methaemoglobin concentrations exceed 40% or when symptoms are present, give methylene blue 1 or 2 mg/kg body weight in a 1% solution by slow intravenous injection. If cyanosis has not been resolved within one hour a second dose of 2 mg/kg body weight may be given. The total dose should not exceed 7 mg/kg body weight as unwanted effects such as dyspnoea, chest pain, vomiting, diarrhoea, mental confusion and cyanosis may occur. Without treatment methaemoglobin levels of 20-30% revert to normal within 3 days.
5. Bed rest is required for methaemoglobin levels in excess of 40%.
6. Continue to monitor and give oxygen for at least two hours after treatment with methylene blue.
7. Consider transfer to centre where haemoperfusion can be performed to remove the nitrates from the blood if the condition of the patient is unstable.

Effects from exposure to decomposition products including nitrogen dioxide (possible decomposition component) can include chest discomfort, shortness of breath and possible pulmonary oedema, the onset of which may be delayed. The exposed person should be

kept under medical surveillance for 24 hours for delayed onset of pulmonary oedema.

Further observation for 2-3 weeks may be required to detect the onset of the inflammatory changes of bronchiolitis fibrosa obliterans.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media

Suitable Extinguishing Media Water spray. Flood fire area with water from a distance.

Unsuitable extinguishing media Carbon dioxide (CO2). Dry chemical.
Extinguishing methods based on smothering are ineffective in the case of oxidizing agents.

Specific hazards arising from the chemical

Specific hazards arising from the chemical WARNING:
Explosion risk in case of fire, especially if contaminated or confined. Molten product may explode from friction, shock or containment. In the case of an intense fire evacuate all personnel to at least 1000 m.

Oxidizing substance. Increases intensity of a fire, even in the absence of oxygen. Ammonium nitrate on its own is not combustible, however, it supports the combustion of other materials. Contact with combustible material may cause fire. Decomposes on heating emitting irritating white fumes and/or brown fumes. Brown fumes indicate the presence of toxic oxides of nitrogen. Containers may explode when heated.

Hazardous combustion products Nitrogen oxides. Nitrous oxide. Ammonium nitrate fumes. Ammonia. Nitric acid.

Special protective actions for fire-fighters

Special protective equipment for fire-fighters WARNING:
A major fire may involve a risk of explosion. Evacuate area immediately. Allow fire to burn out. An adjacent detonation may also involve the risk of explosion. Heating can cause decomposition of the material, which can lead to the containers exploding. Confinement of material may result in detonation.

In the case of an intense fire evacuate all personnel to a least 1000 metres. Police and emergency personnel should be notified immediately. If possible remove vehicles and further heat and ignition sources from area. Do not return to areas until the site has completely cooled down.

Decomposes on heating emitting irritating white fumes and/or brown fumes. Brown fumes indicate the presence of toxic oxides of nitrogen. On detection of fire the compartment(s) should be opened up to provide maximum ventilation. Fire-fighters to wear self-contained breathing apparatus and suitable protective clothing if there is a risk of exposure to products of combustion/decomposition. If safe to do so, remove containers from path of fire. If safe to do so, prevent molten material from being confined in drains, pipes, etc. If safe to do so, cool containers and adjacent areas with flooding quantities of water until well after fire is out.

Hazchem code 1Y

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Keep people away from and upwind of spill/leak. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Do not touch damaged containers or

spilled material unless wearing appropriate protective clothing. Evacuate personnel to safe areas. Ensure adequate ventilation. Avoid contact with skin, eyes, and clothing. Use personal protective equipment as required. Wash thoroughly after handling.

Other information

Keep combustibles (wood, paper, oil, etc) away from spilled material. Ventilate the area. Refer to protective measures listed in Sections 7 and 8.

In the case of a transport accident notify the Police, Regulatory Authorities and Orica Australia Pty Ltd (Telephone: 1800 033 111 -- 24 hour service) and/or Orica New Zealand Ltd (Telephone: 0800 734 607 -- 24 hour service) or Orica International (Telephone: +61 3 9663 2130 -- 24 hour service Australia).

For emergency responders

Use personal protection recommended in Section 8.

Environmental precautions

Environmental precautions

Prevent entry into waterways, sewers, basements or confined areas. Do not flush into surface water or sanitary sewer system. Prevent product from entering drains. Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

Methods for containment

Prevent further leakage or spillage if safe to do so. Keep ammonium nitrate out of confined areas, including sewers, due to risk of explosion.

Methods for cleaning up

Clean up spillages immediately. Contain - prevent run off into drains and waterways. Wear protective equipment to prevent skin and eye contact and breathing in dust. Sweep or vacuum up, but avoid generating dust. Collect in properly labelled containers or drums for disposal (loose fitting lids). Use clean shovel/equipment. DO NOT return spilled material to original container. Ensure that contaminated material (clothing, pallets) is thoroughly washed.

This material is classified as a Security Sensitive Ammonium Nitrate (SSAN). Spillage recovery needs to be appropriately documented and material accurately accounted for.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling

Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation. Avoid generation of dust. Do not breathe dust. Avoid contact with skin, eyes, and clothing. Take off contaminated clothing and wash before reuse. Use personal protection equipment. Wash thoroughly after handling. Keep out of reach of children. Handle with care. Do not mix with other chemicals.

General hygiene considerations

Remove and wash contaminated clothing and gloves, including the inside, before re-use. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes, and clothing. Wear suitable gloves and eye/face protection.

Conditions for safe storage, including any incompatibilities

Storage Conditions

Store in a cool, dry, well ventilated place and out of direct sunlight. Store away from sources of heat or ignition. Store away from combustibles including organic materials, reducing agents, metal powders, strong acids, nitrites, chlorates, chlorides and permanganates. Keep containers closed when not in use - check regularly for spills.

Concrete floors are recommended for storage. If ammonium nitrate is to be stored in bulk, the surface must be treated so that it is resistant to attack. Bulk ammonium nitrate should not be stored on a bituminous floor. Floors drains, recesses or other areas of possible confinement should be eliminated to prevent entrapment/confinement of molten (flowing)

ammonium nitrate during a fire.

This product when stored in a confined, unventilated space/hold can give off ammonia or other odour and lead to the depletion of oxygen within this space and other confined spaces. It is therefore essential that ventilation is carried out prior to entry.

Ensure ammonium nitrate is stored securely and in accordance with regulations/controls issued by relevant authority. The secure storage of ammonium nitrate within Australia includes but is not limited to the use of site security plans, locking the facility/container with physical restraining items, validation and record keeping of all stock, and where deemed necessary through a risk management approach constant surveillance.

Incompatible materials Ammonium nitrate is incompatible with, and must be stored away from, tetranitromethane, dichloroisocyanuric acid, trichloroisocyanuric acid, bromates, chlorates, chlorites, hypochlorites, perchlorates, chloroisocyanurates, nitrites, powdered metals, strong acids, reducing agents, permanganates, combustible materials, brass, bronze, copper, zinc. Incompatible with combustible materials.

Poisons Schedule (SUSMP) None allocated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Limits No value assigned for this specific material by Safe Work Australia. However, Workplace Exposure Standard(s) for dusts and decomposition product(s):

Dusts not otherwise classified: 8hr TWA = 10 mg/m^3
Nitrogen dioxide: 8hr TWA = 5.6 mg/m^3 (3 ppm), 15 min STEL = 9.4 mg/m^3 (5 ppm)

As published by Safe Work Australia Workplace Exposure Standards for Airborne Contaminants.

TWA - The time-weighted average airborne concentration of a particular substance when calculated over an eight-hour working day, for a five-day working week.

STEL (Short Term Exposure Limit) - the airborne concentration of a particular substance calculated as a time-weighted average over 15 minutes, which should not be exceeded at any time during a normal eight hour work day. According to current knowledge this concentration should neither impair the health of, nor cause undue discomfort to, nearly all workers.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Appropriate engineering controls

Engineering controls Apply technical measures to comply with the occupational exposure limits.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

Individual protection measures, such as personal protective equipment

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, SAFETY SHOES, CHEMICAL GOGGLES, GLOVES, DUST MASK.

Eye/face protection	Goggles.
Skin and body protection	Wear suitable protective clothing. Overalls. Boots.
Hand protection	Impervious gloves.
Respiratory protection	If determined by a risk assessment an inhalation risk exists, wear a dust mask/respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716.
Environmental exposure controls	No information available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Solid
Appearance	Granules or Prills
Color	White to Off-white
Odor	Negligible
Odor threshold	No information available.

Property	**Values**	**Remarks • Method**
pH	4.5-5.2 (10% solution, 20°C)	
pH (as aqueous solution)	No data available	None known
Melting point / freezing point	160-169°C	
Boiling point / boiling range	Decomposes	None known
Flash point	Not applicable	
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	Not applicable	
Lower flammability or explosive limits	Not applicable	
Vapor pressure	Negligible	None known
Vapor density	No data available	None known
Relative density	0.72-0.78 g/cm³ (bulk density)	
Water solubility	Soluble in water	
Solubility(ies)	No data available	None known
Partition coefficient	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	ca. 210°C	
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known

Other information

10. STABILITY AND REACTIVITY

Reactivity

Reactivity Powerful oxidizing agent. Oxidizing agents may cause vigorous reactions. Contact with acids liberates toxic gas. Hygroscopic: absorbs moisture or water from surrounding air.

Chemical stability

Stability Stable under normal ambient and anticipated storage and handling conditions when free of contaminates including inorganic and organic materials. May explode under confinement and high temperature, but not readily detonated. May explode due to nearby detonations.

Explosion data

Sensitivity to mechanical impact Not available.

Sensitivity to static discharge Not available.

Possibility of hazardous reactions

Possibility of hazardous reactions Oxidizing agent. Supports combustion of other materials and increases intensity of a fire. Will react with organic materials, and reducing agents. Reacts with nitrites, chlorides, chlorates, permanganates, metal powders. When mixed with strong acids, and occasionally during blasting, it produces an irritating toxic brown gas, mostly of nitrogen dioxide. When molten (such as in a fire situation) may decompose violently due to shock or pressure.

Contamination with chlorine bleaches, pool chlorine, hypochlorites may result in the formation of explosive nitrogen trichloride. Heating can cause expansion or decomposition of the material, which can lead to the containers exploding.

Conditions to avoid

Conditions to avoid Heat, flames and sparks. Dust formation. Moisture. Incompatible materials. Avoid contact with combustible substances. Avoid contact with other chemicals.

Incompatible materials

Incompatible materials Ammonium nitrate is incompatible with, and must be stored away from, tetranitromethane, dichloroisocyanuric acid, trichloroisocyanuric acid, bromates, chlorates, chlorites, hypochlorites, perchlorates, chloroisocyanurates, nitrites, powdered metals, strong acids, reducing agents, permanganates, combustible materials, brass, bronze, copper, zinc. Incompatible with combustible materials.

Hazardous decomposition products

Hazardous decomposition products Nitrogen oxides. Nitrous oxide. Ammonium nitrate fumes. Ammonia. Nitric acid.
When heated to decomposition (unconfined) ammonium nitrate produces nitrous oxide, white ammonium nitrate fumes and water. When mixed with strong acids, and occasionally during blasting, it produces an irritating toxic brown gas, mostly nitrogen dioxide. When molten it may decompose violently due to shock or pressure.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Information on likely routes of exposure

Product Information No adverse health effects expected if the chemical is handled in accordance with this Safety Data Sheet and the chemical label. Symptoms or effects that may arise if the chemical is mishandled and overexposure occurs are:

Inhalation Breathing in dust may result in respiratory irritation. Blasting may produce a toxic brown gas of nitrogen dioxide. Inhalation of the gas may result in chest discomfort, shortness of breath and possible pulmonary oedema, the onset of which may be delayed. Absorption of ammonium nitrate by inhalation, ingestion or through burnt or broken skin may cause dilation of blood vessels by direct smooth muscle relaxation and may also cause methaemoglobinaemia. May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination.

Eye contact Causes serious eye irritation. Dust contact with the eyes can lead to mechanical irritation.

Skin contact May cause irritation. Nitrates can be absorbed through cut, burnt or broken skin.

Ingestion Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Ingestion of larger amounts may cause defects to the central nervous system (e.g. dizziness, headache). May cause a lowering of blood pressure (hypotension).

Symptoms Irritation.

Numerical measures of toxicity - Product Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Ammonium nitrate	= 2217 mg/kg (Rat)	-	> 88.8 mg/L (Rat) 4 h

See section 16 for terms and abbreviations

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation No information available.

Serious eye damage/eye irritation Causes serious eye irritation.

Respiratory or skin sensitization Not classified.

Germ cell mutagenicity No information available.

Carcinogenicity No information available.

Reproductive toxicity No information available.

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Aspiration hazard No information available.

Chronic effects: NITRATES: Absorption of nitrates by ingestion, inhalation or through burnt or broken skin may cause dilation of the blood vessels by direct smooth muscle relaxation with a subsequent lowering of blood pressure and may also cause breathing difficulties, blueness of the skin (cyanosis) and methaemoglobinaemia. In humans and animals methaemoglobinaemia has occurred under untreated circumstances following the ingestion of nitrates.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity

Keep out of waterways.
Ammonium nitrate is a plant nutrient. Large scale contamination may kill vegetation and cause poisoning in livestock and poultry.

Ammonium nitrate was evaluated at 5, 10, 25 and 50 mg (NH4+)/L. The fertility of Daphnia magna was decreased at 50 mg/L. Post embryonic growth of crustacea was impaired at 10, 25 and 50 mg/L. Can stimulate weed and algal growth in static surface waters.

Considered to be of low toxicity to aquatic life.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Ammonium nitrate	-	LC50: 65 - 85mg/L (48h, Cyprinus carpio)	-	-

Persistence and degradability

Persistence and degradability Biodegradable.

Bioaccumulative potential

Bioaccumulation Bioaccumulation is not expected.

Chemical name	Partition coefficient
Ammonium nitrate	-3.1

Mobility

Mobility in soil Water soluble. Expected to be mobile in soil.

Other adverse effects

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation. Waste ammonium nitrate may be disposed of as a fertiliser, but this method of disposal must be agreed with the authorities.

As this material is classified as a Security Sensitive Ammonium Nitrate (SSAN) disposal of material needs to be appropriately documented and material accurately accounted for.

Contaminated packaging Dispose of contents/containers in accordance with local regulations. Empty containers must be either rendered totally unusable, or if to be recycled for use, decontaminated by rinsing thoroughly with water. Rinsing water needs to be disposed of carefully.

14. TRANSPORT INFORMATION

ADG

Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for Transport by Road and Rail; DANGEROUS GOODS.

UN number 1942
Proper shipping name AMMONIUM NITRATE
Hazard class 5.1
Packing group III
Hazchem code 1Y

IATA

UN number	1942
UN proper shipping name	AMMONIUM NITRATE
Transport hazard class(es)	5.1
Packing group	III

IMDG

UN number	1942
UN proper shipping name	AMMONIUM NITRATE
Transport hazard class(es)	5.1
Packing group	III
IMDG EMS Fire	F-H
IMDG EMS Spill	S-Q

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations

Australia
Classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG).

Classified as a hazardous chemical in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS).

Various regulations/controls/authorisations/licences may apply governing the manufacture, importation, exportation, use, handling, storage, sale/supply, transport and disposal of ammonium nitrate. Ammonium nitrate in Australia is considered a security sensitive material and loss, theft, attempted theft and unexplained discrepancies shall be reported to authorities. Record keeping and licensing of individuals shall be required and maintained.

See section 8 for national exposure control parameters

Poisons Schedule (SUSMP) None allocated

Major hazard (accident/incident planning) regulation
Verify that license requirements are met

Hazardous chemical	Threshold quantity (T)
Oxidizing material listed in Appendix A to the ADG Code	50

International Inventories

AIIC	All the constituents of this material are listed on the Australian Inventory of Industrial Chemicals.
NZIoC	All the constituents of this material are listed on the New Zealand Inventory of Chemicals.

Legend:
- Australian Inventory of Industrial Chemicals

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer Not applicable

The Stockholm Convention on Persistent Organic Pollutants Not applicable

The Rotterdam Convention Not applicable

16. OTHER INFORMATION

`Registry of Toxic Effects of Chemical Substances'. Ed. D. Sweet, US Dept. of Health & Human Services: Cincinatti, 2021

Reason(s) For Issue: 5 Yearly Revised Primary SDS

Issuing Date: 09-Nov-2021

This Safety Data Sheet has been prepared by Ixom Operations Pty Ltd (Toxicology and SDS Services).

Revision Note:
The symbol (*) in the margin of this SDS indicates that this line has been revised.

Key or legend to abbreviations and acronyms used in the safety data sheet

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
C	Carcinogen		

Key literature references and sources for data used to compile the SDS

EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australian Industrial Chemicals Introduction Scheme (AICIS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine's PubMed database (NLM PUBMED)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set
RTECS (Registry of Toxic Effects of Chemical Substances)
World Health Organization

Disclaimer

This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since The Supplier cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Supplier representative or The Supplier at the contact details on page 1.

The Supplier's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.

End of Safety Data Sheet

SAFETY DATA SHEET

SECTION 1 IDENTIFICATION

PRODUCT

Product Name: **AVIATION OIL ELITE 20W-50**
Product Description: Base Oil and Additives
SDS Number: 17342
Product Code: 201050201045
Intended Use: Aviation Piston Engine Oil

COMPANY IDENTIFICATION

Supplier: **Imperial Oil Downstream**
P.O. Box 2480, Station M
Calgary, ALBERTA T2P 3M9 Canada

24 Hour Emergency Telephone	1-866-232-9563
Transportation Emergency Phone Number	1-866-232-9563
Product Technical Information	1-800-268-3183
Supplier General Contact	1-800-567-3776

SECTION 2 HAZARD IDENTIFICATION

This material is considered to be hazardous according to regulatory guidelines.

This product has been classified in accordance with hazard criteria of the Hazardous Products Regulations (HPR) SOR/2015-17 and the SDS contains all the information required by the HPR SOR/2015-17.

CLASSIFICATION:

Reproductive Toxicity (Fertility) — Category 2

LABEL:
Pictogram:

Signal Word: Warning

Hazard Statements:
H361: Suspected of damaging fertility.

Precautionary Statements:
P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P280: Wear protective gloves and protective clothing.P308 + P313: IF exposed or concerned: Get medical advice/attention.P405: Store locked up.P501: Dispose of contents and container in accordance with local regulations.

Contains: TRICRESYL PHOSPHATE

Other hazard information:

Health Hazards Not Otherwise Classified: None as defined under HPR SOR/2015-17.

Physical Hazards Not Otherwise Classified: None as defined under HPR SOR/2015-17.

PHYSICAL / CHEMICAL HAZARDS
No significant hazards.

HEALTH HAZARDS
High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.

ENVIRONMENTAL HAZARDS
No significant hazards.

NFPA Hazard ID:	Health:	1	Flammability:	1	Reactivity:	0
HMIS Hazard ID:	Health:	1*	Flammability:	1	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a mixture.

Hazardous Substance(s) or Complex Substance(s) in Hazardous product

Name	CAS#	Concentration*	GHS Hazard Codes
TRICRESYL PHOSPHATE	1330-78-5	1.5 - 1.56%	H361(F), H400(M factor 1), H410(M factor 1)

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

SECTION 4 FIRST-AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

Seek immediate medical attention. If medical attention will be delayed, contact a Regional Poison Centre or emergency medical professional regarding the induction of vomiting or use of activated charcoal/syrup of ipecac. Do not induce vomiting or give anything by mouth to a groggy or unconscious person.

SECTION 5 FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight streams of water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: May generate irritating and harmful gases/vapours/fumes when burning.

Hazardous Combustion Products: Aldehydes, Incomplete combustion products, Oxides of carbon, Phosphorus oxides, Smoke, Fume

FLAMMABILITY PROPERTIES

Flash Point [Method]: >250°C (482°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

PROTECTIVE MEASURES

Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: respiratory protection will be necessary only in special cases, e.g., formation of mists. Half-face or full-face respirator with filter(s) for dust/organic vapor or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to hydrocarbons are recommended. Gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do so without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do so without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dyke far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Avoid all personal contact. Avoid contact with used product. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or earthing procedures. However, bonding and earthing may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator.

STORAGE

Keep containers closed when not in use. The type of container used to store the material may affect static accumulation and dissipation. Do not store in open or unlabelled containers. Store in a cool, dry place with adequate ventilation. Keep away from incompatible materials, open flames and high temperatures.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists/aerosols can occur the following is recommended: 5 mg/m³ - ACGIH TLV (inhalable fraction).

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

Adequate ventilation should be provided whenever the material is heated or mists are generated.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

Chemical resistant gloves are recommended. If contact with forearms is likely wear gauntlet style gloves.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or

manufacturer data. The types of clothing to be considered for this material include:
Chemical/oil resistant clothing is recommended.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practise good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid
Form: Clear
Colour: Amber
Odour: Characteristic
Odour Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 °C): 0.88
Flammability (Solid, Gas): N/A
Flash Point [Method]: >250°C (482°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: > 158°C (316°F) [Estimated]
Decomposition Temperature: N/D
Vapour Density (Air = 1): N/D
Vapour Pressure: < 0.013 kPa (0.1 mm Hg) at 20ºC [Estimated]
Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3.5 [Estimated]
Solubility in Water: Negligible
Viscosity: 182 cSt (182 mm2/sec) at 40ºC | 20.3 cSt (20.3 mm2/sec) at 100°C
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/A
Pour Point: -33°C (-27°F)
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Negligible hazard at ambient/normal handling temperatures.
Ingestion	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin Corrosion/Irritation: No end point data for material.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
Eye	
Serious Eye Damage/Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.
Sensitisation	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: No end point data for material.	Not expected to be a skin sensitizer. Based on assessment of the components.
Aspiration: Data available.	Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: No end point data for material.	Not expected to be a germ cell mutagen. Based on assessment of the components.
Carcinogenicity: No end point data for material.	Not expected to cause cancer. Based on assessment of the components.
Reproductive Toxicity: No end point data for material.	Contains a substance that may be a reproductive toxicant. Based on assessment of the components.
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: Data available.	Not expected to cause organ damage from prolonged or repeated exposure. Based on test data for structurally similar materials.

OTHER INFORMATION

For the product itself:

Oils that are used in gasoline engines may become hazardous and display the following properties: Carcinogenic in animal tests. Caused mutations in vitro. Possible allergen and photoallergen. Contains polycyclic aromatic compounds (PAC) from combustion products of gasoline and/or thermal degradation products.

Contains:

Tricresyl phosphate (TCP): TCP (<9% ortho isomer) administered to rats by oral gavage in a one-generation reproduction/developmental toxicology study adversely affected both males and females. TCP-treated male rats had decreased sperm concentration and motility, abnormal sperm morphology and adverse histologic changes in the testes and epididymides. Adverse histologic changes were also observed in the ovaries of TCP-treated female rats. The percent of sperm-positive females littering was significantly reduced in the TCP-treatment groups with only one of twenty females in the high dose group delivering young . Developmental parameters were unaffected by TCP exposure. Impaired fertility and decreased sperm motility following TCP treatment have also been reported in a reproduction toxicity study in mice.

CMR Status: None.

--REGULATORY LISTS SEARCHED--

1 = IARC 1	3 = IARC 2B	5 = ACGIH A1
2 = IARC 2A	4 = ACGIH ALL	6 = ACGIH A2

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

ECOLOGICAL DATA

Ecotoxicity

Test	Duration	Organism Type	Test Results
Aquatic - Chronic Toxicity	21 day(s)	Daphnia magna	NOELR 1 mg/l: data for similar materials

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Dispose of waste at an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. Protect the environment. Dispose of used oil at designated sites. Minimize skin contact. Do not mix used oils with solvents, brake fluids or coolants. Product is suitable for burning in an enclosed, controlled burner for fuel value or disposal by supervised incineration.

REGULATORY DISPOSAL INFORMATION

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (TDG): Not Regulated for Land Transport

LAND (DOT): Not Regulated for Land Transport

SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

Marine Pollutant: No

AIR (IATA): Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

CEPA: All components of this product are either on the Domestic Substance List (DSL) or are exempt.

Listed or exempt from listing/notification on the following chemical inventories: AIIC, DSL, ENCS, IECSC, KECI, PICCS, TCSI, TSCA

The Following Ingredients are Cited on the Lists Below: None.

--REGULATORY LISTS SEARCHED--

1 = TSCA 4	3 = TSCA 5e	5 = TSCA 12b
2 = TSCA 5a2	4 = TSCA 6	6 = NPRI

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):
H361(F): Suspected of damaging fertility; Repro Tox, Cat 2 (Fertility)
H400: Very toxic to aquatic life; Acute Env Tox, Cat 1
H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
No revision information

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DGN: 5015853XCA (1025224)

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SAFETY DATA SHEET

1. Identification

Product identifier	**Brakleen® Brake Parts Cleaner**
Other means of identification	
Product code	05151
Recommended use	Brake parts cleaner
Recommended restrictions	None known.

Manufacturer/Importer/Supplier/Distributor information

Manufactured or sold by:

Company name	CRC Industries, Inc.
Address	885 Louis Dr. Warminster, PA 18974 US
Telephone	
General Information	215-674-4300
Technical Assistance	800-521-3168
Customer Service	800-272-4620
24-Hour Emergency (CHEMTREC)	800-424-9300 (US) 703-527-3887 (International)
Website	www.crcindustries.com

2. Hazard(s) identification

Physical hazards	Flammable aerosols	Category 1
	Gases under pressure	Compressed gas
Health hazards	Serious eye damage/eye irritation	Category 2
	Reproductive toxicity (the unborn child)	Category 2
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
	Specific target organ toxicity, repeated exposure	Category 2
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 3
OSHA defined hazards	Not classified.	

Label elements

Signal word	Danger
Hazard statement	Extremely flammable aerosol. Contains gas under pressure; may explode if heated. Causes serious eye irritation. May cause drowsiness or dizziness. Suspected of damaging the unborn child. May cause damage to organs (liver, kidneys, brain, lungs) through prolonged or repeated exposure. Harmful to aquatic life.
Precautionary statement	
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not spray on an open flame or other ignition source. Do not apply while equipment is energized. Pressurized container: Do not pierce or burn, even after use. Extinguish all flames, pilot lights and heaters. Vapors will accumulate readily and may ignite. Use only with adequate ventilation; maintain ventilation during use and until all vapors are gone. Open doors and windows or use other means to ensure a fresh air supply during use and while product is drying. If you experience any symptoms listed on this label, increase ventilation or leave the area. Do not breathe mist or vapor. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.

Response	If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention. If exposed or concerned: Get medical attention.
Storage	Store in a well-ventilated place. Store locked up. Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F. Exposure to high temperature may cause can to burst.
Disposal	Dispose of contents/container in accordance with local/regional/national regulations.
Hazard(s) not otherwise classified (HNOC)	Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion.

Supplemental information

11.8% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Acetone		67-64-1	80 - 90
Carbon dioxide		124-38-9	10 - 20
Toluene		108-88-3	1 - 3

Specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
Skin contact	Rinse skin with water/shower. Get medical attention if irritation develops and persists.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion	In the unlikely event of swallowing contact a physician or poison control center. Rinse mouth.
Most important symptoms/effects, acute and delayed	May cause drowsiness and dizziness. Headache. Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Prolonged exposure may cause chronic effects.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media	Alcohol resistant foam. Water fog. Carbon dioxide (CO2). Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Contents under pressure. Pressurized container may rupture when exposed to heat or flame. This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. Static electricity accumulation may be significantly increased by the presence of small quantities of water or other contaminants. Material will float and may ignite on surface of water. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.
Fire-fighting equipment/instructions	In case of fire: Stop leak if safe to do so. Move containers from fire area if you can do so without risk. Containers should be cooled with water to prevent vapor pressure build up.
General fire hazards	Extremely flammable aerosol. Contents under pressure. Pressurized container may rupture when exposed to heat or flame.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Remove all possible sources of ignition in the surrounding area. Many vapors are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks). Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Emergency personnel need self-contained breathing equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Use appropriate containment to avoid environmental contamination. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Stop the flow of material, if this is without risk. Prevent product from entering drains. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. Inform appropriate managerial or supervisory personnel of all environmental releases. Use appropriate containment to avoid environmental contamination.

7. Handling and storage

Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimize fire risks from flammable and combustible materials (including combustible dust and static accumulating liquids) or dangerous reactions with incompatible materials. Pressurized container: Do not pierce or burn, even after use. Do not use if spray button is missing or defective. Do not spray on a naked flame or any other incandescent material. Do not smoke while using or until sprayed surface is thoroughly dry. Do not cut, weld, solder, drill, grind, or expose containers to heat, flame, sparks, or other sources of ignition. Use caution around energized equipment. The metal container will conduct electricity if it contacts a live source. This may result in injury to the user from electrical shock and/or flash fire. Do not breathe mist or vapor. Avoid contact with eyes. Avoid prolonged exposure. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Use only in well-ventilated areas. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. Avoid release to the environment. For product usage instructions, please see the product label.

Conditions for safe storage, including any incompatibilities

Level 3 Aerosol.

Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C/122 °F. Do not puncture, incinerate or crush. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. Avoid spark promoters. These alone may be insufficient to remove static electricity. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Acetone (CAS 67-64-1)	PEL	2400 mg/m3
		1000 ppm
Carbon dioxide (CAS 124-38-9)	PEL	9000 mg/m3
		5000 ppm

US. OSHA Table Z-2 (29 CFR 1910.1000)

Components	Type	Value
Toluene (CAS 108-88-3)	Ceiling	300 ppm
	TWA	200 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
Acetone (CAS 67-64-1)	STEL	750 ppm
	TWA	500 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
Carbon dioxide (CAS 124-38-9)	STEL	30000 ppm
	TWA	5000 ppm
Toluene (CAS 108-88-3)	TWA	20 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Acetone (CAS 67-64-1)	TWA	590 mg/m3 250 ppm
Carbon dioxide (CAS 124-38-9)	STEL	54000 mg/m3 30000 ppm
	TWA	9000 mg/m3 5000 ppm
Toluene (CAS 108-88-3)	STEL	560 mg/m3 150 ppm
	TWA	375 mg/m3 100 ppm

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
Acetone (CAS 67-64-1)	50 mg/l	Acetone	Urine	*
Toluene (CAS 108-88-3)	0.3 mg/g	o-Cresol, with hydrolysis	Creatinine in urine	*
	0.03 mg/l	Toluene	Urine	*
	0.02 mg/l	Toluene	Blood	*

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

Toluene (CAS 108-88-3) Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

Toluene (CAS 108-88-3) Skin designation applies.

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection Wear protective gloves such as: Nitrile. Neoprene. Polyvinyl alcohol (PVA).

Other Wear suitable protective clothing.

Respiratory protection If engineering controls are not feasible or if exposure exceeds the applicable exposure limits, use a NIOSH-approved cartridge respirator with an organic vapor cartridge. Use a self-contained breathing apparatus in confined spaces and for emergencies. Air monitoring is needed to determine actual employee exposure levels.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state Liquid.

Form Aerosol.

Color Clear. Colorless.

Odor	Sweet.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	-138.8 °F (-94.9 °C) estimated
Initial boiling point and boiling range	132.9 °F (56.1 °C) estimated
Flash point	< 0 °F (< -17.8 °C) Tag Closed Cup
Evaporation rate	Fast.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	1.2 % estimated
Flammability limit - upper (%)	12.8 % estimated
Vapor pressure	6962 hPa estimated
Vapor density	2 (air = 1)
Relative density	0.88 estimated
Solubility (water)	Slightly soluble.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	869 °F (465 °C) estimated
Decomposition temperature	Not available.
Viscosity (kinematic)	Not available.
Percent volatile	88.2 % estimated

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Heat, flames and sparks. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Acids. Aluminum.
Hazardous decomposition products	Carbon oxides.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause damage to organs through prolonged or repeated exposure by inhalation. May cause drowsiness and dizziness. Headache. Nausea, vomiting.
Skin contact	Prolonged skin contact may cause temporary irritation.
Eye contact	Causes serious eye irritation.
Ingestion	Acetone poisoning may result in liver and kidney damage.
Symptoms related to the physical, chemical and toxicological characteristics	Headache. May cause drowsiness and dizziness. Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Information on toxicological effects

Acute toxicity Narcotic effects.

Product	Species	Test Results
Brakleen® Brake Parts Cleaner		
Acute		
Dermal		
LD50	Rabbit	22231 mg/kg estimated

Product	Species	Test Results
Inhalation		
LC50	Rat	33087 ppm, 4 hours estimated
		82 mg/l, 4 Hours estimated
Oral		
LD50	Rat	6560 mg/kg estimated

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation Causes serious eye irritation.

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

Toluene (CAS 108-88-3) 3 Not classifiable as to carcinogenicity to humans.

Reproductive toxicity Suspected of damaging the unborn child.

Specific target organ toxicity - single exposure May cause drowsiness and dizziness.

Specific target organ toxicity - repeated exposure May cause damage to organs through prolonged or repeated exposure: Liver. Kidneys. Brain. Lungs.

Aspiration hazard Based on available data, the classification criteria are not met.

Chronic effects May cause damage to organs through prolonged or repeated exposure. Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity Harmful to aquatic life.

Product		Species	Test Results
Brakleen® Brake Parts Cleaner			
Aquatic			
Acute			
Fish	LC50	Fish	7948.4028 mg/l, 96 hours estimated

Components		Species	Test Results
Acetone (CAS 67-64-1)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	10294 - 17704 mg/l, 48 hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	4740 - 6330 mg/l, 96 hours
Toluene (CAS 108-88-3)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	5.46 - 9.83 mg/l, 48 hours
Fish	LC50	Coho salmon,silver salmon (Oncorhynchus kisutch)	8.11 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)	
Acetone	-0.24
Toluene	2.73

Mobility in soil No data available.

Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal of waste from residues / unused products	If discarded, this product is considered a RCRA ignitable waste, D001. Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Contents under pressure. Do not puncture, incinerate or crush. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose in accordance with all applicable regulations.
Hazardous waste code	D001: Waste Flammable material with a flash point <140 F
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	UN1950
UN proper shipping name	Aerosols, flammable, Limited Quantity
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Label(s)	2.1
Packing group	Not applicable.
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	N82
Packaging exceptions	306
Packaging non bulk	None
Packaging bulk	None

IATA

UN number	UN1950
UN proper shipping name	Aerosols, flammable, Limited Quantity
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Packing group	Not applicable.
Environmental hazards	No.
ERG Code	10L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed.
Cargo aircraft only	Allowed.

IMDG

UN number	UN1950
UN proper shipping name	AEROSOLS, LIMITED QUANTITY
Transport hazard class(es)	
Class	2
Subsidiary risk	-
Packing group	Not applicable.
Environmental hazards	
Marine pollutant	No.
EmS	F-D, S-U
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

SARA 304 Emergency release notification

Not regulated.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

Toluene (CAS 108-88-3)

CERCLA Hazardous Substance List (40 CFR 302.4)

Acetone (CAS 67-64-1)	Listed.
Toluene (CAS 108-88-3)	Listed.

CERCLA Hazardous Substances: Reportable quantity

Acetone (CAS 67-64-1)	5000 LBS
Toluene (CAS 108-88-3)	1000 LBS

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center (800-424-8802) and to your Local Emergency Planning Committee.

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Toluene (CAS 108-88-3)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Acetone (CAS 67-64-1)	6532
Toluene (CAS 108-88-3)	6594

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Acetone (CAS 67-64-1)	35 %WV
Toluene (CAS 108-88-3)	35 %WV

DEA Exempt Chemical Mixtures Code Number

Acetone (CAS 67-64-1)	6532
Toluene (CAS 108-88-3)	594

Food and Drug Administration (FDA) Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Section 311/312 Hazard categories
Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - Yes
Pressure Hazard - Yes
Reactivity Hazard - No

SARA 302 Extremely hazardous substance No

US state regulations

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Acetone (CAS 67-64-1)
Toluene (CAS 108-88-3)

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. New Jersey Worker and Community Right-to-Know Act

Acetone (CAS 67-64-1)
Carbon dioxide (CAS 124-38-9)
Toluene (CAS 108-88-3)

US. Massachusetts RTK - Substance List

Acetone (CAS 67-64-1)
Carbon dioxide (CAS 124-38-9)
Toluene (CAS 108-88-3)

US. Pennsylvania Worker and Community Right-to-Know Law

Acetone (CAS 67-64-1)
Toluene (CAS 108-88-3)
Carbon dioxide (CAS 124-38-9)

US. Rhode Island RTK

Acetone (CAS 67-64-1)

Toluene (CAS 108-88-3)

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Benzene (CAS 71-43-2)	Listed: February 27, 1987
Cumene (CAS 98-82-8)	Listed: April 6, 2010
Ethanal (CAS 75-07-0)	Listed: April 1, 1988
Ethylbenzene (CAS 100-41-4)	Listed: June 11, 2004

US - California Proposition 65 - CRT: Listed date/Developmental toxin

Benzene (CAS 71-43-2)	Listed: December 26, 1997
Toluene (CAS 108-88-3)	Listed: January 1, 1991

US - California Proposition 65 - CRT: Listed date/Female reproductive toxin

Toluene (CAS 108-88-3)	Listed: August 7, 2009

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

Benzene (CAS 71-43-2)	Listed: December 26, 1997

Volatile organic compounds (VOC) regulations

EPA

VOC content (40 CFR 51.100(s))	2.7 %
Consumer products (40 CFR 59, Subpt. C)	Not regulated

State

Consumer products	This product is regulated as a Brake Cleaner. This product is compliant for use in all 50 states. This product also complies with South Coast Air Quality Management District Rule 1171.
VOC content (CA)	2.7 %
VOC content (OTC)	2.7 %

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	05-26-2015
Prepared by	Allison Cho
Version #	01
Further information	CRC # 668A
HMIS® ratings	Health: 1* Flammability: 4 Physical hazard: 0 Personal protection: B

NFPA ratings

Health: 1
Flammability: 4
Instability: 0

NFPA ratings

Disclaimer

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. This information is accurate to the best of CRC Industries' knowledge or obtained from sources believed by CRC to be accurate. Before using any product, read all warnings and directions on the label. For further clarification of any information contained on this (M)SDS consult your supervisor, a health & safety professional, or CRC Industries.

SAFETY DATA SHEET

Classified in accordance with Health Canada Hazardous Products Regulations (SOR/2015-17)

1. Identification

Product identifier: Brine Solution

Other means of identification

Common name(s), synonym(s): Salt water, Brine recycle stream, Sodium chloride solution

SDS number: NOVA-0087

Recommended use and restriction on use

Recommended use: Operation of underground storage caverns and for salt manufacturing.

Restrictions on use: All uses other than the identified.

Manufacturer/Importer/Supplier/Distributor Information

Manufacturer

Company Name:	NOVA Chemicals
Address:	785 Petrolia Line Corunna, Ontario, Canada N0N 1G0
Telephone:	Product Information: 1-412-490-4063
SDS Information Email:	msdsemail@novachem.com

Emergency telephone number:

1-800-561-6682, 1-403-314-8767 (NOVA Chemicals) (24 hours)

General Comments

This is **not** a NOVA Chemicals' product.

2. Hazard(s) identification

Hazard Classification According to Hazardous Products Regulations

Health Hazards

Serious Eye Damage/Eye Irritation	Category 2A

Label Elements

Hazard Symbol:

Signal Word: Warning

Hazard Statement: Causes serious eye irritation.

Precautionary Statements:

Prevention: Wash hands thoroughly after handling. Wear eye protection/face protection.

Response: IF IN EYES: Rinse cautiously with water for several minutes. Remove

contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Storage: Store locked up.

Disposal: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in GHS classification: None.

3. Composition/information on ingredients

Mixtures

Chemical Identity	Common name and synonyms	CAS number	Content in percent (%)*
Sodium chloride	Salt	7647-14-5	5 - 26%

* All concentrations are percent by weight.

Additional Information: This product is considered hazardous by the Hazardous Products Regulations, 2015.

4. First-aid measures

Inhalation: Call a POISON CENTRE/doctor if you feel unwell.

Ingestion: Call a POISON CENTRE/doctor if you feel unwell.

Skin Contact: If skin irritation occurs: Get medical advice/attention.

Eye contact: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Most important symptoms/effects, acute and delayed

Symptoms: Eye irritation.

Indication of immediate medical attention and special treatment needed

Treatment: For more detailed medical emergency support information, call 1-800-561-6682 or 1-403-314-8767 (24 hours, NOVA Chemicals Emergency Response). Treat symptomatically. Treatment for overexposure should be directed at controlling the symptoms and clinical condition of the patient. After adequate first aid, no further treatment is required unless symptoms reappear.

5. Fire-fighting measures

General Fire Hazards: This product is not flammable. Product does not burn.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: In case of fire in the surroundings: use appropriate extinguishing media.

Unsuitable extinguishing media: not applicable

Specific hazards arising from the chemical: None. This product is not flammable.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: None.

Special protective equipment for firefighters: Firefighters should wear personal protective equipment suitable for the fire conditions and the materials burning.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unauthorized personnel away.

Methods and material for containment and cleaning up: Wear appropriate personal protective equipment. Do not touch or walk through spilled material. Keep upwind. Keep out of low areas. Stop leak if safe to do so. Contain discharge by booming on water or diking on ground. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply.

Small Spills: Remove liquid material with approved pumps or vacuum equipment.

Large Spills: Isolate, contain, and attempt to recover. Remove liquid material with approved pumps or vacuum equipment. Spill area may be washed down with water, with wash waters collected for testing and proper disposal.

7. Handling and storage

Precautions for safe handling: Product is slowly corrosive to metal. Handle in properly designed and approved equipment systems. Periodically inspect pipelines and other equipment for integrity and corrosion. Do not ingest or inhale. Avoid contact with skin and eyes. Wash hands thoroughly after handling. Wear eye protection/face protection.

Conditions for safe storage, including any incompatibilities: Storage area should be clearly identified, well-illuminated and clear of obstruction. Store locked up. Only allow access to authorized persons. Storage ponds and tank areas should be periodically inspected and kept separate from fresh water supply or outlets. Keep away from incompatible materials.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

None of the components have assigned exposure limits.

Appropriate Engineering Controls Provide adequate ventilation to maintain worker exposure below levels that are irritating to the eyes. Administrative (procedure) controls and use of personal protective equipment may also be required.

Individual protection measures, such as personal protective equipment

General information: Personal protective equipment (PPE) should not be considered a long-term solution to exposure control. Employer programs to properly select, fit, maintain and train employees to use equipment must accompany PPE.

	Consult a competent industrial hygiene resource, the PPE manufacturer's recommendation, and/or applicable regulations to determine hazard potential and ensure adequate protection.
Eye/face protection:	Chemical goggles are recommended. If splashing is possible use chemical goggles and a full-face shield. Carefully rinse off contaminated goggles before removing.
Skin Protection	
Hand Protection:	Chemical resistant gloves.
Skin and Body Protection:	Wear chemical-resistant safety footwear with good traction to prevent slipping. Wear work clothes with long sleeves and pants. If splashing or contact with liquid material is possible, consider the need for an impervious overcoat.
Respiratory Protection:	None under normal conditions.
Hygiene measures:	Ensure that eyewash stations and safety showers are in close proximity to work locations.

9. Physical and chemical properties

Appearance	
Physical state:	liquid
Form:	liquid
Colour:	White/clear
Odour:	Odourless
Odour Threshold:	No data available.
pH:	6.5 - 8.5
Melting point/freezing point:	-10 °C (14 °F)
Initial boiling point and boiling range:	> 100 °C (> 212 °F)
Flash Point:	not applicable
Evaporation rate:	No data available.
Flammability (solid, gas):	not applicable
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	not applicable
Flammability limit - lower(%):	not applicable
Vapour pressure:	not applicable
Vapour density:	not applicable
Density:	1,200 kg/m3
Relative density:	1.2 (15 °C (59 °F))
Solubility(ies)	
Solubility in water:	Miscible with water.
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	not applicable
Decomposition temperature:	not applicable
Viscosity:	No data available.

10. Stability and reactivity

Reactivity:	Product is slowly corrosive to metal.
Chemical Stability:	Material is stable under normal conditions.

Possibility of Hazardous Reactions:	None known.
Conditions to Avoid:	None known.
Incompatible Materials:	In presence of air, liquid contact or mists will slowly corrode most metals.
Hazardous Decomposition Products:	None known.

11. Toxicological information

Information on likely routes of exposure

Inhalation:	May be irritating to the respiratory tract.
Ingestion:	Ingestion of large quantities of this product may cause irritation of the gastrointestinal tract.
Skin Contact:	Skin contact may lead to skin dryness; mild skin irritant.
Eye contact:	Causes serious eye irritation.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation:	Coughing, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.
Ingestion:	If very large quantities ingested - nausea, vomiting, dehydration, diarrhoea, oedema.
Skin Contact:	Dry skin.
Eye contact:	Eye irritation.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral
Product: Not classified for acute toxicity based on available data.

Dermal
Product: Not classified for acute toxicity based on available data.

Inhalation
Product: Not classified for acute toxicity based on available data.

Repeated dose toxicity
Product: No data available.

Skin Corrosion/Irritation
Product: No data available.

Components:
Sodium chloride — Mild.

Serious Eye Damage/Eye Irritation
Product: Causes serious eye irritation.

Respiratory or Skin Sensitization
Product: No data available.

Carcinogenicity
Product: No data available.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:
No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:
No carcinogenic components identified

ACGIH Carcinogen List:
No carcinogenic components identified

Germ Cell Mutagenicity

In vitro
Product: No data available.

In vivo
Product: No data available.

Reproductive toxicity
Product: No data available.

Specific Target Organ Toxicity - Single Exposure
Product: No data available.

Specific Target Organ Toxicity - Repeated Exposure
Product: No data available.

Aspiration Hazard
Product: No data available.

Other effects: No data available.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish
Product: No data available.

Components:
Sodium chloride — LC 50 (Rainbow trout,donaldson trout (Oncorhynchus mykiss), 96 h): 4,747 - 7,824 mg/l Mortality

Aquatic Invertebrates
Product: No data available.

Components:
Sodium chloride — EC 50 (Water flea (Daphnia magna), 48 h): 340.7 - 469.2 mg/l Intoxication

Toxicity to aquatic plants
Product: No data available.

Chronic hazards to the aquatic environment:

Fish
Product: No data available.

Aquatic Invertebrates
Product: No data available.

Toxicity to aquatic plants
Product: No data available.

Persistence and Degradability

Biodegradation
Product: No data available.

BOD/COD Ratio
Product: No data available.

Bioaccumulative Potential
Bioconcentration Factor (BCF)
Product: No data available.

Partition Coefficient n-octanol / water (log Kow)
Product: No data available.

Mobility in Soil: When spilled onto soil, brine will behave similar to spilled water. Sodium chloride may leach from soil into groundwater.

Other Adverse Effects: A concentrated brine solution (~26% sodium chloride) will dehydrate animal and vegetative species.

13. Disposal considerations

Disposal instructions: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. The use, mixing or processing of this product with other materials may alter its properties or hazards.

Contaminated Packaging: Check local, federal and provincial environmental regulations prior to disposal.

14. Transport information

TDG
Not regulated.

15. Regulatory information

Canada Federal Regulations

List of Toxic Substances (CEPA, Schedule 1)
Not regulated

Export Control List (CEPA 1999, Schedule 3)
Not regulated

National Pollutant Release Inventory (NPRI)

Canada. Canadian Environmental Protection Act (CEPA). National Pollutant Release Inventory (NPRI) (Parts 1-4)

NPRI	Not regulated

Canada. National Pollutant Release Inventory (NPRI) Substances, Part 5, VOCs with Additional Reporting Requirements

NPRI PT5	Not regulated

Greenhouse Gases

Not regulated

Precursor Control Regulations

Not regulated

Canada. Substances Subject to Significant New Activity (SNAc) Reporting Requirements

Not regulated

Inventory status

Canada DSL Inventory List:	On or in compliance with the inventory
US TSCA Inventory:	On or in compliance with the inventory

16. Other information, including date of preparation or last revision

Issue Date: 03/06/2020

Revision Information: 03/06/2020: SDS Update

Version #: 7.0

Abbreviations and acronyms: ACGIH = American Conference of Governmental Industrial Hygienists; BOD = Biochemical Oxygen Demand; CAS = Chemical Abstracts Service; CEPA = Canadian Environmental Protection Act; COD = Chemical Oxygen Demand; DSL = Domestic Substances List; EC50 = Effective Concentration 50%; EPA = Environmental Protection Agency; GHS = Globally Harmonized System for the Classification and Labelling of Chemicals; IARC = International Agency for Research on Cancer; IDLH = Immediately Dangerous to Life or Health; Kow = Octanol/water partition coefficient; LC50 = Lethal Concentration 50%; LD50 = Lethal Dose 50%; LEL = Lower Explosive Limit; NDSL = Non-Domestic Substances List; NFPA = National Fire Protection Association; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OEL = Occupational Exposure Limit; OSHA = Occupational Safety and Health Administration; PNOC = Particulates Not Otherwise Classified; PPE = Personal Protective Equipment; REL = Recommended Exposure Limit; SCBA = Self Contained Breathing Apparatus; SDS = Safety Data Sheet; STEL = Short Term Exposure Limit; TDG = Transportation of Dangerous Goods; TLV = Threshold Limit Value; TSCA = Toxic Substances Control Act; TWA = Time Weighted Average

Further Information: No data available.

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SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: **CAT DEO 15W-40 (DIESEL ENGINE OIL)**
Product Description: Base Oil and Additives
Product Code: 20202040B020, 478669-00, 97X127
Intended Use: Engine oil

COMPANY IDENTIFICATION

Supplier: **EXXON MOBIL CORPORATION**
3225 GALLOWS RD.
FAIRFAX, VA. 22037 USA

24 Hour Health Emergency	609-737-4411
Transportation Emergency Phone	800-424-9300 or 703-527-3887 CHEMTREC
Product Technical Information	800-662-4525
MSDS Internet Address	http://www.exxon.com, http://www.mobil.com

SECTION 2 HAZARDS IDENTIFICATION

This material is not hazardous according to regulatory guidelines (see (M)SDS Section 15).

Other hazard information:

HAZARD NOT OTHERWISE CLASSIFIED (HNOC): None as defined under 29 CFR 1900.1200.

PHYSICAL / CHEMICAL HAZARDS
No significant hazards.

HEALTH HAZARDS
High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.

ENVIRONMENTAL HAZARDS
No significant hazards.

NFPA Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0
HMIS Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert

advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a mixture.

Hazardous Substance(s) or Complex Substance(s) required for disclosure

Name	CAS#	Concentration*	GHS Hazard Codes
ETHYOXYLATED LONG CHAIN ALCOHOLS	68551-12-2	0.1 - < 1%	H318, H400(M factor 1)
SOLVENT DEWAXED HEAVY PARAFFINIC DISTILLATE	64742-65-0	5 - < 10%	H304
TETRAPROPENYL PHENOL	121158-58-5	0.1 - < 0.25%	H315, H319(2A), H360(1B)(F), H400(M factor 10), H410(M factor 10)
ZINC ALKYL DITHIOPHOSPHATE	113706-15-3	1 - 2.5%	H303, H315, H318, H401, H411

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage (concentration) of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Oxides of carbon, Smoke, Fume, Sulfur oxides, Incomplete combustion products, Aldehydes

FLAMMABILITY PROPERTIES

Flash Point [Method]: >215°C (419°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

PROTECTIVE MEASURES

Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: respiratory protection will be necessary only in special cases, e.g., formation of mists. Half-face or full-face respirator with filter(s) for dust/organic vapor or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to hydrocarbons are recommended. Gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however,

geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Avoid contact with used product. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator.

STORAGE

The container choice, for example storage vessel, may effect static accumulation and dissipation. Do not store in open or unlabelled containers.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

Substance Name	Form	Limit / Standard			NOTE	Source
SOLVENT DEWAXED HEAVY PARAFFINIC DISTILLATE	Mist.	TWA	5 mg/m3		N/A	OSHA Z1
SOLVENT DEWAXED HEAVY PARAFFINIC DISTILLATE		TWA	2000 mg/m3	500 ppm	N/A	OSHA Z1
SOLVENT DEWAXED HEAVY PARAFFINIC DISTILLATE	Mist.	TWA	5 mg/m3		N/A	ACGIH

Exposure limits/standards for materials that can be formed when handling this product: When mists/aerosols can occur the following are recommended: 5 mg/m³ - ACGIH TLV (inhalable fraction), 5 mg/m³ - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

No biological limits allocated.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid

Color: Amber
Odor: Characteristic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 °C): 0.826
Flammability (Solid, Gas): N/A
Flash Point [Method]: >215°C (419°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: > 316°C (600°F)
Decomposition Temperature: N/D
Vapor Density (Air = 1): N/D
Vapor Pressure: [N/D at 20 °C]
Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
Solubility in Water: Negligible
Viscosity: 115.5 cSt (115.5 mm2/sec) at 40 °C | 15 cSt (15 mm2/sec) at 100°C
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/A
Pour Point: < -27°C (-17°F)
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: See sub-sections below.

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Negligible hazard at ambient/normal handling temperatures.

Ingestion	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin Corrosion/Irritation: No end point data for material.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
Eye	
Serious Eye Damage/Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.
Sensitization	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: No end point data for material.	Not expected to be a skin sensitizer. Based on assessment of the components.
Aspiration: Data available.	Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: No end point data for material.	Not expected to be a germ cell mutagen. Based on assessment of the components.
Carcinogenicity: No end point data for material.	Not expected to cause cancer. Based on assessment of the components.
Reproductive Toxicity: No end point data for material.	Not expected to be a reproductive toxicant. Based on assessment of the components.
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: No end point data for material.	Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components.

OTHER INFORMATION

For the product itself:

Diesel engine oils: Not carcinogenic in animals tests. Used and unused diesel engine oils did not produce any carcinogenic effects in chronic mouse skin painting studies.
Oils that are used in gasoline engines may become hazardous and display the following properties: Carcinogenic in animal tests. Caused mutations in vitro. Possible allergen and photoallergen. Contains polycyclic aromatic compounds (PAC) from combustion products of gasoline and/or thermal degradation products.

Contains:
Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.
Tetrapropenyl phenol (TPP). TPP was tested in a rat oral gavage one-generation reproductive toxicity study and a rat dietary two-generation reproductive toxicity study. Results from the one-generation study included reduced ovary weights and changes in male reproductive accessory organs. Results from the two-generation study included prolonged estrous cyclicity, reduced ovary weights, accelerated sexual maturation, decreased mean live litter size, decreased fertility rates, hypospermia, and reduced weights of male reproductive accessory organs. A Specific Concentration Limit (SCL) for reproductive effects of 1.5 wt% TPP was derived by the supplier based on the NOAEL (15 mg/kg/day) from the rat dietary two-generation study and was confirmed in supporting studies with other substances containing TPP as an impurity.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC	3 = IARC 1	5 = IARC 2B
2 = NTP SUS	4 = IARC 2A	6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

NOTE: One or more components of this material contain an impurity (branched alkylphenol) that is highly toxic to aquatic organisms. The components containing the impurity were tested by the supplier and found to be no more than minimally toxic to aquatic organisms.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Protect the environment. Dispose of used oil at designated sites. Minimize skin contact. Do not mix used oils with solvents, brake fluids or coolants.

REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrositivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT): Not Regulated for Land Transport

LAND (TDG): Not Regulated for Land Transport

SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

Marine Pollutant: No

AIR (IATA): Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: This material is not considered hazardous in accordance with OSHA HazCom 2012, 29 CFR 1910.1200.

Listed or exempt from listing/notification on the following chemical inventories: TSCA

EPCRA SECTION 302: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY:

Chemical Name	CAS Number	Typical Value

ZINC ALKYL DITHIOPHOSPHATE	113706-15-3	1 - 2.5%

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
DIPHENYLAMINE	122-39-4	18
ZINC ALKYL DITHIOPHOSPHATE	113706-15-3	13, 15, 17, 19

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):
H303: May be harmful if swallowed; Acute Tox Oral, Cat 5
H304: May be fatal if swallowed and enters airways; Aspiration, Cat 1
H315: Causes skin irritation; Skin Corr/Irritation, Cat 2
H318: Causes serious eye damage; Serious Eye Damage/Irr, Cat 1
H319(2A): Causes serious eye irritation; Serious Eye Damage/Irr, Cat 2A
H360(1B)(F): May damage fertility; Repro Tox, Cat 1B (Fertility)
H400: Very toxic to aquatic life; Acute Env Tox, Cat 1
H401: Toxic to aquatic life; Acute Env Tox, Cat 2
H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1
H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Updates made in accordance with implementation of GHS requirements.

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SAFETY DATA SHEET

SECTION 1 IDENTIFICATION

PRODUCT

Product Name: **CAT FEED**
Product Description: Petroleum Distillates
SDS Number: 4684
Product Code: 60301020
Intended Use: FUEL OIL, Process stream

COMPANY IDENTIFICATION

Supplier: **Imperial Oil Downstream**
P.O. Box 2480, Station M
Calgary, ALBERTA T2P 3M9 Canada

24 Hour Emergency Telephone	1-866-232-9563
Transportation Emergency Phone Number	1-866-232-9563
Product Technical Information	1-800-268-3183
Supplier General Contact	1-800-567-3776

SECTION 2 HAZARD IDENTIFICATION

This material is considered to be hazardous according to regulatory guidelines.

This product has been classified in accordance with hazard criteria of the Hazardous Products Regulations (HPR) SOR/2015-17 and the SDS contains all the information required by the HPR SOR/2015-17.

CLASSIFICATION:

Flammable Liquids — Category 4
Acute Toxicity (Inhalation) — Category 4
Skin Irritation — Category 2
Carcinogenicity — Category 1B
Reproductive Toxicity (Developmental) — Category 2
Specific Target Organ Toxicity — Repeated Exposure — Category 2

LABEL:
Pictogram:

Signal Word: Danger

Hazard Statements:
H227: Combustible liquid. H315: Causes skin irritation. H332: Harmful if inhaled. H350: May cause cancer. H361: Suspected of damaging the unborn child. H373: May cause damage to organs through prolonged or repeated exposure. Blood, Bone marrow, Liver, Thymus

Precautionary Statements:
P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P260: Do not breathe mist / vapours. P264: Wash skin thoroughly after handling. P271: Use only outdoors or in a well-ventilated area. P273: Avoid release to the environment. P280: Wear protective gloves/protective clothing/eye protection/face protection.P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P308 + P313: IF exposed or concerned: Get medical advice/attention. P312: Call a POISON CENTER or doctor/physician if you feel unwell. P332 + P313: If skin irritation occurs: Get medical advice/attention. P362 + P364: Take off contaminated clothing and wash it before reuse. P370 + P378: In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish. P391: Collect spillage.P403: Store in a well-ventilated place. P405: Store locked up.P501: Dispose of contents and container in accordance with local regulations.

Contains: DISTILLATE (PETROLEUM), VACUUM. . .C15-50; HEAVY THERMAL CRACKED DISTILLATE; LIGHT CATALYTIC CRACKED DISTILLATE; LIGHT VACUUM GAS OIL (PETROLEUM); PITCH

Other hazard information:

Health Hazards Not Otherwise Classified: None as defined under HPR SOR/2015-17.

Physical Hazards Not Otherwise Classified: None as defined under HPR SOR/2015-17.

PHYSICAL / CHEMICAL HAZARDS

Material can accumulate static charges which may cause an ignition. Material can release vapours that readily form flammable mixtures. Vapour accumulation could flash and/or explode if ignited. Combustible.

HEALTH HAZARDS

High-pressure injection under skin may cause serious damage. Under conditions of poor personal hygiene and prolonged repeated contact, some polycyclic aromatic compounds (PACs) have been suspected as a cause of skin cancer in humans. Hydrogen sulphide, a highly toxic gas, is expected to be present. Signs and symptoms of overexposure to hydrogen sulphide include respiratory and eye irritation, dizziness, nausea, coughing, a sensation of dryness and pain in the nose, and loss of consciousness. Odour does not provide a reliable indicator of the presence of hazardous levels in the atmosphere. This product contains aromatic oils. Aromatic oils contain high concentrations of polycyclic aromatic compounds. Prolonged skin contact may produce serious toxic effects including skin cancer, liver damage, blood effects and effects on the unborn. May be irritating to the eyes, nose, throat, and lungs.

ENVIRONMENTAL HAZARDS

Expected to be very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

NFPA Hazard ID:	Health:	2	Flammability:	2	Reactivity:	0
HMIS Hazard ID:	Health:	2*	Flammability:	2	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a mixture.

Hazardous Substance(s) or Complex Substance(s) in Hazardous product

Name	CAS#	Concentration*	GHS Hazard Codes
DISTILLATE (PETROLEUM), VACUUM. . .C15-50	70592-78-8	20 - 25%	H332, H350(1B), H361(D), H373, H400(M factor 1), H410(M factor 1)
GAS OIL EXTRACTS	64743-06-2	10 - 15%	H304
HEAVY THERMAL CRACKED DISTILLATE	64741-81-7	10 - 20%	H304, H332, H350(1B), H361(D), H373, H400(M factor 1), H410(M factor 1)
LIGHT CATALYTIC CRACKED DISTILLATE	64741-59-9	1 - 5%	H304, H332, H350(1B), H315, H373, H400(M factor 1), H410(M factor 1)
LIGHT VACUUM GAS OIL (PETROLEUM)	64741-58-8	30 - 60%	H315, H332, H351, H373, H401, H411
PITCH	61789-60-4	3 - 4%	H350(1B)

Hazardous Constituent(s) Contained in Complex Substance(s)

Name	CAS#	Concentration*	GHS Hazard Codes
HYDROGEN SULPHIDE	7783-06-4	0.1 - 0.25%	H220, H280, H330(2), H400(M factor 1)

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

SECTION 4 FIRST-AID MEASURES

INHALATION

Immediately remove from further exposure. Get immediate medical assistance. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. Give supplemental oxygen, if available. If breathing has stopped, assist ventilation with a mechanical device.

SKIN CONTACT

Remove contaminated clothing. Dry wipe exposed skin and cleanse with waterless hand cleaner and follow by washing thoroughly with soap and water. For those providing assistance, avoid further skin contact to yourself or others. Wear impervious gloves. Launder contaminated clothing separately before reuse. Discard contaminated articles that cannot be laundered. If product is injected into or under the skin, or into any part of

the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight streams of water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Combustible. Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

Hazardous Combustion Products: Hydrogen sulphide, Incomplete combustion products, Oxides of carbon, Smoke, Fume, Sulphur oxides

FLAMMABILITY PROPERTIES

Flash Point [Method]: >70°C (158°F) [Typical] [Closed Cup]
Flammable Limits (Approximate volume % in air): LEL: 0.5 UEL: 5.0 [Estimated]
Autoignition Temperature: 300°C (572°F) [Estimated]

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

PROTECTIVE MEASURES

Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required, due to toxicity or flammability of the material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

SPILL MANAGEMENT

Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapour-suppressing foam may be used to reduce vapour. Use clean non-sparking tools to collect absorbed material. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Water spray may reduce vapour, but may not prevent ignition in enclosed spaces. Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do so without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dyke far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Avoid all personal contact. Do not enter storage areas or confined spaces unless adequately ventilated. Harmful amounts of H2S may be present. The toxic and olfactory (sense of smell) fatigue properties of hydrogen sulfide require that air monitoring alarms and respiratory protection be used where the concentration might be expected to reach a harmful level, such as in an enclosed space, heated transport vessel, or in a spill or leak situation.

Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or earthing procedures. However, bonding and earthing may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator. A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10E-12 Siemens per meter) and is considered a semiconductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semiconductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.

STORAGE

The type of container used to store the material may affect static accumulation and dissipation. Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Storage containers should be earthed and bonded. Fixed storage containers, transfer containers and associated equipment should be grounded and bonded to prevent accumulation of static charge.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Substance Name	Form	Limit/Standard			Note	Source
DISTILLATE (PETROLEUM), VACUUM. . .C15-50 [benzene solubles]	Total oil mist	TWA	0.1 mg/m3		Skin	Supplier
HEAVY THERMAL CRACKED DISTILLATE [benzene solubles]	Total oil mist	TWA	0.1 mg/m3		Skin	Supplier
HYDROGEN SULPHIDE		STEL	14 mg/m3	10 ppm		Supplier
HYDROGEN SULPHIDE		TWA	7 mg/m3	5 ppm		Supplier
HYDROGEN SULPHIDE		STEL	5 ppm			ACGIH
HYDROGEN SULPHIDE		TWA	1 ppm			ACGIH
PITCH [benzene solubles]	Total oil mist	TWA	0.1 mg/m3		Skin	Supplier

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

Use explosion-proof ventilation equipment to stay below exposure limits.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

Positive-pressure, air-supplied respirator in areas where H2S vapours may accumulate.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use

conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

Chemical resistant gloves are recommended. If contact with forearms is likely wear gauntlet style gloves.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

Chemical/oil resistant clothing is recommended.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practise good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications.

GENERAL INFORMATION

Physical State: Liquid
Colour: Dark Brown
Odour: Petroleum/Solvent
Odour Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15.5 °C): 0.89 - 0.92
Density: 890 kg/m³ (7.43 lbs/gal, 0.89 kg/dm³) - 920 kg/m³ (7.68 lbs/gal, 0.92 kg/dm³) [Typical]
Flammability (Solid, Gas): N/A
Flash Point [Method]: >70°C (158°F) [Typical] [Closed Cup]
Flammable Limits (Approximate volume % in air): LEL: 0.5 UEL: 5.0 [Estimated]
Autoignition Temperature: 300°C (572°F) [Estimated]
Boiling Point / Range: 221°C (430°F) - 600°C (1112°F) [Typical]
Decomposition Temperature: N/D
Vapour Density (Air = 1): > 1 at 101 kPa
Vapour Pressure: [N/D at 20°C]
Evaporation Rate (n-butyl acetate = 1): < 1
pH: N/D
Log Pow (n-Octanol/Water Partition Coefficient): N/D
Solubility in Water: Negligible
Viscosity: 67.23 cSt (67.23 mm2/sec) at 40ºC | 39 cSt (39 mm2/sec) at 50°C [ASTM D 445]
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/A

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Heat, sparks, flame, and build up of static electricity.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: No end point data for material.	Slightly Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Elevated temperatures or mechanical action may form vapours, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs.
Ingestion	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin Corrosion/Irritation: No end point data for material.	Irritating to the skin. Based on assessment of the components.
Eye	
Serious Eye Damage/Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.
Sensitisation	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: No end point data for material.	Not expected to be a skin sensitizer. Based on assessment of the components.
Aspiration: No end point data for material.	Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: No end point data for material.	Not expected to be a germ cell mutagen. Based on assessment of the components.
Carcinogenicity: No end point data for material.	Caused cancer in laboratory animals. Based on assessment of the components.
Reproductive Toxicity: No end point data for material.	Caused damage to the fetus in laboratory animals, but the relevance to humans is uncertain. Based on assessment of the

	components.
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: No end point data for material.	Concentrated, prolonged or deliberate exposure may cause organ damage. Based on assessment of the components.

TOXICITY FOR SUBSTANCES

NAME	ACUTE TOXICITY
LIGHT CATALYTIC CRACKED DISTILLATE	Inhalation Lethality: 4 hour(s) LC50 4.65 mg/l (Aerosol) (Rat)

OTHER INFORMATION

For the product itself:

Target Organs Repeated Exposure: Blood, Bone marrow, Liver, Thymus

Contains:

Gas oil vacuum: Carcinogenic in animal tests. Causes mutations in-vitro. Dermal exposure to high concentrations resulted in maternal toxicity, decreased fetal weight and fetal survival, and some external fetal malformations. Dermal studies in animals: increased mortality, skin irritation, liver, kidney, thymus, bone marrow, blood and lymphoid tissue toxic effects. Possible allergen and photoallergen. HYDROGEN SULPHIDE: Chronic health effects due to repeated exposures to low levels of H2S have not been established. High level (700 ppm) acute exposure can result in sudden death. High concentrations will lead to cardiopulmonary arrest due to nervous system toxicity and pulmonary edema. Lower levels (150 ppm) may overwhelm sense of smell, eliminating warning of exposure. Symptoms of overexposure to H2S include headache, fatigue, insomnia, irritability, and gastrointestinal problems. Repeated exposures to approximately 25 ppm will irritate mucous membranes and the respiratory system and have been implicated in some eye damage. MIDDLE DISTILLATES WITH CRACKED STOCKS: Carcinogenic in animal tests. Caused mutations in-vitro. Repeated dermal exposures to high concentrations in test animals resulted in reduced litter size and litter weight, and increased fetal resorptions at maternally toxic doses. Dermal exposure to high concentrations resulted in severe skin irritation with weight loss and some mortality. Inhalation exposure to high concentrations resulted in respiratory tract irritation, lung changes/infiltration/accumulation, and reduction in lung function. Polycyclic Aromatic Compounds (PAC/PNA): Carcinogenic in animal studies. Caused mutations in-vitro. Reproductive and developmental studies resulted in decreased fetal weights, survival and malformations, as well as reduced sperm count in males. Dermal studies resulted in increased mortality, skin irritation, liver, kidney, thymus, bone marrow, blood and lymphoid tissue toxic effects. Possible allergen and/or photoallergen.

CMR Status:

Chemical Name	CAS Number	List Citations
HEAVY THERMAL CRACKED DISTILLATE	64741-81-7	3
HYDROGEN SULPHIDE	7783-06-4	4
LIGHT CATALYTIC CRACKED DISTILLATE	64741-59-9	1, 6
LIGHT VACUUM GAS OIL (PETROLEUM)	64741-58-8	1, 6

--REGULATORY LISTS SEARCHED--

1 = IARC 1	3 = IARC 2B	5 = ACGIH A1
2 = IARC 2A	4 = ACGIH ALL	6 = ACGIH A2

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

ECOTOXICITY

Material -- Expected to be very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

REGULATORY DISPOSAL INFORMATION

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (TDG)

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (HEAVY THERMAL CRACKED DISTILLATE)
Hazard Class & Division: 9
UN Number: 3082
Packing Group: III
Marine Pollutant: Yes
Special Provisions: 16, 99

LAND (DOT)

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (HEAVY THERMAL CRACKED DISTILLATE)
Hazard Class & Division: 9
ID Number: 3082
Packing Group: III
Marine Pollutant: Yes

ERG Number: 171
Label(s): 9
Transport Document Name: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (HEAVY THERMAL CRACKED DISTILLATE), 9, PG III, MARINE POLLUTANT

Footnote: This material is not regulated under 49 CFR in a container of 450 litre/119 gallon capacity or less when transported solely by land, as long as the material is not a hazardous waste, a marine pollutant, or specifically listed as a hazardous substance.

SEA (IMDG)

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (HEAVY THERMOCRACKED DISTILLATE)
Hazard Class & Division: 9
EMS Number: F-A, S-F
UN Number: 3082
Packing Group: III
Marine Pollutant: Yes
Label(s): 9
Transport Document Name: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (HEAVY THERMOCRACKED DISTILLATE), 9, PG III

AIR (IATA)

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (HEAVY THERMOCRACKED DISTILLATE)
Hazard Class & Division: 9
UN Number: 3082
Packing Group: III
Label(s) / Mark(s): 9, EHS
Transport Document Name: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (HEAVY THERMOCRACKED DISTILLATE), 9, PG III

SECTION 15 REGULATORY INFORMATION

CEPA: Contains one or more components that are on the NDSL and have been notified under CEPA.

Listed or exempt from listing/notification on the following chemical inventories (May contain substance(s) subject to notification to the EPA Active TSCA inventory prior to import to USA): AIIC, IECSC, KECI, TSCA
Special Cases:

Inventory	Status
NDSL	Restrictions Apply

The Following Ingredients are Cited on the Lists Below: None.

--REGULATORY LISTS SEARCHED--

1 = TSCA 4 3 = TSCA 5e 5 = TSCA 12b

2 = TSCA 5a2 4 = TSCA 6 6 = NPRI

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):
H220: Extremely flammable gas; Flammable Gas, Cat 1
H280: Contains gas under pressure; may explode if heated; Pressurized Gas
H304: May be fatal if swallowed and enters airways; Aspiration, Cat 1
H315: Causes skin irritation; Skin Corr/Irritation, Cat 2
H330(2): Fatal if inhaled; Acute Tox Inh, Cat 2
H332: Harmful if inhaled; Acute Tox Inh, Cat 4
H350(1B): May cause cancer; Carcinogenicity, Cat 1B
H351: Suspected of causing cancer; GHS Carcinogenicity, Cat 2
H361(D): Suspected of damaging the unborn child; Repro Tox, Cat 2 (Develop)
H373: May cause damage to organs through prolonged or repeated exposure; Target Organ, Repeated, Cat 2
H400: Very toxic to aquatic life; Acute Env Tox, Cat 1
H401: Toxic to aquatic life; Acute Env Tox, Cat 2
H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1
H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Composition: Component table information was modified.
GHS Health Symbol information was modified.
Section 08: Exposure Limits Table information was modified.
Section 11: Tox List Cited Table information was modified.
Section 14: ERG Number information was modified.
Section 14: Hazard Class & Division information was added.
Section 14: Hazard Class information was modified.
Section 14: Label(s) information was modified.
Section 14: LAND (TDG) Default information was deleted.
Section 14: Marine Pollutant information was added.
Section 14: Marine Pollutant information was modified.
Section 14: Packing Group information was added.
Section 14: Proper Shipping Name information was added.
Section 14: Proper Shipping Name information was modified.
Section 14: Special Provisions information was added.
Section 14: TDG Technical Name - All information was added.
Section 14: TDG Technical Name - Close parenthesis information was added.
Section 14: TDG Technical Name - Open parenthesis information was added.
Section 14: Transport Document Name information was modified.
Section 14: UN Number information was added.
Section 14: UN Number information was modified.
Section 15: National Chemical Inventory Listing information was modified.

THIS SDS COVERS THE FOLLOWING MATERIALS: VACUUM GAS OIL (IOCO) - OBSOLETE | CAT CRACKER FEEDSTOCK | CAT FEED | CCIP, CAT FEED | HCIS CAT FEED | VACUUM GAS OIL | VGO

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SAFETY DATA SHEET

Lucas Heavy Duty CAT, Mining & Construction Grease NLGI # 2

Section 1. Identification

GHS product identifier : Lucas Heavy Duty CAT, Mining & Construction Grease NLGI # 2

Other means of identification : Not available.

Product number : 10597, 10598, 10881

Identified uses

Not available.

Supplier's details : Lucas Oil Products, Inc
302 North Sheridan Street
Corona, California 92880-2067
Toll Free: (800) 342-2512
Tel: (951) 270-0154
Fax: (951) 270-1902
Website: www.LucasOil.com

Emergency telephone number (with hours of operation) : (951) 493-1149
(951) 847-5949
Markn@lucasoil.com

7:00A.M. to 5:00P.M. Monday thru Friday

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Causes serious eye irritation.
Causes skin irritation.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention : Wear protective gloves. Wear eye or face protection. Wash hands thoroughly after handling.

Section 2. Hazards identification

Response : IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Not applicable.

Disposal : Not applicable.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Other means of identification : Not available.

CAS number/other identifiers

CAS number : Not applicable.

Product code : 10597, 10598, 10881

Ingredient name	%	CAS number
Solvent naphtha (petroleum), medium aliph.	30 - 60	64742-88-7
Antimony, dialkyl dithiocarbamate	5 - 10	15890-25-2
Butene, homopolymer	1 - 5	9003-29-6
Lithium hydroxide, monohydrate	1 - 5	1310-66-3

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Continue to rinse for at least 20 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes skin irritation.

Ingestion : Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : No known significant effects or critical hazards.

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : No known significant effects or critical hazards.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : No specific fire or explosion hazard.

Section 5. Fire-fighting measures

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
Sulfur oxides
metal oxide/oxides

Special protective actions for fire-fighters : No special measures are required.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Solvent naphtha (petroleum), medium aliph.	**OSHA PEL (United States, 2/2013).** TWA: 100 ppm 8 hours. TWA: 400 mg/m³ 8 hours.
Antimony, dialkyl dithiocarbamate	**ACGIH TLV (United States, 6/2013).** TWA: 0.5 mg/m³, (as Sb) 8 hours. **OSHA PEL (United States, 2/2013).** TWA: 0.5 mg/m³, (as Sb) 8 hours. **NIOSH REL (United States, 4/2013).** TWA: 0.5 mg/m³, (as Sb) 10 hours.

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure controls/personal protection

Respiratory protection : Use a properly fitted, air-purifying or supplied air respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Grease.]

Color : Grey buttery.

Odor : Petroleum.

Odor threshold : Not available.

pH : Not available.

Melting point : Not available.

Boiling point : Not available.

Flash point : Closed cup: >200°C (>392°F)

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 0.93

Solubility : Negligible.

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : High temperatures, sparks, or open flames.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, reducing materials, acids and alkalis.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Antimony, dialkyl dithiocarbamate	LD50 Dermal LD50 Oral	Rabbit Rat	16000 mg/kg 16400 mg/kg	- -

Irritation/Corrosion

There is no data available.

Sensitization

There is no data available.

Carcinogenicity

There is no data available.

Specific target organ toxicity (single exposure)

There is no data available.

Specific target organ toxicity (repeated exposure)

There is no data available.

Aspiration hazard

Name	Result
Solvent naphtha (petroleum), medium aliph. Butene, homopolymer	ASPIRATION HAZARD - Category 1 ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes skin irritation.

Ingestion : Irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : No known significant effects or critical hazards.

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : No known significant effects or critical hazards.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Long term exposure

Section 11. Toxicological information

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	16835 mg/kg

Section 12. Ecological information

Toxicity

There is no data available.

Persistence and degradability

There is no data available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Butene, homopolymer	7.6 to 7.8	314 to 1882	high

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and

Section 13. Disposal considerations

sewers.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	No.	No.	No.
Additional information	-	-	-

AERG : Not applicable

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Water Act (CWA) 307: Antimony, dialkyl dithiocarbamate

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

Section 15. Regulatory information

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Butene, homopolymer	1 - 5	No.	No.	No.	Yes.	No.
Lithium hydroxide, monohydrate	1 - 5	No.	No.	No.	Yes.	No.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Antimony, dialkyl dithiocarbamate	15890-25-2	5 - 10
Supplier notification	Antimony, dialkyl dithiocarbamate	15890-25-2	5 - 10

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : The following components are listed: Molybdenum disulphide

New York : None of the components are listed.

New Jersey : The following components are listed: Distillates (petroleum), hydrotreated heavy naphthenic; Antimony, dialkyl dithiocarbamate; Lithium hydroxide, monohydrate

Pennsylvania : The following components are listed: Antimony, dialkyl dithiocarbamate

California Prop. 65

No products were found.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health : 2 * **Flammability :** 1 **Physical hazards :** 0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

Health : 2 **Flammability :** 1 **Instability :** 0

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

History

Section 16. Other information

Date of issue mm/dd/yyyy	:	01/15/2015
Date of previous issue	:	03/15/2014
Version	:	2
Revised Section(s)	:	1, 3, 16
Prepared by	:	KMK Regulatory Services Inc.
Key to abbreviations	:	ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) UN = United Nations

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: **CAT HYDRAULIC OIL (HYDO) SAE 10W**
Product Description: Base Oil and Additives
Product Code: 20202050B020, 478909-00, 971670
Intended Use: Hydraulic/transmission fluid

COMPANY IDENTIFICATION

Supplier: **EXXON MOBIL CORPORATION**
22777 Springwoods Village Parkway
Spring, TX. 77389 USA

24 Hour Health Emergency	609-737-4411
Transportation Emergency Phone	800-424-9300 or 703-527-3887 CHEMTREC
Product Technical Information	800-662-4525
MSDS Internet Address	http://www.exxon.com, http://www.mobil.com

SECTION 2 HAZARDS IDENTIFICATION

This material is not hazardous according to regulatory guidelines (see (M)SDS Section 15).

Other hazard information:

HAZARD NOT OTHERWISE CLASSIFIED (HNOC): None as defined under 29 CFR 1910.1200.

PHYSICAL / CHEMICAL HAZARDS
No significant hazards.

HEALTH HAZARDS
High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.

ENVIRONMENTAL HAZARDS
No significant hazards.

NFPA Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0
HMIS Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert

advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a mixture.

Hazardous Substance(s) or Complex Substance(s) required for disclosure

Name	CAS#	Concentration*	GHS Hazard Codes
ZINC DITHIOPHOSPHATE	68649-42-3	1 - 2.5%	H315, H318, H401, H411

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage (concentration) of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Pressurized mists may form a flammable mixture.

Hazardous Combustion Products: Aldehydes, Oxides of carbon, Smoke, Fume, Sulfur oxides, Incomplete combustion products

FLAMMABILITY PROPERTIES

Flash Point [Method]: >200°C (392°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

PROTECTIVE MEASURES

Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: respiratory protection will be necessary only in special cases, e.g., formation of mists. Half-face or full-face respirator with filter(s) for dust/organic vapor or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to hydrocarbons are recommended. Gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator.

STORAGE

The container choice, for example storage vessel, may effect static accumulation and dissipation. Do not store in open or unlabelled containers. Keep away from incompatible materials.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists/aerosols can occur the following are recommended: 5 mg/m³ - ACGIH TLV (inhalable fraction), 5 mg/m³ - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

No biological limits allocated.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to

be considered for this material include:
No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:
No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:
No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid
Color: Amber
Odor: Characteristic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 °C): 0.878
Flammability (Solid, Gas): N/A
Flash Point [Method]: >200°C (392°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: > 316°C (600°F) [Estimated]
Decomposition Temperature: N/D
Vapor Density (Air = 1): > 2 at 101 kPa [Estimated]

Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 °C [Estimated]
Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3.5 [Estimated]
Solubility in Water: Negligible
Viscosity: 37.7 cSt (37.7 mm2/sec) at 40 °C | 6.1 cSt (6.1 mm2/sec) at 100°C
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/A
Pour Point: -18°C (0°F)
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: See sub-sections below.

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Negligible hazard at ambient/normal handling temperatures.
Ingestion	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin Corrosion/Irritation: No end point data for material.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
Eye	
Serious Eye Damage/Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.
Sensitization	
Respiratory Sensitization: No end point data	Not expected to be a respiratory sensitizer.

for material.	
Skin Sensitization: No end point data for material.	Not expected to be a skin sensitizer. Based on assessment of the components.
Aspiration: Data available.	Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: No end point data for material.	Not expected to be a germ cell mutagen. Based on assessment of the components.
Carcinogenicity: No end point data for material.	Not expected to cause cancer. Based on assessment of the components.
Reproductive Toxicity: No end point data for material.	Not expected to be a reproductive toxicant. Based on assessment of the components.
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: No end point data for material.	Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components.

OTHER INFORMATION

Contains:
Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC	3 = IARC 1	5 = IARC 2B
2 = NTP SUS	4 = IARC 2A	6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Protect the environment. Dispose of used oil at designated sites. Minimize skin contact. Do not mix used oils with solvents, brake fluids or coolants.

REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrositivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT): Not Regulated for Land Transport

LAND (TDG): Not Regulated for Land Transport

SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

Marine Pollutant: No

AIR (IATA): Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: This material is not considered hazardous in accordance with OSHA HazCom 2012, 29 CFR 1910.1200.

Listed or exempt from listing/notification on the following chemical inventories: AICS, DSL, ENCS, IECSC, KECI, PICCS, TSCA

EPCRA SECTION 302: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY:

Chemical Name	CAS Number	Typical Value
ZINC DITHIOPHOSPHATE	68649-42-3	1 - 2.5%

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
ZINC DITHIOPHOSPHATE	68649-42-3	13, 15, 17, 19

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):
H315: Causes skin irritation; Skin Corr/Irritation, Cat 2
H318: Causes serious eye damage; Serious Eye Damage/Irr, Cat 1
H401: Toxic to aquatic life; Acute Env Tox, Cat 2
H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Updates made in accordance with implementation of GHS requirements.

The information and recommendations contained herein are, to the best of ExxonMobil's knowledge and belief, accurate and reliable as of the date issued. You can contact ExxonMobil to insure that this document is the most current available from ExxonMobil. The information and recommendations are offered for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. If buyer repackages this product, it is the user's responsibility to insure proper health, safety and other necessary information is included with and/or on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, re-publication or retransmission of this document, in whole or in part, is not permitted. The term, "ExxonMobil" is used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliates in which they directly or indirectly hold any interest.

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DGN: 2004671XUS (546411)

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SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: **CAT TRANSMISSION AND DRIVE TRAIN OIL (TDTO) 30**
Product Description: Base Oil and Additives
Product Code: 20202050B050, 564666-00, 971420
Intended Use: Manual transmission fluid

COMPANY IDENTIFICATION

Supplier: **EXXON MOBIL CORPORATION**
3225 GALLOWS RD.
FAIRFAX, VA. 22037 USA

24 Hour Health Emergency	609-737-4411
Transportation Emergency Phone	800-424-9300 or 703-527-3887 CHEMTREC
Product Technical Information	800-662-4525
MSDS Internet Address	http://www.exxon.com, http://www.mobil.com

SECTION 2 HAZARDS IDENTIFICATION

This material is not hazardous according to regulatory guidelines (see (M)SDS Section 15).

Other hazard information:

HAZARD NOT OTHERWISE CLASSIFIED (HNOC): None as defined under 29 CFR 1900.1200.

PHYSICAL / CHEMICAL HAZARDS
No significant hazards.

HEALTH HAZARDS
High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.

ENVIRONMENTAL HAZARDS
No significant hazards.

NFPA Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0
HMIS Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert

advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a mixture.

Hazardous Substance(s) or Complex Substance(s) required for disclosure

Name	CAS#	Concentration*	GHS Hazard Codes
CALCIUM SULFONATE		0.1 - < 1%	H317
TETRAPROPENYL PHENOL	121158-58-5	0.1 - < 1%	H315, H361(F), H400(M factor 1), H410(M factor 1)
ZINC ARYLDITHIOPHOSPHATE	98073-07-5	1 - < 5%	H320(2B), H402, H412

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage (concentration) of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Incomplete combustion products, Aldehydes, Oxides of carbon, Smoke, Fume, Sulfur oxides

FLAMMABILITY PROPERTIES

Flash Point [Method]: >218°C (424°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

PROTECTIVE MEASURES

Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: respiratory protection will be necessary only in special cases, e.g., formation of mists. Half-face or full-face respirator with filter(s) for dust/organic vapor or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to hydrocarbons are recommended. Gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator.

STORAGE

The container choice, for example storage vessel, may effect static accumulation and dissipation. Do not store in open or unlabelled containers. Keep away from incompatible materials.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists/aerosols can occur the following are recommended: 5 mg/m³ - ACGIH TLV (inhalable fraction), 5 mg/m³ - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

No biological limits allocated.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection,

use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid
Color: Amber
Odor: Characteristic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 °C): 0.893
Flammability (Solid, Gas): N/A
Flash Point [Method]: >218°C (424°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: > 316°C (600°F)
Decomposition Temperature: N/D

Vapor Density (Air = 1): > 2 at 101 kPa
Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 °C
Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
Solubility in Water: Negligible
Viscosity: 100 cSt (100 mm2/sec) at 40 °C | 11.2 cSt (11.2 mm2/sec) at 100°C
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/A
Pour Point: -18°C (0°F)
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: See sub-sections below.

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Negligible hazard at ambient/normal handling temperatures.
Ingestion	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin Corrosion/Irritation: No end point data for material.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
Eye	
Serious Eye Damage/Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.
Sensitization	

Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: No end point data for material.	Not expected to be a skin sensitizer. Based on assessment of the components.
Aspiration: Data available.	Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: No end point data for material.	Not expected to be a germ cell mutagen. Based on assessment of the components.
Carcinogenicity: No end point data for material.	Not expected to cause cancer. Based on assessment of the components.
Reproductive Toxicity: No end point data for material.	Not expected to be a reproductive toxicant. Based on assessment of the components.
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: No end point data for material.	Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components.

OTHER INFORMATION

Contains:
Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.
Tetrapropenyl phenol (TPP). TPP was tested in a rat oral gavage one-generation reproductive toxicity study and a rat dietary two-generation reproductive toxicity study. Results from the one-generation study included reduced ovary weights and changes in male reproductive accessory organs. Results from the two-generation study included prolonged estrous cyclicity, reduced ovary weights, accelerated sexual maturation, decreased mean live litter size, decreased fertility rates, hypospermia, and reduced weights of male reproductive accessory organs. A Specific Concentration Limit (SCL) for reproductive effects of 1.5 wt% TPP was derived by the supplier based on the NOAEL (15 mg/kg/day) from the rat dietary two-generation study and was confirmed in supporting studies with other substances containing TPP as an impurity.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC	3 = IARC 1	5 = IARC 2B
2 = NTP SUS	4 = IARC 2A	6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

NOTE: One or more components of this material contain an impurity (branched alkylphenol) that is highly toxic to aquatic organisms. The components containing the impurity were tested by the supplier and found to be no more than minimally toxic to aquatic organisms.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Protect the environment. Dispose of used oil at designated sites. Minimize skin contact. Do not mix used oils with solvents, brake fluids or coolants.

REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT): Not Regulated for Land Transport

LAND (TDG): Not Regulated for Land Transport

SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

Marine Pollutant: No

AIR (IATA): Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: This material is not considered hazardous in accordance with OSHA HazCom 2012, 29 CFR 1910.1200.

Listed or exempt from listing/notification on the following chemical inventories: AICS, DSL, ENCS, IECSC, KECI, PICCS, TSCA

EPCRA SECTION 302: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
ZINC ARYLDITHIOPHOSPHATE	98073-07-5	13, 15, 17, 19

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):
H315: Causes skin irritation; Skin Corr/Irritation, Cat 2
H317: May cause allergic skin reaction; Skin Sensitization, Cat 1
H320(2B): Causes eye irritation; Serious Eye Damage/Irr, Cat 2B
H361(F): Suspected of damaging fertility; Repro Tox, Cat 2 (Fertility)
H400: Very toxic to aquatic life; Acute Env Tox, Cat 1
H402: Harmful to aquatic life; Acute Env Tox, Cat 3
H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1
H412: Harmful to aquatic life with long lasting effects; Chronic Env Tox, Cat 3

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Updates made in accordance with implementation of GHS requirements.

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SAFETY DATA SHEET

SECTION 1 IDENTIFICATION

PRODUCT

Product Name: **COMPRESSOR OIL 122**
Product Description: Base Oil and Additives
SDS Number: 8293
Product Code: 201560205510
Intended Use: Compressor oil

COMPANY IDENTIFICATION

Supplier: **Imperial Oil Downstream**
P.O. Box 2480, Station M
Calgary, ALBERTA T2P 3M9 Canada

24 Hour Emergency Telephone	1-866-232-9563
Transportation Emergency Phone Number	1-866-232-9563
Product Technical Information	1-800-268-3183
Supplier General Contact	1-800-567-3776

SECTION 2 HAZARD IDENTIFICATION

This material is considered to be NON-HAZARDOUS according to regulatory guidelines.

This product has been classified in accordance with hazard criteria of the Hazardous Products Regulations (HPR) SOR/2015-17 and the SDS contains all the information required by the HPR SOR/2015-17.

Other hazard information:

Health Hazards Not Otherwise Classified: None as defined under HPR SOR/2015-17.

Physical Hazards Not Otherwise Classified: None as defined under HPR SOR/2015-17.

PHYSICAL / CHEMICAL HAZARDS

No significant hazards.

HEALTH HAZARDS

High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.

ENVIRONMENTAL HAZARDS

No significant hazards.

NFPA Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0
HMIS Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a mixture.

Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*	GHS Hazard Codes
OXA DITHIA PHOSPHATETRADECANOIC ACID ETHYLHEXYL ESTER	83547-95-9	0.1 - < 1%	H315, H317, H401, H411

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

SECTION 4 FIRST-AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight streams of water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Aldehydes, Incomplete combustion products, Oxides of carbon, Smoke, Fume, Sulphur oxides

FLAMMABILITY PROPERTIES

Flash Point [Method]: 226°C (439°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

PROTECTIVE MEASURES

Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: respiratory protection will be necessary only in special cases, e.g., formation of mists. Half-face or full-face respirator with filter(s) for dust/organic vapor or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to hydrocarbons are recommended. Gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do so without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do so without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material;

however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dyke far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

This material is not intended for use in air compressors for breathing applications. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or earthing procedures. However, bonding and earthing may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator.

STORAGE

The type of container used to store the material may affect static accumulation and dissipation. Do not store in open or unlabelled containers. Keep away from incompatible materials.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists/aerosols can occur the following is recommended: 5 mg/m³ - ACGIH TLV (inhalable fraction).

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practise good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid
Colour: Yellow
Odour: Characteristic
Odour Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 °C): 0.89
Flammability (Solid, Gas): N/A
Flash Point [Method]: 226°C (439°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0

Autoignition Temperature: N/D
Boiling Point / Range: N/D
Decomposition Temperature: N/D
Vapour Density (Air = 1): N/D
Vapour Pressure: [N/D at 20°C] | < 1 kPa (7.5 mm Hg) at 38°C
Evaporation Rate (n-butyl acetate = 1): < 1
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
Solubility in Water: Negligible
Viscosity: 122 cSt (122 mm2/sec) at 40ºC
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/A
Pour Point: -12°C (10°F)
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Negligible hazard at ambient/normal handling temperatures.
Ingestion	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin Corrosion/Irritation: No end point data for material.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
Eye	
Serious Eye Damage/Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.

Sensitisation	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: No end point data for material.	Not expected to be a skin sensitizer. Based on assessment of the components.
Aspiration: Data available.	Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: No end point data for material.	Not expected to be a germ cell mutagen. Based on assessment of the components.
Carcinogenicity: No end point data for material.	Not expected to cause cancer. Based on assessment of the components.
Reproductive Toxicity: No end point data for material.	Not expected to be a reproductive toxicant. Based on assessment of the components.
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: No end point data for material.	Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components.

OTHER INFORMATION

For the product itself:

Component concentrations in this formulation would not be expected to cause skin sensitization, based on tests of the components, this formulation, or similar formulations.

Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitising in test animals.

CMR Status: None.

--REGULATORY LISTS SEARCHED--

1 = IARC 1	3 = IARC 2B	5 = ACGIH A1
2 = IARC 2A	4 = ACGIH ALL	6 = ACGIH A2

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (TDG): Not Regulated for Land Transport

LAND (DOT): Not Regulated for Land Transport

SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

Marine Pollutant: No

AIR (IATA): Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

CEPA: All components of this product are either on the Domestic Substance List (DSL) or are exempt.

Listed or exempt from listing/notification on the following chemical inventories: AIIC, DSL, IECSC, KECI, TSCA

Special Cases:

Inventory	Status
ENCS	Restrictions Apply

The Following Ingredients are Cited on the Lists Below: None.

--REGULATORY LISTS SEARCHED--

1 = TSCA 4	3 = TSCA 5e	5 = TSCA 12b
2 = TSCA 5a2	4 = TSCA 6	6 = NPRI

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):
H315: Causes skin irritation; Skin Corr/Irritation, Cat 2
H317: May cause allergic skin reaction; Skin Sensitisation, Cat 1
H401: Toxic to aquatic life; Acute Env Tox, Cat 2
H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Section 16: HCode Key information was modified.

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SAFETY DATA SHEET

SECTION 1 IDENTIFICATION

PRODUCT

Product Name: **COMPRESSOR OIL 264**
Product Description: Base Oil and Additives
SDS Number: 8299
Product Code: 201560205530
Intended Use: Compressor oil

COMPANY IDENTIFICATION

Supplier: **Imperial Oil Downstream**
P.O. Box 2480, Station M
Calgary, ALBERTA T2P 3M9 Canada

24 Hour Emergency Telephone	1-866-232-9563
Transportation Emergency Phone Number	1-866-232-9563
Product Technical Information	1-800-268-3183
Supplier General Contact	1-800-567-3776

SECTION 2 HAZARD IDENTIFICATION

This material is considered to be NON-HAZARDOUS according to regulatory guidelines.

This product has been classified in accordance with hazard criteria of the Hazardous Products Regulations (HPR) SOR/2015-17 and the SDS contains all the information required by the HPR SOR/2015-17.

Other hazard information:

Health Hazards Not Otherwise Classified: None as defined under HPR SOR/2015-17.

Physical Hazards Not Otherwise Classified: None as defined under HPR SOR/2015-17.

PHYSICAL / CHEMICAL HAZARDS

No significant hazards.

HEALTH HAZARDS

High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.

ENVIRONMENTAL HAZARDS

No significant hazards.

NFPA Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0
HMIS Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a mixture.

Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*	GHS Hazard Codes
DINONYL NAPHTHALENESULPHONIC ACID, BARIUM SALT	25619-56-1	0.1 - < 1%	H302, H315
TRIPHENYL PHOSPHATE	115-86-6	0.1 - < 0.25%	H400(M factor 1), H411

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

SECTION 4 FIRST-AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight streams of water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Aldehydes, Incomplete combustion products, Oxides of carbon, Smoke, Fume, Sulphur oxides

FLAMMABILITY PROPERTIES

Flash Point [Method]: 260°C (500°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

PROTECTIVE MEASURES

Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: respiratory protection will be necessary only in special cases, e.g., formation of mists. Half-face or full-face respirator with filter(s) for dust/organic vapor or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to hydrocarbons are recommended. Gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do so without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do so without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dyke far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

This material is not intended for use in air compressors for breathing applications. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or earthing procedures. However, bonding and earthing may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator.

STORAGE

The type of container used to store the material may affect static accumulation and dissipation. Do not store in open or unlabelled containers. Keep away from incompatible materials.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Substance Name	Form	Limit/Standard			Note	Source
DINONYL NAPHTHALENESULPHONIC ACID, BARIUM SALT [as Ba]		TWA	0.5 mg/m3			ACGIH
TRIPHENYL PHOSPHATE		TWA	3 mg/m3			ACGIH

Exposure limits/standards for materials that can be formed when handling this product: When mists/aerosols can occur the following is recommended: 5 mg/m³ - ACGIH TLV (inhalable fraction).

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practise good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid
Colour: Amber

Odour: Characteristic
Odour Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 °C): 0.897 [ASTM D4052]
Flammability (Solid, Gas): N/A
Flash Point [Method]: 260°C (500°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: N/D
Decomposition Temperature: N/D
Vapour Density (Air = 1): N/D
Vapour Pressure: [N/D at 20°C] | < 1 kPa (7.5 mm Hg) at 38°C
Evaporation Rate (n-butyl acetate = 1): < 1
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
Solubility in Water: Negligible
Viscosity: 280 cSt (280 mm2/sec) at 40ºC [ASTM D 445]
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/D
Pour Point: 0°C (32°F)
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Negligible hazard at ambient/normal handling temperatures.
Ingestion	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.

Skin	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin Corrosion/Irritation: No end point data for material.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
Eye	
Serious Eye Damage/Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.
Sensitisation	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: No end point data for material.	Not expected to be a skin sensitizer. Based on assessment of the components.
Aspiration: Data available.	Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: No end point data for material.	Not expected to be a germ cell mutagen. Based on assessment of the components.
Carcinogenicity: No end point data for material.	Not expected to cause cancer. Based on assessment of the components.
Reproductive Toxicity: No end point data for material.	Not expected to be a reproductive toxicant. Based on assessment of the components.
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: No end point data for material.	Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components.

TOXICITY FOR SUBSTANCES

NAME	ACUTE TOXICITY
DINONYL NAPHTHALENESULPHONIC ACID, BARIUM SALT	Oral Lethality: LD 50 1750 mg/kg (Rat)

OTHER INFORMATION

For the product itself:

Component concentrations in this formulation would not be expected to cause skin sensitization, based on tests of the components, this formulation, or similar formulations.

Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitising in test animals.

CMR Status: None.

--REGULATORY LISTS SEARCHED--

1 = IARC 1
2 = IARC 2A
3 = IARC 2B
4 = ACGIH ALL
5 = ACGIH A1
6 = ACGIH A2

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Protect the environment. Dispose of used oil at designated sites. Minimize skin contact. Do not mix used oils with solvents, brake fluids or coolants.

REGULATORY DISPOSAL INFORMATION

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (TDG): Not Regulated for Land Transport

LAND (DOT): Not Regulated for Land Transport

SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

Marine Pollutant: No

AIR (IATA): Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

CEPA: All components of this product are either on the Domestic Substance List (DSL) or are exempt.

Listed or exempt from listing/notification on the following chemical inventories: AIIC, DSL, ENCS, KECI, PICCS, TCSI, TSCA

Special Cases:

Inventory	Status
IECSC	Restrictions Apply

The Following Ingredients are Cited on the Lists Below: None.

--REGULATORY LISTS SEARCHED--

1 = TSCA 4	3 = TSCA 5e	5 = TSCA 12b
2 = TSCA 5a2	4 = TSCA 6	6 = NPRI

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):
H302: Harmful if swallowed; Acute Tox Oral, Cat 4
H315: Causes skin irritation; Skin Corr/Irritation, Cat 2
H400: Very toxic to aquatic life; Acute Env Tox, Cat 1
H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Composition: Component table information was modified.
Section 11 Substance Toxicology table information was added.
Section 11: Other Health Effects information was added.
Section 13: Disposal Considerations - Disposal Recommendations information was modified.
Section 15: National Chemical Inventory Listing information was modified.
Section 15: Special Cases Table information was added.
Section 16: HCode Key information was modified.

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DGN: 5007247 (1014028)

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Diesel Exhaust Fluid (DEF)

SECTION 1. IDENTIFICATION

Product Identifier	Diesel Exhaust Fluid (DEF)
Other Means of Identification	55-124AIR, 55-124C, 55-125AIR, 55-125BTG, 55-125H2B, 55-125MER, 55-126AIR, 55-126C, 55-126MER, 55-126STPDES, 55-129AIR, 55-129AIR-1000, 55-129AIR-1250, 55-129AIR-RPV, 55-129H2B, 55-129H2B-1000, 55-129H2B-1000T, 55-129H2B-RPV, 55-129H2B-RPV-T, 55-129H2B-R-RET, 55-129H2B-RSV, 55-129H2B-RSV-T, 55-129H2B-T, 55-129OLD-1000, 55-129OPW-1250, BULK-DEF, 55-125VW, 55-125FORD, 55-125BTGEXP, 55-125CHN, 55-125GM, 55-129FLT, 55-129CHN, 55-129FLT-1000, 55-125FLT, 55-129CHN-1000, 55-129IBP, 55-129IBP-1250, 55-126IBP, 55-129RC, 55-129BLU, 55-129BLU-1000, 55-129RC-1000, 55-125RC, 55-129TRP-1000, 55-125C, 55-125TRP, 55-125, 55-125BLU, 55-125CNH, 55-126, 55-126BLU, 55-126IBP, 55-129AIR-R, 55-129CNH-1000, 55-129IBP, 55-129IBP-1250, 55-129OLD-1250, 55-129OWCB-1250, 55-125TUX, 55-129TRP, 55-125RK, 55-125h2b-tray, 55-126H2BH96, 55-126TRP, 55-126VW, 55-126BTGX80, 55-126DYNX96, 55-126CNH, 55-126FLT, 55-126FORD, 55-126RC, 55-126GM, 55-126H2B, 55-126BTG, 55-126DYN, 55-125AIRX48, 55-124H2BH52, 55-126H2BX96, 55-126CHN, BULK-DEF-40
Other Identification	Marine DEF
Recommended Use	Please refer to Product label.
Restrictions on Use	None known.
Manufacturer/Supplier Identifier	Recochem Inc., 850 Montee de Liesse, Montreal, QC, H4T 1P4, Compliance and Regulatory Department, 905-878-5544, www.recochem.com
Other Contact Information	Yara North America Inc., The following product codes are packaged by Recochem Inc. in Canada for Yara North America Inc: 55-124AIR, 55-125AIR, 55-126AIR, 55-129AIR, 55-129AIR-1000, 55-129AIR-1250, 55-129AIR-RPV, 55-129AIR-R - 100 North Tampa St. Suite 3200, Tampa, Florida, 33602, United States, 1-877-810-4333, www.air1def.com
Emergency Phone No.	CANUTEC, 613-996-6666, 24 Hours
SDS No.	1519

SECTION 2. HAZARD IDENTIFICATION

Classification

Skin irritation - Category 3; Eye irritation - Category 2B; Specific target organ toxicity (single exposure) - Category 3

Label Elements

Signal Word:
Warning

Hazard Statement(s):
H316 Causes mild skin irritation.

H320 Causes eye irritation.
H335 May cause respiratory irritation.

Precautionary Statement(s):
Prevention:
P261 Avoid breathing fume, mist, vapours, spray.
P264 Wash hands thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.

Response:
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312 Call a POISON CENTRE or doctor if you feel unwell.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 Call a POISON CENTRE or doctor if you feel unwell.
P337 + P313 If eye irritation persists: Get medical advice/attention.
P332 + P313 If skin irritation occurs: Get medical advice/attention.

Storage:
Store in a well ventilated place. Keep cool. Keep container tightly closed. Store locked up.

Disposal:
Dispose of contents/container in accordance with applicable regional, national and local laws and regulations.

Other Hazards

Not applicable.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture:

Chemical Name	CAS No.	%	Other Identifiers	Other Names
Urea	57-13-6	15-40		
Free Ammonia	7664-41-7	0.1-1		

Notes

Use of Generic SDS:
If the concentration or actual concentration range of an ingredient of a particular hazardous product in the series is different from the concentration or actual concentration range disclosed for the rest of the series, either the concentration or the actual concentration range must be indicated beside that ingredient under item 3 (Composition/Information on ingredients) of the SDS. Furthermore, if any other specific information element(s) (such as flash point, numerical measure of toxicity, etc.) for a particular hazardous product in the series differs from that of the other products in the series (without affecting the classification), the information element relevant to that hazardous product must be disclosed on the SDS with an indication to which hazardous product each relates.

Source: Health Canada - Technical Guidance on the Requirements of the Hazardous Products Act and the Hazardous Products Regulations WHMIS 2015 Supplier Requirements - pg 117

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Remove source of exposure or move to fresh air. Call a Poison Centre or doctor if you feel unwell.

Skin Contact

Avoid direct contact. Wear chemical protective clothing if necessary. Take off contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Quickly and gently blot or brush away excess chemical. Wash gently and thoroughly with lukewarm, gently flowing water and mild soap for 5 minutes. If skin irritation occurs, get medical advice or attention. Get medical advice or attention if you feel unwell or are concerned. Clean clothing, shoes and leather goods.

Eye Contact

Avoid direct contact. Wear chemical protective gloves if necessary. Quickly and gently blot or brush chemical off the face. Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open. Remove contact lenses, if present and easy to do. Take care not to rinse contaminated water into the unaffected eye or onto the face. If eye irritation persists, get medical advice or attention.

Ingestion

Rinse mouth with water. Get medical advice or attention if you feel unwell or are concerned.

First-aid Comments

Get medical advice or attention if you feel unwell or are concerned.

Most Important Symptoms and Effects, Acute and Delayed

No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Immediate Medical Attention and Special Treatment

Target Organs

Eyes, respiratory system, skin.

Special Instructions

No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Medical Conditions Aggravated by Exposure

Dermatitis.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Not combustible. Use extinguishing agent suitable for surrounding fire.

Unsuitable Extinguishing Media

None known.

Specific Hazards Arising from the Product

Does not burn. This product presents no unusual hazards in a fire situation. Closed containers may rupture violently when heated releasing contents.
In a fire, the following hazardous materials may be generated: very toxic carbon monoxide, carbon dioxide; corrosive, oxidizing nitrogen oxides.

Special Protective Equipment and Precautions for Fire-fighters

Review Section 6 (Accidental Release Measures) for important information on responding to leaks/spills.
See Skin Protection in Section 8 (Exposure Controls/Personal Protection) for advice on suitable chemical protective materials.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

No special precautions are necessary. Use the personal protective equipment recommended in Section 8 of this safety data sheet.

Environmental Precautions

Do not allow into any sewer, on the ground or into any waterway.

Methods and Materials for Containment and Cleaning Up

Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling

Prevent skin contact. Do not get in eyes. Do not swallow. Avoid generating vapours or mists.

Conditions for Safe Storage

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Not available.

Appropriate Engineering Controls

The hazard potential of this product is relatively low. General ventilation is usually adequate. For large scale use of this product: use local exhaust ventilation, if general ventilation is not adequate to control amount in the air.

Individual Protection Measures

Eye/Face Protection

Not required but it is good practice to wear safety glasses or chemical safety goggles.

Skin Protection

Wear chemical protective clothing e.g. gloves, aprons, boots.
Suitable materials are: nitrile rubber.

Respiratory Protection

Not normally required if product is used as directed.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Clear liquid.
Odour	Ammonia-like
Odour Threshold	Not available
pH	9 - 10 (100% solution)
Melting Point/Freezing Point	-11.5 ºC (11.3 ºF) (melting); -11.5 ºC (11.3 ºF) (freezing)
Initial Boiling Point/Range	100 ºC (212 ºF)
Flash Point	Not applicable
Evaporation Rate	Not available
Flammability (solid, gas)	Not applicable
Upper/Lower Flammability or Explosive Limit	Not applicable (upper); Not applicable (lower)
Vapour Pressure	Not available

Vapour Density (air = 1)	Not available
Relative Density (water = 1)	1.0000 - 1.1765 at 20 ºC
Solubility	Very soluble (more than 50 g/100 mL) in water; Not available (in other liquids)
Partition Coefficient, n-Octanol/Water (Log Kow)	Not available
Auto-ignition Temperature	Not available
Decomposition Temperature	Not available
Viscosity	1.4 mm2/s at 20 ºC (kinematic); 1.4 mPa.s at 20 ºC (dynamic)

Other Information

Physical State	Liquid
Molecular Weight	Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity

None known.

Chemical Stability

Normally stable.

Possibility of Hazardous Reactions

None known.

Conditions to Avoid

Contamination. High temperatures. Water, moisture or humidity. Temperatures above 135.0 ºC (275.0 ºF)

Incompatible Materials

Reacts explosively with: strong oxidizing agents (e.g. perchloric acid).
Not corrosive to metals.

Hazardous Decomposition Products

None known.

SECTION 11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Inhalation; skin contact; eye contact.

Acute Toxicity

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
Urea		8471 mg/kg (rat)	> 21000 mg/kg (rabbit)
Free Ammonia	2000 ppm (rat) (4-hour exposure)	Not applicable	Not applicable

LC50: Not applicable.

LD50 (oral): Not applicable.

LD50 (dermal): Not applicable.

Skin Corrosion/Irritation

Human experience shows very mild irritation.

Serious Eye Damage/Irritation

Human experience shows very mild irritation.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

May be harmful At high concentrations based on human experience. Nose and throat irritation.

Skin Absorption

Not harmful based on human experience.

Ingestion

Not harmful based on animal tests.

Aspiration Hazard

Not known to be an aspiration hazard.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

May cause Following skin contact: dermatitis.
May cause If inhaled: at high concentrations irritation of the respiratory system. May cause respiratory tract injury.

Respiratory and/or Skin Sensitization

No information was located. No information was located.

Carcinogenicity

Chemical Name	IARC	ACGIH®	NTP	OSHA
Urea	Not Listed	Not designated	Not Listed	Not Listed
Free Ammonia	Not Listed	Not designated	Not Listed	Not Listed

Not a carcinogen.

Reproductive Toxicity

Development of Offspring

Does not cause harm to the unborn child.

Sexual Function and Fertility

Does not cause effects on sexual function or fertility.

Effects on or via Lactation

No information was located.

Germ Cell Mutagenicity

Not mutagenic.

Interactive Effects

No information was located.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Acute Aquatic Toxicity

Chemical Name	LC50 Fish	EC50 Crustacea	ErC50 Aquatic Plants	ErC50 Algae
Urea	Not available	Not available		
Free Ammonia	Not available	Not available		

Chronic Aquatic Toxicity

Chemical Name	NOEC Fish	EC50 Fish	NOEC Crustacea	EC50 Crustacea
Urea	Not available		Not available	
Free Ammonia	Not available		Not available	

Persistence and Degradability

No information was located.

Bioaccumulative Potential

No information was located.

Mobility in Soil

No information was located.

Other Adverse Effects

There is no information available.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14. TRANSPORT INFORMATION

Not regulated under Canadian TDG regulations. Not regulated under US DOT Regulations.

Environmental Hazards	Not applicable
Special Precautions	Not applicable

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

Proof of Dangerous Goods Classification

Date of Classification	January 09, 2017
Classification	Not Regulated

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Canada

Domestic Substances List (DSL) / Non-Domestic Substances List (NDSL)

All ingredients are listed on the DSL/NDSL.

USA

Toxic Substances Control Act (TSCA) Section 8(b)

All ingredients are listed on the TSCA Inventory.

Custom Regulatory 1

Consumer Product Safety Improvement Act of 2008 General Conformity Certification

The Supplier identified in Section 1 of this MSDS has evaluated this product and certifies it to be labeled and packaged in compliance with the applicable provisions of the Federal Hazardous Substance Act as stated in 16 CFR 1500 and enforced by the Consumer Product Safety Commission, and where applicable the products that require Child Resistant Closures are packaged in accordance with the Poison Prevention Packaging Act as stated in 16 CFR 1700 and enforced by the Consumer Product Safety Commission. All closures have been tested in accordance with the latest protocols. No other testing is required to certify compliance with the above. The date of manufacture is stamped on the product container.

SECTION 16. OTHER INFORMATION

SDS Prepared By	Compliance and Regulatory Department
Phone No.	905-878-5544
Date of Preparation	June 09, 2017
Date of Last Revision	November 30, 2020

Revision Indicators	The following SDS content was changed on January 16, 2018: SECTION 1. IDENTIFICATION; Other Means of Identification. The following SDS content was changed on August 01, 2019: SECTION 1. IDENTIFICATION; Other Contact Information; SECTION 7. HANDLING AND STORAGE; Precautions for Safe Handling. The following SDS content was changed on January 21, 2020: SECTION 1. IDENTIFICATION; Other Means of Identification. The following SDS content was changed on January 31, 2020: SECTION 1. IDENTIFICATION; Other Means of Identification. The following SDS content was changed on November 30, 2020: SECTION 1. IDENTIFICATION; Other Means of Identification; Other Identification; SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES; Relative Density.
References	CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS).
Additional Information	We are committed to uphold the Industry Consumer Ingredient Communication Voluntary Initiative. Please send us your request by visiting our website at www.recochem.com. Ingredients present (intentionally added ingredients) at a concentration of greater than one percent (1%) shall be listed in descending order of predominance. Ingredients present at a concentration of not more than one percent shall be listed but may be disclosed without respect to order of predominance.
Disclaimer	Notice to reader: To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET

DIESEL FUEL

000003000395

Version 6.3 Revision Date 2022/02/01 Print Date 2022/02/01

SECTION 1. IDENTIFICATION

Product name	:	DIESEL FUEL
Synonyms	:	Seasonal Diesel, #2 Diesel, #1 Diesel, #2 Heating Oil, #1 Heating Oil, OSX, D50, Arctic Diesel, Farm Diesel, Marine Diesel, Low Sulphur Diesel, LSD, Ultra Low Sulphur Diesel, ULSD, Mining Diesel, Naval Distillate, Dyed Diesel, Marked Diesel, Coloured Diesel, Furnace special, Biodiesel blend, B1, B2, B5, Renewable Diesel blend (RX where X is 2- 50, X is representative of volume %), Diesel Low Cloud (LC), Marine Gas Oil, Marine Gas Oil Dyed
Product code	:	103213, 100679, 100654, 100653, 100105, 100992, 100637, 100634, 100631, 100638, 100641, 100635, 100632, 100684, 100683, 100657, 100656, 100655, 100687, 100686, 100685, 100681, 100661, 100659, 100667, 100666, 100665, 100682, 100671, 100669, 100664, 100662, 100680, 100781, 100964, 103204, 103180, 103179, 103193, 103178, 103136, 103135, 103134, 103133, 103132, 103131, 101799, 102907, 102762, 102763, 102755, 102302, 102744, 101801, 100678, 100677, 101802, 100107, 100668, 100658, 100911, 100663, 100652, 100460, 100065, 101796, 101793, 101795, 101792, 101794, 101791, 100768, 100643, 100642, 100103, 101798, 101800, 101797, 101788, 101789, 101787, 102531, 100734, 100733, 100640, 100997, 100995, 100732, 100731, 100994
Manufacturer or supplier's details		Petro-Canada P.O. Box 2844, 150 - 6th Avenue South-West Calgary Alberta T2P 3E3 Canada, Telephone: 1-866-786-2671
Emergency telephone number		CHEMTREC: 1-800-424-9300 (toll free) or +1 703-527-3887; Suncor Energy: +1 403-296-3000

Recommended use of the chemical and restrictions on use

Recommended use	:	Diesel fuels are distillate fuels suitable for use in high and medium speed internal combustion engines of the compression ignition type. Mining diesels, marine diesels, MDO and naval distillates may have a higher flash point requirement.
Prepared by	:	Product Safety

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	Bright oily liquid.
Colour	Clear to yellow (This product may be dyed red for taxation purposes)

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Odour	Mild petroleum oil like.

GHS Classification

Flammable liquids : Category 3

Acute toxicity (Inhalation) : Category 4

Skin irritation : Category 2

Carcinogenicity : Category 2

Specific target organ toxicity - single exposure : Category 3 (Central nervous system)

Specific target organ toxicity - repeated exposure : Category 2 (Liver, thymus, Bone)

Aspiration hazard : Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Flammable liquid and vapour.
May be fatal if swallowed and enters airways.
Causes skin irritation.
Harmful if inhaled.
May cause drowsiness or dizziness.
Suspected of causing cancer.
May cause damage to organs (Liver, thymus, Bone) through prolonged or repeated exposure.

Precautionary statements : **Prevention:**
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Keep container tightly closed.
Ground and bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting equipment.
Use non-sparking tools.
Take action to prevent static discharges.
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:

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IF SWALLOWED: Immediately call a POISON CENTER/doctor.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
IF exposed or concerned: Get medical advice/ attention.
Do NOT induce vomiting.
If skin irritation occurs: Get medical advice/ attention.
Take off contaminated clothing and wash it before reuse.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
Storage:
Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Potential Health Effects

Primary Routes of Entry : Eye contact
Ingestion
Inhalation
Skin contact

Aggravated Medical Condition : None known.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration
Kerosine (petroleum), hydrodesulfurized; Kerosine — unspecified	64742-81-0	48 - 100 %
Kerosine (petroleum); Straight run kerosine	8008-20-6	
Fuels, diesel; Gasoil — unspecified	68334-30-5	
Alkanes, C10-20-branched and linear	928771-01-1	0 - 50 %
Fatty acids, C16-18 and C18-unsatd., Me esters	67762-38-3	0 - 20 %

All above concentrations are in percent by weight.

SECTION 4. FIRST AID MEASURES

If inhaled : Move to fresh air.
Artificial respiration and/or oxygen may be necessary.
Seek medical advice.

In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing

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		and shoes. Wash skin thoroughly with soap and water or use recognized skin cleanser. Wash clothing before reuse. Seek medical advice.
In case of eye contact	:	Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.
If swallowed	:	Rinse mouth with water. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Seek medical advice.
Most important symptoms and effects, both acute and delayed	:	Harmful if inhaled. Respiratory, skin and eye irritation; nausea; cancer.
Notes to physician	:	Treat symptomatically. For specialist advice physicians should contact the Poisons Information Service.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Dry chemical Carbon dioxide (CO2) Water fog. Foam
Unsuitable extinguishing media	:	Do NOT use water jet.
Specific hazards during firefighting	:	Cool closed containers exposed to fire with water spray.
Hazardous combustion products	:	Carbon oxides (CO, CO2), nitrogen oxides (NOx), sulphur oxides (SOx), smoke and irritating vapours as products of incomplete combustion.
Further information	:	Prevent fire extinguishing water from contaminating surface water or the ground water system.
Special protective equipment for firefighters	:	Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	For personal protection see section 8. Ensure adequate ventilation. Evacuate personnel to safe areas. Material can create slippery conditions.
Environmental precautions	:	If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	:	Prevent further leakage or spillage if safe to do so. Remove all sources of ignition. Soak up with inert absorbent material. Non-sparking tools should be used. Ensure adequate ventilation.

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Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Use only with adequate ventilation.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity.
Avoid contact with skin, eyes and clothing.
Do not ingest.
Keep away from heat and sources of ignition.
Keep container closed when not in use.

Conditions for safe storage : Store in original container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
To maintain product quality, do not store in heat or direct sunlight.
Ensure the storage containers are grounded/bonded.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Kerosine (petroleum), hydrodesulfurized; Kerosine — unspecified	64742-81-0	TWA	200 mg/m3 (As total hydrocarbon vapour)	ACGIH
		TWA	200 mg/m3 (total hydrocarbon vapor)	CA AB OEL
		TWA	525 mg/m3	CA ON OEL
		TWA	200 mg/m3 (As total hydrocarbon vapour)	ACGIH
		TWA	200 mg/m3 (total hydrocarbon vapor)	ACGIH
Kerosine (petroleum); Straight run kerosine	8008-20-6	TWA	200 mg/m3 (total hydrocarbon vapor)	CA BC OEL
		TWA	200 mg/m3 (total hydrocarbon vapor)	CA AB OEL
		TWA	200 mg/m3 (total hydrocarbon	ACGIH

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			vapor)	
Fuels, diesel; Gasoil — unspecified	68334-30-5	TWA	100 mg/m3 (total hydrocarbons)	CA AB OEL
		TWA (Vapour and inhalable aerosols)	100 mg/m3 (total hydrocarbons)	CA BC OEL
		TWA (Inhalable fraction and vapor)	100 mg/m3 (total hydrocarbons)	ACGIH

Engineering measures : Adequate ventilation to ensure that Occupational Exposure Limits are not exceeded.
Use only in well-ventilated areas.
Ensure that eyewash station and safety shower are proximal to the work-station location.

Personal protective equipment

Respiratory protection : Concentration in air determines protection needed.
Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type : organic vapour cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection

Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R). Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns. It should be realized that eventually any material regardless of their imperviousness, will get permeated by chemicals. Therefore, protective gloves should be regularly checked for wear and tear. At the first signs of hardening and cracks, they should be changed.

Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye protection : Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Protective measures : Wash contaminated clothing before re-use.

Hygiene measures : Remove and wash contaminated clothing and gloves, including the inside, before re-use.

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Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Bright oily liquid.
Colour	:	Clear to yellow (This product may be dyed red for taxation purposes)
Odour	:	Mild petroleum oil like.
Odour Threshold	:	No data available
pH	:	No data available
Melting point	:	No data available
Boiling point/boiling range	:	150 - 371 °C (302 - 700 °F)
Decomposition temperature		No data available
Flash point	:	> 40 °C (104 °F) Method: closed cup
Auto-Ignition Temperature	:	204 °C (399 °F)
Evaporation rate	:	No data available
Flammability	:	Flammable in presence of open flames, sparks and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. This product can accumulate static charge and ignite.
Upper explosion limit	:	6 %(V)
Lower explosion limit	:	0.7 %(V)
Vapour pressure	:	7.5 mmHg (20 °C / 68 °F)
Relative vapour density	:	4.5
Relative density	:	0.8 - 0.88
Solubility(ies)		
Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity		
Viscosity, kinematic	:	1.3 - 4.1 cSt (40 °C / 104 °F)

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SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Stable at normal ambient temperature and pressure.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Hazardous polymerisation does not occur.
Conditions to avoid	:	Extremes of temperature and direct sunlight.
Incompatible materials	:	Reactive with oxidising agents and acids.
Hazardous decomposition products	:	May release COx, NOx, SOx, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure
Eye contact
Ingestion
Inhalation
Skin contact

Acute toxicity

Product:

Acute oral toxicity	:	Remarks: Based on available data, the classification criteria are not met.
Acute inhalation toxicity	:	Acute toxicity estimate: 1.5 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Calculation method Assessment: The component/mixture is moderately toxic after short term inhalation. Remarks: Harmful if inhaled.
Acute dermal toxicity	:	Assessment: The substance or mixture has no acute dermal toxicity

Components:

Kerosine (petroleum), hydrodesulfurized; Kerosine — unspecified:

Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg,
Acute inhalation toxicity	:	LC50 (Rat): > 5.2 mg/l Exposure time: 4 hrs Test atmosphere: dust/mist
Acute dermal toxicity	:	LD50 (Rabbit): > 2,000 mg/kg,

Kerosine (petroleum); Straight run kerosine:

Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg,
Acute inhalation toxicity	:	LC50 (Rat): > 5 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	:	LD50 (Rabbit): > 2,000 mg/kg,

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Fuels, diesel; Gasoil — unspecified:

Acute oral toxicity	:	LD50 (Rat): 7,500 mg/kg,
Acute inhalation toxicity	:	LC50 (Rat): 4.1 mg/l Exposure time: 4 h Test atmosphere: vapour
Acute dermal toxicity	:	LD50 (Mouse): 24,500 mg/kg,

Skin corrosion/irritation

Product:

Remarks: Causes skin irritation.

Serious eye damage/eye irritation

Product:

Remarks: Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation

Product:

Remarks: Based on available data, the classification criteria are not met.

Germ cell mutagenicity

Product:

Germ cell mutagenicity- Assessment	Based on available data, the classification criteria are not met.

Carcinogenicity

Product:

Carcinogenicity - Assessment	Suspected of causing cancer.

Reproductive toxicity

Product:

Reproductive toxicity - Assessment	Based on available data, the classification criteria are not met.

STOT - single exposure

Product:

Target Organs: Central nervous system
Remarks: May cause drowsiness or dizziness.

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STOT - repeated exposure

Product:

Target Organs: Liver, thymus, Bone
Remarks: May cause damage to organs through prolonged or repeated exposure.

No data available

Aspiration toxicity

Product:

May be fatal if swallowed and enters airways.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish	:	Remarks: No data available
Toxicity to daphnia and other aquatic invertebrates	:	Remarks: No data available
Toxicity to algae	:	Remarks: No data available
Toxicity to bacteria	:	Remarks: No data available

Persistence and degradability

Product:

Biodegradability	:	Remarks: No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	The product should not be allowed to enter drains, water courses or the soil. Offer surplus and non-recyclable solutions to a licensed disposal company. Waste must be classified and labelled prior to recycling or disposal. Send to a licensed waste management company.

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		Dispose of as hazardous waste in compliance with local and national regulations. Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.
Contaminated packaging	:	Contact local or business unit authorities for guidance on disposal of product.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

UN/ID No.	:	UN 1202
Proper shipping name	:	Diesel fuel
Class	:	3
Packing group	:	III
Labels	:	Class 3 - Flammable Liquid
Packing instruction (cargo aircraft)	:	366

IMDG-Code

UN number	:	UN 1202
Proper shipping name	:	DIESEL FUEL
Class	:	3
Packing group	:	III
Labels	:	3
EmS Code	:	F-E, S-E
Marine pollutant	:	yes

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

National Regulations

TDG

UN number	:	UN 1202
Proper shipping name	:	DIESEL FUEL
Class	:	3
Packing group	:	III
Labels	:	3
ERG Code	:	128
Marine pollutant	:	yes

SECTION 15. REGULATORY INFORMATION

This product has been classified according to the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all of the information required by the HPR.

The components of this product are reported in the following inventories:

DSL	On the inventory, or in compliance with the inventory

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SECTION 16. OTHER INFORMATION

For Copy of SDS	:	Internet: www.petro-canada.ca/msds Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228 For Product Safety Information: 1 905-804-4752
Prepared by	:	Product Safety
Revision Date	:	2022/02/01

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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Oxivir® Plus (Canada)
Disinfectant Cleaner Concentrate

Revision: 2021-03-29 **Version:** 05.0

Product name: Oxivir® Plus (Canada)
Disinfectant Cleaner Concentrate
SDS #: MS0301296
Recommended use:
- Industrial/Institutional
- Disinfectant Cleaner
- This product is intended to be diluted prior to use

Uses advised against: Uses other than those identified are not recommended

Manufacturer, importer, supplier:
US Headquarters
Diversey, Inc.
1300 Altura Rd., Suite 125
Fort Mill, SC 29708
Phone: 1-888-352-2249
SDS Internet Address: https://sds.diversey.com

Canadian Headquarters
Diversey Canada, Inc.
6150 Kennedy Road Unit 3
Mississauga, Ontario L5T 2J4
Phone: 1-800-668-7171

Emergency telephone number: 1-800-851-7145; 1-651-917-6133 (Int'l)

2. HAZARDS IDENTIFICATION

Classification for the undiluted product
Serious eye damage/eye irritation Category 1

Signal word: **Danger.**

Hazard Statements
CAUSES SERIOUS EYE DAMAGE.
Precautionary Statements
Causes burns/ serious damage to mouth, throat and stomach. Keep container tightly closed. Avoid contact with eyes, skin and clothing. Wash affected areas thoroughly after handling. Wear chemical-splash goggles and chemical-resistant gloves. IF SWALLOWED: Rinse mouth. DO NOT induce vomiting unless directed to do so by medical personnel. Drink a cupful of milk or water. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing for at least 15 minutes. Immediately call a Poison Center (1-800-851-7145) or physician. Dispose of in accordance with all federal, state and local applicable regulations.

Health hazards not otherwise classified (HHNOC) - Not applicable
Physical hazards not otherwise classified (PHNOC) - Not applicable

Classification for the diluted product 1:40
This product, when diluted as stated on the label, is not classified as hazardous according to OSHA 29CFR 1910.1200 (HazCom 2012-GHS) and Canadian Hazardous Products Regulations (HPR) (WHMIS 2015-GHS).

Hazard and Precautionary Statements
None required.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Classified Ingredients

Ingredient(s)	CAS #	Weight %
Propylene glycol n-propyl ether	1569-01-3	5 - 10%
Hydrogen peroxide	7722-84-1	5 - 10%
Dodecylbenzene sulfonic acid	68584-22-5	1 - 5%
2-Hydroxybenzoic Acid	69-72-7	1 - 5%

4. FIRST AID MEASURES

Undiluted Product:

Eyes: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing for at least 15 minutes.
Skin: No specific first aid measures are required.
Inhalation: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Ingestion: IF SWALLOWED: Rinse mouth. DO NOT induce vomiting unless directed to do so by medical personnel. Drink a cupful of milk or water.
Notes to physician: Treat symptomatically.

Most Important Symptoms/Effects: No information available.
Immediate medical attention and special treatment needed Not applicable.
Aggravated Medical Conditions: Individuals with chronic respiratory disorders such as asthma, chronic bronchitis, emphysema, etc., may be more susceptible to irritating effects.

Diluted Product:

Eyes: Rinse with plenty of water.
Skin: No specific first aid measures are required
Inhalation: No specific first aid measures are required
Ingestion: IF SWALLOWED: Call a Poison Center (1-800-851-7145) or doctor/physician if you feel unwell.

5. FIRE-FIGHTING MEASURES

Specific methods: No special methods required
Suitable extinguishing media: The product is not flammable. Extinguish fire using agent suitable for surrounding fire.
Specific hazards: Corrosive material (See sections 8 and 10).

Special protective equipment for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.
Extinguishing media which must not be used for safety reasons: No information available.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Put on appropriate personal protective equipment (see Section 8.).
Environmental precautions and clean-up methods: Clean-up methods - large spillage. Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container. Use a water rinse for final clean-up.

7. HANDLING AND STORAGE

Handling: Can react to release hazardous gases. Do not mix with other products or chemicals except as directed on the label. Mix only with water. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Do not taste or swallow. Product residue may remain on/in empty containers. All precautions for handling the product must be used in handling the empty container and residue. Avoid breathing vapors or mists. Use only with adequate ventilation. Remove and wash contaminated clothing and footwear before re-use. FOR COMMERCIAL AND INDUSTRIAL USE ONLY.
Storage: Keep tightly closed in a dry, cool and well-ventilated place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines: .

Ingredient(s)	CAS #	ACGIH	OSHA
Hydrogen peroxide	7722-84-1	1 ppm (TWA)	1 ppm (TWA) 1.4 mg/m³ (TWA)

Undiluted Product:

Engineering measures to reduce exposure:
Good general ventilation should be sufficient to control airborne levels.

Personal Protective Equipment
It is the responsibility of the employer to determine the potential risk of exposure to hazardous chemicals for employees in the workplace in order to determine the necessity, selection, and use of personal protective equipment.

Eye protection:	Chemical-splash goggles.
Hand protection:	Chemical-resistant gloves.
Skin and body protection:	No personal protective equipment required under normal use conditions.
Respiratory protection:	No personal protective equipment required under normal use conditions. If aerosols, mists, or vapors are not adequately controlled by ventilation, use appropriate respiratory protection to avoid over-exposure.
Hygiene measures:	Handle in accordance with good industrial hygiene and safety practice.

Diluted Product:

Engineering measures to reduce exposure:
Good general ventilation should be sufficient to control airborne levels.

Personal Protective Equipment

Eye protection:	No personal protective equipment required under normal use conditions.
Hand protection:	No personal protective equipment required under normal use conditions.
Skin and body protection:	No personal protective equipment required under normal use conditions.
Respiratory protection:	No personal protective equipment required under normal use conditions.
Hygiene measures:	Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Evaporation Rate: No information available
Odor threshold: No information available.
Decomposition temperature: Not determined
Solubility: Completely Soluble
Relative Density (relative to water): 1.04
Vapor density: No information available
Vapor pressure: No information available.
Partition coefficient (n-octanol/water): No information available
Elemental Phosphorus: 0.09 % by wt.
pH: < 2
Corrosion to metals: Not determined
Explosion limits: - upper: Not determined **- lower:** Not determined

Color: Clear , Colorless
Odor: Surfactant
Boiling point/range: Not determined
Autoignition temperature: No information available
Solubility in other solvents: No information available
Density: 1.037 Kg/L
Bulk density: No information available
Flash point (°F): > 200 °F > 93 °C
Viscosity: 0
VOC: 8.3 %
Flammability (Solid or Gas): Not applicable
Sustained combustion: Not applicable

Dilution pH:
≈ 2.2
Dilution Flash Point (°F): > 200 °F > 93.4 °C
VOC % by wt. at use dilution: 0.2 %

* - Title 17, California Code of Regulations, Division 3, Chapter 1, Subchapter 8.5, Article 2, Consumer Products, Sections 94508

10. STABILITY AND REACTIVITY

Reactivity:	Not Applicable
Stability:	The product is stable
Possibility of hazardous reactions:	May vigorously react with strong alkaline products resulting in spattering and excessive heat.
Hazardous decomposition products:	Oxygen.
Materials to avoid:	Strong bases. Ammonia. Do not mix with chlorinated products (such as bleach). Do not mix with any other product or chemical unless specified in the use directions.

Conditions to avoid: None known.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:
Skin contact, Inhalation, Ingestion, Eye contact

Delayed, immediate, or chronic effects and symptoms from short and long-term exposure
Skin contact: Unlikely to be irritant in normal use.
Eye contact: Corrosive. Causes serious eye damage. Symptoms may include pain, burning sensation, redness, watering, blurred vision or loss of vision.
Ingestion: Causes burns/ serious damage to mouth, throat and stomach. Symptoms may include stomach pain and nausea.
Inhalation: May cause irritation and corrosive effects to nose, throat and respiratory tract. Symptoms may include coughing and difficulty breathing.
Sensitization: No known effects.
Target Organs (SE): None known
Target Organs (RE): None known

Numerical measures of toxicity

ATE - Oral (mg/kg):	>5000
ATE - Dermal (mg/kg):	>5000
ATE - Inhalatory, mists (mg/l):	20
ATE - Inhalatory, vapors (mg/l):	>50

12. ECOLOGICAL INFORMATION

Ecotoxicity: No information available.

Persistence and Degradability: No information available.

Bioaccumulation: No information available.

13. DISPOSAL CONSIDERATIONS

Do not contaminate water, food, or feed by storage or disposal.

Waste from residues / unused products (undiluted product):
This product, as sold, if discarded or disposed, is a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the waste solution meets RCRA criteria for hazardous waste. Dispose in compliance with all Federal, state, provincial, and local laws and regulations.

Waste from residues / unused products (diluted product):
This product, when diluted as stated on this SDS, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the waste solution meets RCRA criteria for hazardous waste. Dispose in compliance with all Federal, state, provincial, and local laws and regulations.

Pesticide Storage:
Refer to product label.

Pesticide Disposal:
Refer to product label.

Container Disposal:
Refer to product label.

RCRA Hazard Class (undiluted product): D002 Corrosive Waste.
RCRA Hazard Class (diluted product): Not Regulated.

14. TRANSPORT INFORMATION

DOT/TDG/IMDG: The information provided below is the full transportation classification for this product. This description does not account for the package size(s) of this product, that may fall under a quantity exception, according to the applicable transportation regulations. When shipping dangerous goods, please consult with your internal, certified hazardous materials specialist to determine if any exceptions can be applied to your shipment.

DOT (Ground) Bill of Lading Description: NOT REGULATED

IMDG (Ocean) Bill of Lading Description: NOT REGULATED

15. REGULATORY INFORMATION

International Inventories at CAS# Level

DSL — All components are listed or otherwise exempt

U.S. Regulations

CERCLA/ SARA

Ingredient(s)	CAS #	Weight %	CERCLA/SARA RQ (lbs)	Section 302 TPQ (lbs)	Section 313
Hydrogen peroxide	7722-84-1	5 - 10%		1000	

Canadian Regulations

This product is a Canadian DIN registered product and is subject to certain labeling requirements for disinfectants under national regulations. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and workplace labels of non-disinfectant products by the HPR (WHMIS 2015). This SDS was prepared in accordance with the HPR (WHMIS 2015) criteria, which may result with differences between the label and SDS language.

DIN No. : 02403684

Ingredient(s)	CAS #	NPRI
Sulfuric acid	7664-93-9	X

16. OTHER INFORMATION

NFPA (National Fire Protection Association)

Rating Scale: (Low Hazard) 0 - 4 (Extreme Hazard)

Health 3
Flammability 0
Instability 0
Special Hazards -

Diluted Product:

Health 0
Flammability 0
Instability 0
Special Hazards -

Revision: 2021-03-29
Version: 05.0

Reason for revision: Not applicable
Prepared by: North American Regulatory Affairs
Additional advice: • Does not contain an added fragrance

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Safety Data Sheet

SDS # : A-1087

Dry Ink -Black/Cyan/Magenta/Yellow

Issuing Date 2010-07-12 **Revision Date** 2015-03-13 **Version** 1

Active

1. Product and Company Identification

Trade Name Toner for iGen 150 Press, iGen4 Matte, Xerox iGen5 Press

Part no. 006R01533, 006R01534, 006R01535, 006R01536, 006R01537, 006R01538, 006R01539, 006R01540, 006R01541, 006R01542, 006R01543, 006R01544, 006R01545, 006R01546, 006R01547, 006R01548, 006R01584, 006R01585, 006R01586, 006R01587

Color	Black, Cyan , Magenta, Yellow
Pure substance/preparation	Preparation
Identified uses	Xerographic printing
Manufactured by	Xerox Corporation Rochester, NY 14644
Emergency telephone	Safety Information US: (800) 275-9376 Chemical Emergency only (Chemtrec) (800) 424-9300

2. Hazards Identification

Emergency Overview

The product contains no substances which, in the form utilized and at their given concentrations, are considered to be hazardous to health.

Color	Appearance	Physical state	Odor
Black, Cyan , Magenta, Yellow	Powder	Solid	Faint

Classification of the substance or mixture

Customer use / Cartridges and sealed bottles

OSHA Hazard Classification

This product is an article which contains a mixture / preparation in powder form. Safety information is given for exposure to the article as sold and used by the customer. Intended use of the product is not expected to result in exposure to the mixture / preparation based on the packaging and method of dispensing.

While this material is not considered hazardous by the OSHA hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information for the safe handling and proper use of the product. This SDS should be retained and made available to employees and other users of this product.

Label elements

Signal Word None

Hazard Statements None required

Precautionary Statements None required

Potential Health Effects

Principle Routes of Exposure Inhalation

Acute toxicity

Eyes No known effect

Skin No known effect

Inhalation No known effect

Ingestion No known effect

Chronic effects

Main symptoms **Overexposure may cause:**
mild respiratory irritation similar to nuisance dust.

Aggravated medical conditions None under normal use conditions

Environmental hazard The environmental impact of this product has not been fully investigated. However, this preparation is not expected to present significant adverse environmental effects.

3. Composition/Information on Ingredients

Product Description This formulation represents multiple colors and the component list includes multiple pigments. The actual toner formulation for each color will differ only in the pigment used.

Chemical Name	CAS-No	Weight %
Polyester resin	39382-25-7	>90
Yellow pigment	4531-49-1	0-10
Carbon Black	1333-86-4	5-10
Cyan pigment	147-14-8	0-10
Amorphous silica	7631-86-9	1-5
Red Pigment	5281-04-9	0-10
Titanium dioxide	13463-67-7	<2

4. First Aid Measures

General advice For external use only. When symptoms persist or in all cases of doubt seek medical advice. Show this material safety data sheet to the doctor in attendance.

Eye contact Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes.

Skin contact Wash skin with soap and water

Inhalation Move to fresh air

Ingestion Rinse mouth with water and afterwards drink plenty of water or milk

Notes to physician Treat symptomatically

Protection of first-aiders No special protective equipment required

5. Fire-Fighting Measures

Flammable properties Not flammable. Will not readily ignite

Flash point Not applicable

Suitable extinguishing media	Use water spray or fog; do not use straight streams, Foam
Unsuitable extinguishing media	Do not use a solid water stream as it may scatter and spread fire

Specific hazards arising from the chemical

Hazardous combustion products	Hazardous decomposition products due to incomplete combustion Carbon oxides Nitrogen oxides (NOx)
Explosion Data	
Sensitivity to Mechanical Impact	Not impact sensitive
Sensitivity to Static Discharge	Fine dust dispersed in air, in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard

Protective Equipment and Precautions for Firefighters
In the event of fire and/or explosion do not breathe fumes. Wear fire/flame resistant/retardant clothing. Use self-contained pressure-demand breathing apparatus if needed to prevent exposure to smoke or airborne toxins.

6. Accidental Release Measures

Personal Precautions	Avoid breathing dust
Environmental Precautions	No special environmental precautions required
Methods for containment	Prevent dust cloud
Methods for cleaning up	Prevent dust cloud. Sweep up or vacuum up spillage and collect in suitable container for disposal. Use non-sparking tools and equipment.
Other Information	The environmental impact of this product has not been fully investigated. However, this preparation is not expected to present significant adverse environmental effects.

7. Handling and Storage

Advice on safe handling	Handle in accordance with good industrial hygiene and safety practice Avoid dust accumulation in enclosed space Prevent dust cloud
Technical measures/Storage conditions	Keep container tightly closed in a dry and well-ventilated place Store at room temperature
Hygiene measures	None under normal use condtions

8. Exposure Controls/Personal Protection

Exposure guidelines

Product information

ACGIH TLV TWA	10 mg/m^3 (inhalable particles)
ACGIH TLV TWA	3 mg/m^3 (respirable dust)
OSHA PEL TWA	15 mg/m^3 (total dust)

OSHA PEL TWA	5 mg/m³ (respirable dust)
Xerox Exposure Limit	2.5 mg/m³ (total dust)
Xerox Exposure Limit	0.4 mg/m³ (respirable dust)

Other Information

The results obtained from a Xerox sponsored Chronic Toner Inhalation Study demonstrated no lung changes in rats for the lowest (1 mg/m³) exposure level (the level most relevant to potential human exposure). A very slight degree of fibrosis was noted in 25% of animals at the middle (4mg/m³) exposure level, while a slight degree of fibrosis was noted in all the animals at the highest (16 mg/m³) exposure level. These findings are attributed to "lung overloading", a generic response to excessive amounts of any dust retained in the lungs for a prolonged period. This study was conducted using a special test toner to comply with an EPA testing protocol.

Occupational Exposure Controls

Engineering measures None under normal use conditions

Personal Protective Equipment

Customer use / Cartridges and sealed bottles

Respiratory protection	No special protective equipment required
Eye/Face protection	No special protective equipment required
Skin and body protection	No special protective equipment required
Hand protection	No special protective equipment required

9. Physical and Chemical Properties

Appearance	Powder	**Odor**	Faint
Odor threshold	Not applicable	**Physical state**	Solid
pH	Not applicable	**Color**	Black, Cyan , Magenta, Yellow
Flash point	Not applicable	**Boiling point/range**	Not applicable
Softening point	49 - 60 °C / 120 - 140 °F	**Autoignition temperature**	Not applicable

Flammability Limits in Air	Not applicable
Explosive properties	Fine dust dispersed in air, in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.
Vapor pressure	Not applicable
Vapor density	Not applicable
Water solubility	Negligible
Viscosity	Not applicable
Partition coefficient	Not applicable
Evaporation rate	Not applicable
Melting point/range	Not determined
Freezing point	Not applicable
Decomposition temperature	Not determined
Specific gravity	~ 1

10. Stability and Reactivity

Reactivity	No dangerous reaction known under conditions of normal use
Stability	Stable under normal conditions
Incompatible products	None
Conditions to Avoid	Prevent dust cloud Fine dust dispersed in air, in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard
Hazardous Decomposition Products	None under normal use
Hazardous polymerization	Hazardous polymerization does not occur.
Hazardous reactions	None under normal processing

11. Toxicological Information

The toxicity data noted below is based on the test results of similar reprographic materials.

Acute toxicity

Product information

Irritation	No skin irritation, No eye irritation
LD50 Oral	> 5 g/kg (rat)
LD50 Dermal	> 5 g/kg (rabbit)
LC50 Inhalation:	> 5 mg/L (rat, 4 hr)
Eyes	No known effect
Skin	No known effect
Inhalation	No known effect
Ingestion	No known effect

Chronic toxicity

Product information

Chronic effects	No known effects under normal use conditions
Main symptoms	**Overexposure may cause:** mild respiratory irritation similar to nuisance dust.
Aggravated medical conditions	None under normal use conditions
Carcinogenicity	See "Other Information" in this section.

Chemical Name	IARC	NTP
Carbon Black	2B	
Titanium dioxide	2B	

Other information

The IARC (International Agency for Research on Cancer) has listed carbon black as "possibly carcinogenic to humans". The classification is based on studies evaluating pure, "free" carbon black. In contrast, toner is a formulation composed of specially prepared polymer and a small amount of carbon black (or other pigment). In the process of making toner, the small amount of carbon black becomes encapsulated within a matrix. Xerox has performed extensive testing of toner, including a chronic bioassay (test for potential carcinogenicity). Exposure to toner did not produce evidence of cancer in exposed animals. The results were submitted to regulatory agencies and published extensively.

The IARC (International Agency for Research on Cancer) has listed titanium dioxide as "possibly carcinogenic to humans". The classification is based on studies in rats using pure, unbound TiO2. Based on the review of available study results, when this product is used as intended, Xerox has concluded that the presence of titanium dioxide in this mixture does not present an increased risk of lung cancer or chronic respiratory disease.

Other toxic effects

Product information

Sensitization	No sensitization responses were observed.

Mutagenic effects	Not mutagenic in AMES Test
Target organ effects	None known
Other adverse effects	None known
Aspiration Hazard	Not applicable

12. Ecological Information

Ecotoxicity
The environmental impact of this product has not been fully investigated. However, this preparation is not expected to present significant adverse environmental effects.

13. Disposal Considerations

Waste Disposal Methods	This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.
Contaminated packaging	Dispose of in accordance with local regulations.

14. Transport Information

Note	This material is not subject to regulation as a hazardous material for shipping.

15. Regulatory Information

OSHA Regulatory Status
This product is an article which contains a mixture / preparation in powder form. Safety information is given for exposure to the article as sold and used by the customer. Intended use of the product is not expected to result in exposure to the mixture / preparation based on the packaging and method of dispensing.

While this material is not considered hazardous by the OSHA hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information for the safe handling and proper use of the product. This SDS should be retained and made available to employees and other users of this product.

International Inventories

TSCA	Complies
DSL/NDSL	Complies

U.S. Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

Clean Water Act
This product is not regulated as a pollutant pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)
This product is not regulated as a hazardous air pollutant (HAPS) under Section 112 of the Clean Air Act Amendments of 1990.

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.
TSCA
TSCA 12(b) does not apply to this product.

U.S. State Regulations

California Proposition 65
Carbon black is regulated under California Proposition 65 only if in the form of "airborne, unbound particles of respirable size". Toner products do not contain carbon black in the form of "airborne, unbound particles of respirable size". Therefore, the requirements of Proposition 65 do not apply to this product.

Titanium dioxide is regulated under California Proposition 65 only if a product results in exposure in the form of "airborne, unbound particles of respirable size". Toner products do not result in exposure to titanium dioxide in the form of "airborne, unbound particles of respirable size". Therefore, the requirements of Proposition 65 do not apply to this product.

Chemical Name	CAS-No	California Prop. 65
Carbon Black	1333-86-4	Carcinogen
Titanium dioxide	13463-67-7	Carcinogen

U.S. State Right-to-Know Regulations
Although this product contains substances included in some U.S. State Right-to-Know regulations, the particles are bound in a unique matrix and, therefore, the product does not pose any specific hazard.

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the CPR.

16. Other Information

Issuing Date	2010-07-12
Revision Date	2015-03-13
Revision Note	Model #(s) Xerox iGen5 Press added, Updated for OSHA HazCom 2012 and WHMIS 2015

Disclaimer
The information provided on this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

end

Safety Data Sheet

SDS # : A-0199

Dry Ink-Black

Issuing Date 1995-02-24 **Revision Date** 2018-01-24 **Version** 1

Active

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product Identifier

Product Name

Dry Ink for 4635 MX, DocuPrint 96 MX, DocuPrint 100 MX, DocuPrint 115 MX, DocuPrint 135 MX, DocuPrint 155 MX, DocuPrint 180 MX

Part no. 006R00819, 006R90229

Color Black
Pure substance/mixture Mixture

Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Xerographic printing

Details of the supplier of the safety data sheet

Manufactured by Xerox Corporation
Rochester, NY 14644

For further information, please contact

Contact person Manager, Environment, Health, Safety & Sustainability
E-mail address askxerox@xerox.com
Emergency telephone Safety Information US: (800) 275-9376
Chemical Emergency only (Chemtrec) (800) 424-9300

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

Customer use / Cartridges and sealed bottles

OSHA Hazard Classification

This product is an article which contains a mixture / preparation in powder form. Safety information is given for exposure to the article as sold and used by the customer. Intended use of the product is not expected to result in exposure to the mixture / preparation based on the packaging and method of dispensing.

While this material is not considered hazardous by the OSHA hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information for the safe handling and proper use of the product. This SDS should be retained and made available to employees and other users of this product.

Label elements

Signal Word	None
Hazard Statements	None required
Precautionary Statements	None required

Other hazards

No hazard expected under normal conditions of use

3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixtures

Chemical Name	CAS No.	Weight %	Classification (Reg. 1272/2008)	Hazard Statements
Styrene/butadiene copolymer	9003-55-8	55-65	--	--
Iron oxide	1317-61-9	25-35	--	--
Polyethylene wax	9002-88-4	1-10	--	--
Carbon Black	1333-86-4	1-10	--	--
Metal Oxide	12060-59-2	1-3	--	--

4. FIRST AID MEASURES

Description of first-aid measures

General advice	For external use only. When symptoms persist or in all cases of doubt seek medical advice. Show this material safety data sheet to the doctor in attendance.
Eye contact	Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes
Skin contact	Wash skin with soap and water
Inhalation	Move to fresh air
Ingestion	Rinse mouth with water and afterwards drink plenty of water or milk

Most important symptoms and effects, both acute and delayed

Acute toxicity

Eyes	No known effect
Skin	No known effect
Inhalation	No known effect
Ingestion	No known effect

Main symptoms	**Overexposure may cause:** mild respiratory irritation similar to nuisance dust.
Aggravated Medical Conditions	None under normal use conditions

Indication of immediate medical attention and special treatment needed

Protection of first-aiders	No special protective equipment required
Notes to physician	Treat symptomatically

5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media	Use water spray or fog; do not use straight streams, Foam
Unsuitable extinguishing media	Do not use a solid water stream as it may scatter and spread fire

Special hazards arising from the substance or mixture

Fine dust dispersed in air, in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion

hazard

Hazardous combustion products
Hazardous decomposition products due to incomplete combustion, Carbon oxides, Nitrogen oxides (NOx)

Special protective actions for fire-fighters
In the event of fire and/or explosion do not breathe fumes. Wear fire/flame resistant/retardant clothing. Use self-contained pressure-demand breathing apparatus if needed to prevent exposure to smoke or airborne toxins.

Other information

Flammable properties	Not flammable. Will not readily ignite.
Flash point	Not applicable

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Avoid breathing dust

Environmental precautions
No special environmental precautions required

Methods and material for containment and cleaning up

Methods for containment	Prevent dust cloud
Methods for cleaning up	Use a vacuum cleaner to remove excess, then wash with COLD water. Hot water fuses the toner making it difficult to remove.

Reference to other sections
The environmental impact of this product has not been fully investigated
However, this preparation is not expected to present significant adverse environmental effects.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling	Handle in accordance with good industrial hygiene and safety practice Avoid dust accumulation in enclosed space Prevent dust cloud
Hygiene measures	None under normal use conditions

Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions	Keep container tightly closed in a dry and well-ventilated place Store at room temperature
Incompatible products	None

Specific end uses
Xerographic printing

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure Limits

ACGIH TLV TWA	10 mg/m^3 (inhalable particles)
ACGIH TLV TWA	3 mg/m^3 (respirable dust)

OSHA PEL TWA	15 mg/m³ (total dust)
OSHA PEL TWA	5 mg/m³ (respirable dust)
Xerox Exposure Limit	2.5 mg/m³ (total dust)
Xerox Exposure Limit	0.4 mg/m³ (respirable dust)

Component Information

Chemical Name	ACGIH TLV	OSHA PEL
Carbon Black	TWA: 3 mg/m³	TWA: 3.5 mg/m³

Exposure controls

Engineering measures None under normal use conditions

Individual protection measures, such as personal protective equipment (PPE)

Respiratory protection	No special protective equipment required.
Eye/Face protection	No special protective equipment required
Skin and body protection	No special protective equipment required
Hand protection	No special protective equipment required

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Powder	**Odor**	Faint
Odor threshold	Not applicable	**Physical state**	Solid
pH	Not applicable	**Color**	Black
Flash point	Not applicable	**Boiling point/range**	Not applicable
Softening point	49 - 60 °C / 120 - 140 °F	**Autoignition temperature**	Not applicable

Flammability Limits in Air Not applicable

Vapor pressure	Not applicable
Vapor density	Not applicable
Water solubility	Negligible
Viscosity	Not applicable
Partition coefficient	Not applicable
Evaporation rate	Not applicable
Melting point/range	Not determined
Freezing point	Not applicable
Decomposition temperature	Not determined
Specific gravity	~ 2.5

Other information

Explosive properties Fine dust dispersed in air, in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard

10. STABILITY AND REACTIVITY

Reactivity

No dangerous reaction known under conditions of normal use

Chemical stability

Stable under normal conditions

Possibility of hazardous reactions

Hazardous reactions None under normal processing
Hazardous polymerization Hazardous polymerization does not occur

Conditions to avoid

Prevent dust cloud, Fine dust dispersed in air, in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard

Incompatible materials to avoid

None

Hazardous decomposition products

None under normal use

11. TOXICOLOGICAL INFORMATION

The toxicity data noted below is based on the test results of similar reprographic materials.

Information on toxicological effects

Acute toxicity

Product Information

Irritation No skin irritation, No eye irritation
Oral LD50 > 5 g/kg (rat)
Dermal LD50 > 5 g/kg (rabbit)
LC50 Inhalation > 5 mg/L (rat, 4 hr)

Component Information

Chemical Name	LC50 Inhalation	Dermal LD50	Oral LD50
Iron oxide			10000 mg/kg (Rat)
Polyethylene wax			8 g/kg (Rat)
Carbon Black		3 g/kg (Rabbit)	15400 mg/kg (Rat)

Chronic toxicity

Sensitization No sensitization responses were observed
Neurological Effects No information available
Target organ effects None known

CMR Effects

Mutagenic effects Not mutagenic in AMES Test
Reproductive toxicity No information available
Carcinogenicity See "Other Information" in this section.

Chemical Name	NTP	IARC
Carbon Black		2B

Other information

The IARC (International Agency for Research on Cancer) has listed carbon black as "possibly carcinogenic to humans". However, Xerox has concluded that the presence of carbon black in this mixture does not present a health hazard. The IARC classification is based on studies evaluating pure, "free" carbon black. In contrast, toner is a formulation composed of specially prepared polymer and a small amount of carbon black (or other pigment). In the process of making toner, the small amount of carbon black becomes encapsulated within a matrix. Xerox has performed extensive testing of toner, including a chronic bioassay (test for potential carcinogenicity). Exposure to toner did not produce evidence of cancer in exposed animals. The results were submitted to regulatory agencies and published extensively.

Other toxic effects

Aspiration Hazard Not applicable
Other adverse effects None known

12. ECOLOGICAL INFORMATION

Toxicity

On available data, the mixture / preparation is not harmful to aquatic life

Component Information

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to microorganisms	Toxicity to daphnia and other aquatic invertebrates
Carbon Black				EC50 > 5600 mg/L 24 h

Persistence and degradability

Not readily biodegradable

Bioaccumulative potential

Bioaccumulation is unlikely

Mobility in soil

Insoluble in water

Other adverse effects

Presents little or no hazard to the environment.

13. DISPOSAL CONSIDERATIONS

Disposal considerations

Waste Disposal Methods This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.

Contaminated packaging No special precautions are needed in handling this material

14. TRANSPORT INFORMATION

This material is not subject to regulation as a hazardous material for shipping

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

OSHA Regulatory Status

This product is an article which contains a mixture / preparation in powder form. Safety information is given for exposure to the article as sold and used by the customer. Intended use of the product is not expected to result in exposure to the mixture / preparation based on the packaging and method of dispensing.

While this material is not considered hazardous by the OSHA hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information for the safe handling and proper use of the product. This SDS should be retained and made available to employees and other users of this product.

Canada

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR), and the SDS contains all the information required by the HPR.

International Inventories

TSCA Complies

DSL/NDSL	Complies

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Clean Water Act

This product is not regulated as a pollutant pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

This product is not regulated as a hazardous air pollutant (HAPS) under Section 112 of the Clean Air Act Amendments of 1990.

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

California Proposition 65

Carbon black is regulated under California Proposition 65 only if in the form of "airborne, unbound particles of respirable size". Toner products do not contain carbon black in the form of "airborne, unbound particles of respirable size". Therefore, the requirements of Proposition 65 do not apply to this product.

Chemical Name	CAS No.	California Prop. 65
Carbon Black	1333-86-4	Carcinogen

U.S. State Right-to-Know Regulations

Although this product contains substances included in some U.S. State Right-to-Know regulations, the particles are bound in a unique matrix and, therefore, the product does not pose any specific hazard.

16. OTHER INFORMATION

Issuing Date	1995-02-24
Revision Date	2018-01-24
Revision Note	Part number 503S000182 removed

Disclaimer

The information provided on this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

end

Material Safety Data Sheet
134a

1. Chemical Product and Company Identification

Product Trade Name: Falcon Signal Horns

Chemical Family: 1,1,1,2-Tetrafluoroethane
FSP Model No: 911, 911R, 911C, 911PSH, MSN, MSNR, SSN, SSNR, SSCN, TAD4N, SSA1N, SSA2N, FNR, FC4N, PBNJC, PBNJR, PBSHN, PBSHNCN, PBSHNCSH, PBSHNR, PBSHNRCN, PWH, PWHR, PWHCN, PWHRCN, SH3, SH3R, SH3CN, SH3RCN.

Chemical Manufacturer: Dupont Or Honeywell
Address:

Phone:
Product Manufacturer: Falcon Safety Products, Inc.
Address: 25 Imclone Drive
Branchburg, NJ 08876
Phone: 1-908-707-4900

Emergency Telephone USA: (800) 498-7192

2. Composition/Information on Ingredients

Chemical Name	Wt.%Range	TLV Units
Tetrafluoroethane	99.0	1000 ppm

CAS #811-97-2
All components of this material are listed on the TSCA inventory.

3. Hazard Identification

Emergency Overview: Clear colorless liquefied gas. Nonflammable. Liquid acts as a refrigerant and exposure of unprotected skin to liquid can cause frostbite. Keep away from children.

Potential Health Effects

INHALATION: Gross overexposure may cause: Central nervous system depression with dizziness, confusion, incoordination, drowsiness or unconsciousness. Irregular heart beat with a strange sensation in the chest, "heart thumping", apprehension, lightheadedness, feeling of fainting, dizziness, weakness, sometimes progressing to loss of consciousness and death. Suffocation, if air is displaced by vapors.

SKIN CONTACT: ETHANE, 1,1,1,2-TETRAFLUORO
Immediate effects of overexposure may include: Frostbite, if liquid or escaping vapor contacts the skin.

EYE CONTACT: ETHANE, 1,1,1,2-TETRAFLUORO
"Frostbite-like" effects may occur if the liquid or escaping vapors contact the eyes.

ADDITIONAL HEALTH EFFECTS ETHANE, 1,1,1,2-TETRAFLUORO

Increased susceptibility to the effects of this material may be observed in persons with pre-existing disease of the: central nervous system, cardiovascular system.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

Medical Conditions Aggravated by Exposure:
Preexisting disease of the central nervous or cardiovascular system may have increased susceptibility to the toxicity of excessive exposures.

4. First Aid Measures

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a doctor.

Skin: In case of contact, immediately flush skin with plenty of water for at least 15 minutes, while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse. Treat for frostbite if necessary by gently warming affected area.

Eyes: Immediately flush with water. Remove any contact lenses and continue flushing for 15 minutes, lifting eyelids occasionally until no evidence of the chemical remains. If irritation develops or persists call a physician.

Ingestion: Not considered a potential route of exposure. Treat for possible frostbite. Swallowing less than an ounce of material is unlikely to cause significant harm. For larger amounts, do not induce vomiting. Call a physician.

Note to Attending Physician:

Because of the possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

There is no specific antidote to overexposure. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient. Immediate medical attention for acute overexposure is required.

5. Firefighting Measures

Flash Point: Will not burn.
Autoignition Temperature: > 750° C
Flammable Limits in Air: LEL/UEL: Not Applicable.
Extinguishing Media: Use dry chemical, "alcohol" foam, CO2 or water.

Special Firefighting Procedures:

Evacuate personnel. Wear self contained breathing apparatus (SCBA) and full protective equipment. Keep containers cool. Containers build pressure under fire conditions causing violent bursting and dangerous propelling of container.

Contact of welding or soldering torch flame with high concentrations of refrigerant can result in visible changes in the size and color of torch flames. This flame effect will only occur in concentrations of product well above the recommended exposure limit, therefore stop all work and ventilate to disperse refrigerant vapors from the work area before using any open flames.
HFC-134a is not flammable in air at temperatures up to 100 deg. C (212 deg. F) at atmospheric pressure. However, mixtures of HFC-134a with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source.

HFC-134a can also become combustible in an oxygen enriched environment (oxygen concentrations greater than that in air). Whether a mixture containing HFC-134a and air, or HFC-134a in an oxygen enriched atmosphere become combustible depends on the inter-relationship of 1) the temperature 2) the pressure, and 3) the proportion of oxygen in the mixture. In general, HFC-134a should not be allowed to exist with air above atmospheric pressure or at high temperatures; or
in an oxygen enriched environment. For example HFC-134a should NOT be mixed with air under pressure for leak testing or other purposes.

6. Accidental Release Measures

Spill or Leak: Although the chances of a large spill or leak is unlikely in aerosol containers, in the event of such an occurrence, evacuate area. Protected personnel should remove ignition sources and shut off fire sources. Provide ventilation.

7. Handling and Storage

Avoid breathing vapors or mist. Keep containers closed. Use only with adequate ventilation. Avoid repeated or prolonged contact with eyes, skin or clothing. Wash thoroughly after handling. Do not store in direct sunlight. Store in cool dry place, away from heat, sparks or flames which may generate toxic decomposition products. Vapors are heavy and may concentrate in low poorly ventilated areas.

8. Exposure Controls/Personal Protection

Respiratory Protection:	Use only with adequate ventilation. Keep container closed. Use approved NIOSH self-contained or supplied air respirators for emergencies and in situations where air may be displaced by vapors.
Eye Protection:	Use chemical protective safety glasses.
Protective Clothing:	Where there is potential for skin contact, use appropriate impervious gloves, apron, pants and jacket.
Exposure Guidelines:	Applicable Exposure Limits.

Tetrafluoroethane:

PEL (OSHA)	none established
TLV (ACGIH)	none established
AEL (DuPont)	1000 ppm, 8 & 12 hour TWA
WEEL (AIHA)	1000 ppm, 8 hour TWA

NFPA, NPCA-HIMIS RATING:

Health	1
Flammability	0
Reactivity	1

Personal Protection rating to be supplied by user depending on use conditions.

9. Physical and Chemical Properties

Physical Form:	Liquefied Gas
Odor:	Slight Ethereal
Boiling Point:	-26.5^{o} C / -15.7^{o} F
pH:	Not Applicable
Solubility in Water:	0.15 wt.% @ 25^{o}C (77^{o}F) @ 14.7 psia.
Specific Gravity:	1.208 @ 25^{o} C / 77^{o} F
Liquid Density	1.21 g/cm^{3} @ 25^{o} C (77^{o} F)
% Volatile by Weight:	100
Vapor Pressure:	96 psia @ 25^{o} C / 77^{o} F
Vapor Density (air=1):	3.6 @ 25^{o} C / 77^{o} F

10. Reactivity

Chemical Stability:	Material is stable.
Conditions to Avoid:	Avoid open flames and high temperatures
Incompatibilities:	Incompatible with alkali or alkaline earth metals - powdered Al, Zn, Be, etc.
Decomposition Products:	Decomposition products are hazardous. High temperatures (open flames, glowing metal surfaces, etc.) will decompose this material forming hydrofluoric acid and possibly carbonyl fluoride. These materials are toxic and irritating. Contact should be avoided.
Hazardous Polymerization:	Will not occur.

11. Toxicological Information

Animal Data

ETHANE, 1,1,1,2-TETRAFLUORO

Eye: A short duration spray of vapor produced very slight eye irritation.

Skin: Animal testing indicates this material is a slight skin irritant, but not a skin sensitizer.

Inhalation: 4 hour, ALC, rat: 567,000 ppm.

Single exposure caused : Cardiac sensitization, a potentially fatal disturbance of heart rhythm associated with a heightened sensitivity to the action of epinephrine.

Lowest-Observed-Adverse-Effect-Level for cardiac sensitization : 75,000 ppm. Single exposure caused: Lethargy, Narcarcosis, Increased respiratory rates. These effects were temporary. Single exposure to near lethal doses caused: Pulmonary edema. Repeated Exposure caused: Increased adrenals, liver, spleen weight. Decreased uterine, prostate weight. Repeated dosing of higher concentrations caused: the following temporary effects- Tremors, Incoordination.

CARCINOGENIC, DEVELOPMENTAL, REPRODUCTIVE, MUTAGENETIC EFFECTS:

In a two-year inhalation study HFC-134a, at a concentration of 50,000 ppm produced an increase in late-occurring benign testicular tumors, testicular hyperplasia and testicular weight. The no effect level for this study was 10,000 ppm. Animal data shows slight fetotoxicity but only at exposure levels producing other toxic effects in the adult animal. Reproductive data on male mice show: No change in reproductive performance. Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures, or in animals. In animal testing, this material has not caused permanent genetic damage in reproductive cells of mammals (has not produced heritable genetic damage).

12. Ecological Information

Aquatic Toxicity:

48 hour EC50 - Daphnia magna: 980 mg/L
96 hour LC50 - Rainbow Trout: 450 mg/L

13. Disposal Considerations

Waste Disposal: Recover by distillation or remove to a permitted waste disposal facility. Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial and Local regulations.

14. Transportation Information

Transport for Aerosol Packaging:

Ground Transport: Consumer Commodity ORM-D
Air Transport: Refrigerant Gas, N.O.S. (Tetrafluoroethane), UN3159, Class 2.2, Pkg.Group N/A, Pkg.Instr.200, Authorization: per DOT-SP-10232. NOTE: Exemption copy required with shipping papers. Hazard Label: Nonflammable Gas

15. Regulatory Information

Section 313 Supplier Information:

This material contains the following toxic chemicals subject to the emergency reporting requirements of Section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40 CFR 372:

CAS#	Chemical Name	% by Weight
-	none	-

This information must be included in all MSDSs that are copied and distributed for this material.
California V.O.C. Data: This product contains 0 grams total VOC per liter.

Title III Hazard Communications Sections 311, 312

Acute	Yes
Chronic	Yes
Fire	No
Reactivity	No
Pressure	Yes

HAZARDOOUS CHEMICAL LIST

SARA Extremely Hazardous Substance: No
CERCLA Hazardous Substance : No
SARA Toxic Chemical : No

16. Other Information

NFPA, NPCA-HMIS

NPCA-HMIS Rating	
Health :	1
Flammability :	0
Reactivity :	1

WHIMIS - Canada

Class A - Compressed Gas
CEPA DSL: 1,1,1,2-Tetrafluoroethane

Personal Protection rating to be supplied by user depending on use

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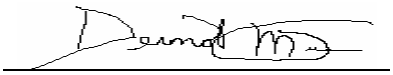
Signature	Printed Name	Title	Revision Date
	Dermot McLeer	Technical Manager	4/12/07

SAFETY DATA SHEET

SECTION 1 IDENTIFICATION

PRODUCT

Product Name: **HEAVY DUTY CHAIN OIL**
Product Description: Base Oil and Additives
SDS Number: 8322
Product Code: 201560B04210
Intended Use: Lubricant

COMPANY IDENTIFICATION

Supplier: **Imperial Oil Downstream**
P.O. Box 2480, Station M
Calgary, ALBERTA T2P 3M9 Canada

24 Hour Emergency Telephone	1-866-232-9563
Transportation Emergency Phone Number	1-866-232-9563
Product Technical Information	1-800-268-3183
Supplier General Contact	1-800-567-3776

SECTION 2 HAZARD IDENTIFICATION

This material is considered to be NON-HAZARDOUS according to regulatory guidelines.

This product has been classified in accordance with hazard criteria of the Hazardous Products Regulations (HPR) SOR/2015-17 and the SDS contains all the information required by the HPR SOR/2015-17.

Other hazard information:

Health Hazards Not Otherwise Classified: None as defined under HPR SOR/2015-17.

Physical Hazards Not Otherwise Classified: None as defined under HPR SOR/2015-17.

PHYSICAL / CHEMICAL HAZARDS

No significant hazards.

HEALTH HAZARDS

High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.

ENVIRONMENTAL HAZARDS

Expected to be harmful to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

NFPA Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0
HMIS Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a mixture.

Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*	GHS Hazard Codes
OLEFIN SULPHIDE	68937-96-2	0.1 - < 1%	H227, H317, H316, H402, H412
TRIPHENYL PHOSPHATE	115-86-6	0.1 - < 1%	H400(M factor 1), H411

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

SECTION 4 FIRST-AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight streams of water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Aldehydes, Incomplete combustion products, Oxides of carbon, Smoke, Fume, Sulphur oxides

FLAMMABILITY PROPERTIES

Flash Point [Method]: 200°C (392°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

PROTECTIVE MEASURES

Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: respiratory protection will be necessary only in special cases, e.g., formation of mists. Half-face or full-face respirator with filter(s) for dust/organic vapor or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to hydrocarbons are recommended. Gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do so without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do so without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dyke far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or earthing procedures. However, bonding and earthing may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator.

STORAGE

The type of container used to store the material may affect static accumulation and dissipation. Do not store in open or unlabelled containers.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Substance Name	Form	Limit/Standard			Note	Source
TRIPHENYL PHOSPHATE		TWA	3 mg/m3			ACGIH

Exposure limits/standards for materials that can be formed when handling this product: When mists/aerosols can occur the following is recommended: 5 mg/m³ - ACGIH TLV (inhalable fraction).

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practise good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid
Colour: Red
Odour: Characteristic
Odour Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 °C): 0.886
Flammability (Solid, Gas): N/A
Flash Point [Method]: 200°C (392°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: N/D
Decomposition Temperature: N/D
Vapour Density (Air = 1): N/D
Vapour Pressure: [N/D at 20°C] | < 1 kPa (7.5 mm Hg) at 38°C
Evaporation Rate (n-butyl acetate = 1): < 0.1
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
Solubility in Water: Negligible
Viscosity: 190 cSt (190 mm2/sec) at 40ºC [ASTM D 445]
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/A
Pour Point: -15°C (5°F) [ASTM D97]
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Negligible hazard at ambient/normal handling temperatures.
Ingestion	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin Corrosion/Irritation: No end point data	Negligible irritation to skin at ambient temperatures. Based on

for material.	assessment of the components.
Eye	
Serious Eye Damage/Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.
Sensitisation	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: No end point data for material.	Not expected to be a skin sensitizer. Based on assessment of the components.
Aspiration: Data available.	Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: No end point data for material.	Not expected to be a germ cell mutagen. Based on assessment of the components.
Carcinogenicity: No end point data for material.	Not expected to cause cancer. Based on assessment of the components.
Reproductive Toxicity: No end point data for material.	Not expected to be a reproductive toxicant. Based on assessment of the components.
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: No end point data for material.	Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components.

OTHER INFORMATION

For the product itself:

Component concentrations in this formulation would not be expected to cause skin sensitization, based on tests of the components, this formulation, or similar formulations.

Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitising in test animals.

CMR Status: None.

--REGULATORY LISTS SEARCHED--

1 = IARC 1	3 = IARC 2B	5 = ACGIH A1
2 = IARC 2A	4 = ACGIH ALL	6 = ACGIH A2

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

ECOTOXICITY

Material -- Expected to be harmful to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (TDG): Not Regulated for Land Transport

LAND (DOT): Not Regulated for Land Transport

SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

Marine Pollutant: No

AIR (IATA): Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

CEPA: All components of this product are either on the Domestic Substance List (DSL) or are exempt.

Listed or exempt from listing/notification on the following chemical inventories: AIIC, DSL, ENCS, IECSC, KECI, PICCS, TSCA

The Following Ingredients are Cited on the Lists Below: None.

--REGULATORY LISTS SEARCHED--

1 = TSCA 4	3 = TSCA 5e	5 = TSCA 12b
2 = TSCA 5a2	4 = TSCA 6	6 = NPRI

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):
H227: Combustible liquid; Flammable Liquid, Cat 4
H317: May cause allergic skin reaction; Skin Sensitisation, Cat 1
H400: Very toxic to aquatic life; Acute Env Tox, Cat 1
H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1
H413: May cause long lasting harmful effects to aquatic life; Chronic Env Tox, Cat 4

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Section 15: National Chemical Inventory Listing information was modified.
Section 16: HCode Key information was modified.

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SAFETY DATA SHEET

Helium

Section 1. Identification

GHS product identifier : Helium

Chemical name : Helium

Other means of identification : helium (dot); Helium-4; He; o-Helium; UN 1046,Helium USP

Product type : Gas.

Product use : Synthetic/Analytical chemistry.

Synonym : helium (dot); Helium-4; He; o-Helium; UN 1046,Helium USP

SDS # : 001025

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : GASES UNDER PRESSURE - Compressed gas

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Contains gas under pressure; may explode if heated.
May displace oxygen and cause rapid suffocation.

Precautionary statements

General : Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction.

Prevention : Not applicable.

Response : Not applicable.

Storage : Protect from sunlight. Store in a well-ventilated place.

Disposal : Not applicable.

Hazards not otherwise classified : In addition to any other important health or physical hazards, this product may displace oxygen and cause rapid suffocation.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : Helium

Other means of identification : helium (dot); Helium-4; He; o-Helium; UN 1046,Helium USP

Product code : 001025

CAS number/other identifiers

CAS number : 7440-59-7

Ingredient name	%	CAS number
Helium	100	7440-59-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : As this product is a gas, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.

Inhalation : No known significant effects or critical hazards.

Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : As this product is a gas, refer to the inhalation section.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Section 4. First aid measures

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

Hazardous thermal decomposition products : No specific data.

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Immediately contact emergency personnel. Stop leak if without risk.

Large spill : Immediately contact emergency personnel. Stop leak if without risk. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid breathing gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Avoid contact with eyes, skin and clothing. Empty containers retain product residue and can be hazardous.

Section 7. Handling and storage

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Helium	**ACGIH TLV (United States, 3/2019). Oxygen Depletion [Asphyxiant].**

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure controls/personal protection

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Gas. [Compressed gas.]

Color : Colorless.

Odor : Odorless.

Odor threshold : Not available.

pH : Not available.

Melting point : -272.2°C (-458°F)

Boiling point : -268.9°C (-452°F)

Critical temperature : -267.9°C (-450.2°F)

Flash point : [Product does not sustain combustion.]

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : 0.14 (Air = 1) Liquid Density@BP: 7.8 lb/ft3 (125 kg/m3)

Specific Volume (ft ^{3}/lb) : 96.1538

Gas Density (lb/ft ^{3}) : 0.0104

Relative density : Not applicable.

Solubility : Not available.

Solubility in water : Not available.

Partition coefficient: n-octanol/water : 0.28

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not applicable.

Flow time (ISO 2431) : Not available.

Molecular weight : 4 g/mole

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : No specific data.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 10. Stability and reactivity

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Not available.

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.

Inhalation : No known significant effects or critical hazards.

Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.

Ingestion : As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Section 11. Toxicological information

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Helium	0.28	-	low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1046	UN1046	UN1046	UN1046	UN1046
UN proper shipping name	HELIUM, COMPRESSED	HELIUM, COMPRESSED	HELIUM, COMPRESSED	HELIUM, COMPRESSED	HELIUM, COMPRESSED
Transport hazard class(es)	2.2	2.2	2.2	2.2	2.2
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Additional information

DOT Classification : **Limited quantity** Yes.
Quantity limitation Passenger aircraft/rail: 75 kg. Cargo aircraft: 150 kg.

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2).
Explosive Limit and Limited Quantity Index 0.125
Passenger Carrying Road or Rail Index 75

IATA : **Quantity limitation** Passenger and Cargo Aircraft: 75 kg. Cargo Aircraft Only: 150 kg.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

Section 15. Regulatory information

SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

State regulations

Massachusetts : This material is listed.

New York : This material is not listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia : This material is listed or exempted.

Canada : This material is listed or exempted.

China : This material is listed or exempted.

Europe : This material is listed or exempted.

Japan : **Japan inventory (ENCS)**: Not determined.
Japan inventory (ISHL): Not determined.

New Zealand : This material is listed or exempted.

Philippines : This material is listed or exempted.

Republic of Korea : This material is listed or exempted.

Taiwan : This material is listed or exempted.

Thailand : Not determined.

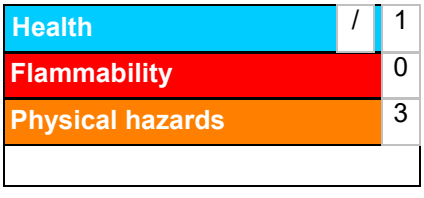
Turkey : Not determined.

United States : This material is active or exempted.

Viet Nam : This material is listed or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



Section 16. Other information

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)

Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
GASES UNDER PRESSURE - Compressed gas	Expert judgment

History

Date of printing : 1/27/2021

Date of issue/Date of revision : 1/27/2021

Date of previous issue : 4/23/2018

Version : 1.02

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET

JET A/A-1 AVIATION TURBINE FUEL

000003001081

Version 2.0 Revision Date 2016/07/20 Print Date 2016/07/20

SECTION 1. IDENTIFICATION

Product name	:	JET A/A-1 AVIATION TURBINE FUEL
Synonyms	:	Jet A-1; Jet A-1-DI; Aviation Turbine Kerosene (ATK); JP-8; NATO F-34; Jet F-34; Aviation Turbine Fuel, Kerosene Type (CAN/CGSB 3.23 & CAN/CGSB 3.24)
Product code	:	101851, 100123
Manufacturer or supplier's details		Petro-Canada P.O. Box 2844, 150 - 6th Avenue South-West Calgary Alberta T2P 3E3 Canada
Emergency telephone number		Suncor Energy: +1 403-296-3000; Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use	:	Used as aviation turbine fuel. May contain a fuel system icing inhibitor. In the arctic, Jet A-1 may also be used as diesel fuel (if it contains a lubricity additive) and heating oil.
Prepared by	:	Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	Clear liquid.
Colour	Clear and colourless
Odour	Kerosene-like.

GHS Classification

Flammable liquids	:	Category 3
Skin irritation	:	Category 2
Reproductive toxicity	:	Category 2
Specific target organ toxicity - single exposure	:	Category 3 (Central nervous system)
Aspiration hazard	:	Category 1

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GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Flammable liquid and vapour.
May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause drowsiness or dizziness.
Suspected of damaging fertility or the unborn child.

Precautionary statements : **Prevention:**
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ eye protection/ face protection.
Use personal protective equipment as required.
Response:
IF SWALLOWED: Immediately call a POISON CENTER/doctor.
IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
IF exposed or concerned: Get medical advice/ attention.
Do NOT induce vomiting.
If skin irritation occurs: Get medical advice/ attention.
Take off contaminated clothing and wash before reuse.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
Storage:
Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Potential Health Effects

Primary Routes of Entry : Eye contact
Ingestion
Inhalation

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Skin contact

Inhalation	:	Inhalation may cause central nervous system effects. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.
Skin	:	May irritate skin.
Eyes	:	May irritate eyes.
Ingestion	:	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Aspiration hazard if swallowed - can enter lungs and cause damage.
Aggravated Medical Condition	:	None known.

Other hazards

None known.

IARC	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration
kerosine (petroleum)	8008-20-6	90 - 100 %
2-(2-methoxyethoxy)ethanol	111-77-3	0 - 0.2 %

SECTION 4. FIRST AID MEASURES

If inhaled	:	Move to fresh air. Artificial respiration and/or oxygen may be necessary. Seek medical advice.
In case of skin contact	:	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing

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		and shoes. Wash skin thoroughly with soap and water or use recognized skin cleanser. Wash clothing before reuse. Seek medical advice.
In case of eye contact	:	Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.
If swallowed	:	Rinse mouth with water. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Seek medical advice.
Most important symptoms and effects, both acute and delayed	:	First aider needs to protect himself.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Dry chemical Carbon dioxide (CO2) Water fog. Foam
Unsuitable extinguishing media	:	Do NOT use water jet.
Specific hazards during firefighting	:	Cool closed containers exposed to fire with water spray.
Hazardous combustion products	:	Carbon oxides (CO, CO2), nitrogen oxides (NOx), sulphur oxides (SOx), smoke and irritating vapours as products of incomplete combustion.
Further information	:	Prevent fire extinguishing water from contaminating surface water or the ground water system.
Special protective equipment for firefighters	:	Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. Material can create slippery conditions.
Environmental precautions	:	If the product contaminates rivers and lakes or drains inform respective authorities.

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Methods and materials for containment and cleaning up	:	Prevent further leakage or spillage if safe to do so. Remove all sources of ignition. Soak up with inert absorbent material. Non-sparking tools should be used. Ensure adequate ventilation. Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling	:	For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Use only with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Avoid contact with skin, eyes and clothing. Do not ingest. Keep away from heat and sources of ignition. Keep container closed when not in use.
Conditions for safe storage	:	Store in original container. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in a dry, cool and well-ventilated place. Keep in properly labelled containers. To maintain product quality, do not store in heat or direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
kerosine (petroleum)	8008-20-6	TWA	100 mg/m3	NIOSH REL
		TWA	500 ppm 2,000 mg/m3	OSHA Z-1
		TWA	200 mg/m3 (total hydrocarbon vapor)	ACGIH
		TWA	400 ppm 1,600 mg/m3	OSHA P0

Engineering measures	:	Use only in well-ventilated areas. Ensure that eyewash station and safety shower are proximal to the work-station location.

Personal protective equipment

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Respiratory protection	:	Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Filter type	:	A NIOSH-approved air-purifying respirator with an organic vapour cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.
Hand protection		
Material	:	polyvinyl alcohol (PVA), Viton(R). Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns. It should be realized that eventually any material regardless of their imperviousness, will get permeated by chemicals. Therefore, protective gloves should be regularly checked for wear and tear. At the first signs of hardening and cracks, they should be changed.
Remarks	:	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Eye protection	:	Wear face-shield and protective suit for abnormal processing problems.
Skin and body protection	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Protective measures	:	Wash contaminated clothing before re-use.
Hygiene measures	:	Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Clear liquid.
Colour	:	Clear and colourless
Odour	:	Kerosene-like.
Odour Threshold	:	No data available

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pH	:	No data available
Pour point	:	-51 °C (-60 °F)No data available
Boiling point/boiling range	:	140 - 300 °C (284 - 572 °F)
Flash point	:	> 38 °C (100 °F) Method: Tagliabue
Auto-Ignition Temperature	:	210 °C (410 °F)
Evaporation rate	:	No data available
Flammability	:	Flammable in presence of open flames, sparks and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. This product can accumulate static charge and ignite. May accumulate in confined spaces.
Upper explosion limit	:	5 %(V)
Lower explosion limit	:	0.7 %(V)
Vapour pressure	:	5.25 mmHg (20 °C / 68 °F)
Relative vapour density	:	4.5
Relative density	:	0.775 - 0.84 (15 °C / 59 °F)
Solubility(ies)		
Water solubility	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Viscosity		
Viscosity, kinematic	:	1.0 - 1.9 cSt (40 °C / 104 °F)
Explosive properties	:	Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Containers may explode in heat of fire.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	:	Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	:	Extremes of temperature and direct sunlight.

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Incompatible materials	:	Reactive with oxidising agents, acids and alkalis.
Hazardous decomposition products	:	May release COx, NOx, SOx, aldehydes, acids, ketones, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure
Eye contact
Ingestion
Inhalation
Skin contact

Acute toxicity

Product:

Acute oral toxicity	:	Remarks: No data available
Acute inhalation toxicity	:	Remarks: No data available
Acute dermal toxicity	:	Remarks: No data available

Components:

kerosine (petroleum):

Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg,
Acute inhalation toxicity	:	LC50 (Rat): > 5 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	:	LD50 (Rabbit): > 2,000 mg/kg,

Skin corrosion/irritation

Product:
Remarks: No data available

Serious eye damage/eye irritation

Product:
Remarks: No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity
No data available

Carcinogenicity

No data available

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Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Offer surplus and non-recyclable solutions to a licensed disposal company.
Waste must be classified and labelled prior to recycling or disposal.
Send to a licensed waste management company.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

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Contaminated packaging : Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

UN/ID No.	:	UN 1863
Proper shipping name	:	Fuel, aviation, turbine engine
Class	:	3
Packing group	:	III
Labels	:	Class 3 - Flammable Liquid
Packing instruction (cargo aircraft)	:	366

IMDG-Code

UN number	:	UN 1863
Proper shipping name	:	FUEL, AVIATION, TURBINE ENGINE
Class	:	3
Packing group	:	III
Labels	:	3
EmS Code	:	F-E, S-E
Marine pollutant	:	no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

National Regulations

49 CFR

UN/ID/NA number	:	UN 1863
Proper shipping name	:	Fuel, aviation, turbine engine
Class	:	3
Packing group	:	III
Labels	:	Class 3 - Flammable Liquid
ERG Code	:	128
Marine pollutant	:	no

SECTION 15. REGULATORY INFORMATION

The components of this product are reported in the following inventories:

DSL	On the inventory, or in compliance with the inventory
TSCA	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
EINECS	On the inventory, or in compliance with the inventory

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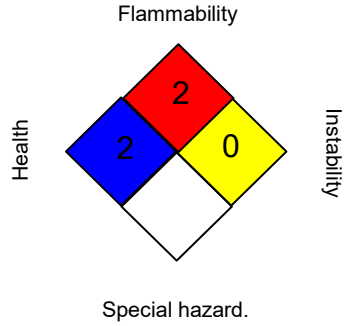
SECTION 16. OTHER INFORMATION

Further information

NFPA:



HMIS III:

HEALTH	2*
FLAMMABILITY	2
PHYSICAL HAZARD	0
PERSONAL PROTECTION	H

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

For Copy of (M)SDS : Internet: www.petro-canada.ca/msds
Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228
For Product Safety Information: 1 905-804-4752

Prepared by : Product Safety: +1 905-804-4752

Revision Date : 2016/07/20

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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29 CFR 1910.1200 (OSHA HazCom 2012)

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Trade name : Kubota® UDT UNIVERSAL TRANS HYDRAULIC FLUID

Recommended use of the chemical and restrictions on use

Details of the supplier of the safety data sheet	**Emergency telephone number**
Ashland P.O. Box 2219 Columbus, OH 43216 United States of America EHS Customer Requests@ashland.com	1-800-ASHLAND (1-800-274-5263) **Regulatory Information Number** 1-800-325-3751 **Product Information** 614-790-3333

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Eye irritation : Category 2A

Skin sensitization : Category 1

GHS Label element

Hazard pictograms :

Signal Word : Warning

Hazard Statements : May cause an allergic skin reaction.
Causes serious eye irritation.

Precautionary Statements : **Prevention:**
Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
Wash skin thoroughly after handling.
Contaminated work clothing must not be allowed out of the workplace.
Wear eye protection/ face protection.
Wear protective gloves.
Response:

IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If skin irritation or rash occurs: Get medical advice/ attention.
If eye irritation persists: Get medical advice/ attention.
Wash contaminated clothing before reuse.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Chemical nature : Defatter

Hazardous components

Chemical Name	CAS-No.	Classification	Concentration (%)
BENZENE, POLYPROPENE DERIVATIVES, SULFONATED, CALCIUM SALTS		Eye Irrit. 2A; H319	1.49
PHOSPHORODITHIOIC ACID	4259-15-8	Eye Dam. 1; H318	1.49
POLYMER		Skin Sens. 1; H317	0.49
PHOSPHOROUS ACID, TRIPHENYL ESTER	101-02-0	Acute Tox. 4; H302 Acute Tox. 3; H331 Skin Irrit. 2; H315 Eye Irrit. 2A; H319 Skin Sens. 1; H317	0.10

SECTION 4. FIRST AID MEASURES

General advice	:	Move out of dangerous area. Show this safety data sheet to the doctor in attendance. Do not leave the victim unattended.
If inhaled	:	If breathed in, move person into fresh air. If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.
In case of skin contact	:	Remove contaminated clothing. If irritation develops, get medical attention. If on skin, rinse well with water. First aid is not normally required. However, it is recommended that exposed areas be cleaned by washing with soap and water. Wash contaminated clothing before re-use.
In case of eye contact	:	Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye.
If swallowed	:	Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.
Most important symptoms and effects, both acute and delayed	:	May cause an allergic skin reaction. Causes serious eye irritation. No symptoms known or expected.
Notes to physician	:	No hazards which require special first aid measures.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Water spray Foam Carbon dioxide (CO2) Dry chemical
Unsuitable extinguishing media	:	High volume water jet
Specific hazards during firefighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	:	carbon dioxide and carbon monoxide Hydrocarbons
Specific extinguishing methods	:	

Product is compatible with standard fire-fighting agents.

Further information : Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.

Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal.

Other information : Comply with all applicable federal, state, and local regulations.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling : Do not breathe vapours/dust.
Do not smoke.
Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
Container hazardous when empty.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
Smoking, eating and drinking should be prohibited in the application area.
For personal protection see section 8.
Dispose of rinse water in accordance with local and national regulations.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Electrical installations / working materials must comply with the technological safety standards.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Engineering measures : Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.

Personal protective equipment

Hand protection
Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection : Wear chemical splash goggles when there is the potential for exposure of the eyes to liquid, vapor or mist.

Skin and body protection : Wear as appropriate:
impervious clothing
Safety shoes
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Discard gloves that show tears, pinholes, or signs of wear.
Wear resistant gloves (consult your safety equipment supplier).

Hygiene measures : Wash hands before breaks and at the end of workday.
When using do not eat or drink.
When using do not smoke.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	:	liquid
Colour	:	amber
Odour	:	hydrocarbon-like
Odour Threshold	:	No data available
pH	:	No data available
Melting point/freezing point	:	No data available
Boiling point/boiling range	:	No data available
Flash point	:	> 390 °F / > 199 °C

		Method: Cleveland open cup
Evaporation rate	:	> 1 Ethyl Ether
Flammability (solid, gas)	:	No data available
Upper explosion limit	:	6 %(V) Calculated Explosive Limit
Lower explosion limit	:	1 %(V) Calculated Explosive Limit
Vapour pressure	:	0.0133333 hPa (21.11 °C) Calculated Vapor Pressure
Relative vapour density	:	No data available
Relative density	:	0.880 (15.6 °C)
Density	:	0.8711 g/cm3
Solubility(ies)		
Water solubility	:	No data available
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Thermal decomposition	:	No data available
Viscosity		
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	9.55 mm2/s
Oxidizing properties	:	No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No decomposition if stored and applied as directed.
Chemical stability	:	Stable under recommended storage conditions.
Possibility of hazardous reactions	:	Product will not undergo hazardous polymerization.
Incompatible materials	:	Strong oxidizing agents
Hazardous decomposition products		carbon dioxide and carbon monoxide

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Inhalation
Skin contact
Eye Contact
Ingestion

Acute toxicity
Not classified based on available information.
Components:
PHOSPHORODITHIOIC ACID:
Acute oral toxicity : LD50 (Rat): 3,100 mg/kg
Method: OECD Test Guideline 401

Acute dermal toxicity : LD50 (Rabbit, male): > 5,000 mg/kg
Method: OECD Test Guideline 402

PHOSPHOROUS ACID, TRIPHENYL ESTER:
Acute oral toxicity : LD50 (Rat, male): 1.59 g/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC 50 (Rat): > 6.7 mg/l
Exposure time: 1 h
Method: OECD Test Guideline 403
Remarks: Aerosol

Acute dermal toxicity : LD50 (Rabbit): > 2 - < 5 g/kg
Method: OECD Test Guideline 402

Skin corrosion/irritation
Not classified based on available information.
Product:
Remarks: May cause skin irritation in susceptible persons.

Result: Repeated exposure may cause skin dryness or cracking.

Components:
BENZENE, POLYPROPENE DERIVATIVES, SULFONATED, CALCIUM SALTS:
Result: Not irritating to skin

PHOSPHORODITHIOIC ACID:
Result: Mildly irritating to skin

POLYMER:
Result: Not irritating to skin

PHOSPHOROUS ACID, TRIPHENYL ESTER:
Result: Severely irritating to skin

Serious eye damage/eye irritation
Causes serious eye irritation.
Product:
Remarks: Vapours may cause irritation to the eyes, respiratory system and the skin., Causes serious eye irritation.

Components:
BENZENE, POLYPROPENE DERIVATIVES, SULFONATED, CALCIUM SALTS:
Result: Irritating to eyes

PHOSPHORODITHIOIC ACID:
Result: Corrosive to eyes

POLYMER:
Result: Not irritating to eyes

PHOSPHOROUS ACID, TRIPHENYL ESTER:
Result: Irritating to eyes

Respiratory or skin sensitisation
Skin sensitisation: May cause an allergic skin reaction.
Respiratory sensitisation: Not classified based on available information.
Components:
PHOSPHORODITHIOIC ACID:
Result: Did not cause sensitisation on laboratory animals.

POLYMER:
Assessment: May cause sensitization by skin contact.

PHOSPHOROUS ACID, TRIPHENYL ESTER:
Test Type: Local lymph node assay
Species: Mouse
Assessment: The product is a skin sensitiser, sub-category 1A.

Germ cell mutagenicity
Not classified based on available information.
Carcinogenicity
Not classified based on available information.
Reproductive toxicity
Not classified based on available information.
STOT - single exposure
Not classified based on available information.
STOT - repeated exposure
Not classified based on available information.
Aspiration toxicity
Not classified based on available information.
Further information
Product:
Remarks: No data available

Carcinogenicity:

IARC	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed

human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

PHOSPHORODITHIOIC ACID:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 4.4 mg/l Exposure time: 96 h Test Type: semi-static test Test substance: WAF Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EL50 (Water flea (Daphnia magna)): 75 mg/l Exposure time: 48 h Test Type: static test Test substance: WAF Method: OECD Test Guideline 202
Toxicity to algae	:	EL50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): 410 mg/l End point: Growth inhibition Exposure time: 72 h Test Type: static test Test substance: WAF

Persistence and degradability

PHOSPHORODITHIOIC ACID:

Biodegradability	:	Result: Not biodegradable Biodegradation: < 5 % Exposure time: 27 d Method: OECD Test Guideline 301D

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

Product:

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Harmful to aquatic life with long lasting effects.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

General advice : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.

Dispose of in accordance with all applicable local, state and federal regulations.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Empty containers should be taken to an approved waste handling site for recycling or disposal.
Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International transport regulations

REGULATION

ID NUMBER	PROPER SHIPPING NAME	*HAZARD CLASS	SUBSIDIARY HAZARDS	PACKING GROUP	MARINE POLLUTANT / LTD. QTY.

U.S. DOT - ROAD

Not dangerous goods

U.S. DOT - RAIL

Not dangerous goods

U.S. DOT - INLAND WATERWAYS

Not dangerous goods

TRANSPORT CANADA - ROAD

Not dangerous goods

TRANSPORT CANADA - RAIL

Not dangerous goods

TRANSPORT CANADA - INLAND WATERWAYS

Not dangerous goods

INTERNATIONAL MARITIME DANGEROUS GOODS

Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO

Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER

Not dangerous goods

MEXICAN REGULATION FOR THE LAND TRANSPORT OF HAZARDOUS MATERIALS AND WASTES

Not dangerous goods

***ORM = ORM-D, CBL = COMBUSTIBLE LIQUID**

Marine pollutant		no

Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

SECTION 15. REGULATORY INFORMATION

SARA 311/312 Hazards : Acute Health Hazard

SARA 313 Component(s)

PHOSPHORODITHIOIC ACID	4259-15-8	1.49 %

Pennsylvania Right To Know

LUBRICATING OILS, PETROLEUM, HYDROTREATED SPENT	64742-58-1	50.00 - 70.00 %
HEAVY PARAFFINIC DISTILLATE	64742-54-7	30.00 - 50.00 %

New Jersey Right To Know

LUBRICATING OILS, PETROLEUM, HYDROTREATED SPENT	64742-58-1	50.00 - 70.00 %

HEAVY PARAFFINIC DISTILLATE	64742-54-7	30.00 - 50.00 %
BENZENE, POLYPROPENE DERIVATIVES, SULFONATED, CALCIUM SALTS	Not Assigned	1.00 - 5.00 %
PHOSPHORODITHIOIC ACID	4259-15-8	1.00 - 5.00 %
CONTENTS PARTIALLY UNKNOWN	Not Assigned	1.00 - 5.00 %

California Prop 65 Proposition 65 warnings are not required for this product based on the results of a risk assessment.

The components of this product are reported in the following inventories:

TSCA : On TSCA Inventory

DSL : All components of this product are on the Canadian DSL.

AUSTR : On the inventory, or in compliance with the inventory

ENCS : On the inventory, or in compliance with the inventory

KECL : On the inventory, or in compliance with the inventory

PICCS : On the inventory, or in compliance with the inventory

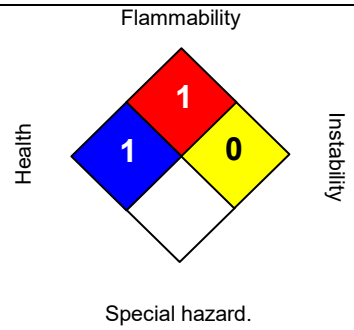
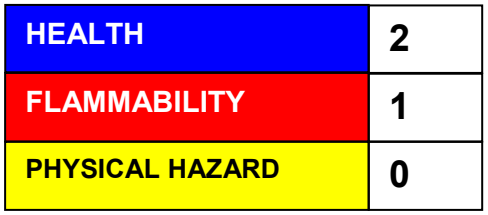
IECSC : On the inventory, or in compliance with the inventory

Inventories

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TSCA (USA)

SECTION 16. OTHER INFORMATION

Further information
Revision Date: 05/22/2015

NFPA:	HMIS III:
	

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

NFPA Flammable and Combustible Liquids Classification
Combustible Liquid Class IIIB

Full text of H-Statements referred to under sections 2 and 3.

H302	Harmful if swallowed.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.

Sources of key data used to compile the Safety Data Sheet
Ashland internal data including own and sponsored test reports
The UNECE administers regional agreements implementing harmonised classification for labelling (GHS) and transport.

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This SDS has been prepared by Ashland's Environmental Health and Safety Department (1-800-325-3751).

List of abbreviations and acronyms that could be, but not necessarily are, used in this safety data sheet :
ACGIH : American Conference of Industrial Hygienists
BEI : Biological Exposure Index
CAS : Chemical Abstracts Service (Division of the American Chemical Society).

CMR : Carcinogenic, Mutagenic or Toxic for Reproduction
FG : Food grade
GHS : Globally Harmonized System of Classification and Labeling of Chemicals.
H-statement : Hazard Statement
IATA : International Air Transport Association.
IATA-DGR : Dangerous Goods Regulation by the “International Air Transport Association” (IATA).

ICAO : International Civil Aviation Organization
ICAO-TI (ICAO) : Technical Instructions by the “International Civil Aviation Organization”
IMDG : International Maritime Code for Dangerous Goods
ISO : International Organization for Standardization
logPow : octanol-water partition coefficient
LCxx : Lethal Concentration, for xx percent of test population
LDxx : Lethal Dose, for xx percent of test population.
ICxx : Inhibitory Concentration for xx of a substance
Ecxx : Effective Concentration of xx
N.O.S.: Not Otherwise Specified
OECD : Organization for Economic Co-operation and Development
OEL : Occupational Exposure Limit
P-Statement : Precautionary Statement
PBT : Persistent , Bioaccumulative and Toxic
PPE : Personal Protective Equipment
STEL : Short-term exposure limit
STOT : Specific Target Organ Toxicity
TLV : Threshold Limit Value
TWA : Time-weighted average
vPvB : Very Persistent and Very Bioaccumulative
WEL : Workplace Exposure Level

CERCLA : Comprehensive Environmental Response, Compensation, and Liability Act
DOT : Department of Transportation
FIFRA : Federal Insecticide, Fungicide, and Rodenticide Act
HMIRC : Hazardous Materials Information Review Commission
HMIS : Hazardous Materials Identification System
NFPA : National Fire Protection Association
NIOSH : National Institute for Occupational Safety and Health
OSHA : Occupational Safety and Health Administration
PMRA : Health Canada Pest Management Regulatory Agency
RTK : Right to Know
WHMIS : Workplace Hazardous Materials Information System

SAFETY DATA SHEET

Oxygen

Section 1. Identification

GHS product identifier : Oxygen

Chemical name : oxygen

Other means of identification : Molecular oxygen; Oxygen molecule; Pure oxygen; O2; UN 1072; Dioxygen; Oxygen USP, Aviator's Breathing Oxygen (ABO)

Product type : Gas.

Product use : Synthetic/Analytical chemistry.

Synonym : Molecular oxygen; Oxygen molecule; Pure oxygen; O2; UN 1072; Dioxygen; Oxygen USP, Aviator's Breathing Oxygen (ABO)

SDS # : 001043

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : OXIDIZING GASES - Category 1
GASES UNDER PRESSURE - Compressed gas

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : May cause or intensify fire; oxidizer.
Contains gas under pressure; may explode if heated.

Precautionary statements

General : Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Open valve slowly. Use only with equipment cleaned for Oxygen service.

Prevention : Keep away from clothing and other combustible materials. Keep reduction valves, valves and fittings free from oil and grease.

Response : In case of fire: Stop leak if safe to do so.

Storage : Protect from sunlight. Store in a well-ventilated place.

Disposal : Not applicable.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : oxygen

Other means of identification : Molecular oxygen; Oxygen molecule; Pure oxygen; O2; UN 1072; Dioxygen; Oxygen USP, Aviator's Breathing Oxygen (ABO)

Product code : 001043

CAS number/other identifiers

CAS number : 7782-44-7

Ingredient name	%	CAS number
oxygen	100	7782-44-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : As this product is a gas, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.

Inhalation : No known significant effects or critical hazards.

Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : As this product is a gas, refer to the inhalation section.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Section 4. First aid measures

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. Oxidizing material. This material increases the risk of fire and may aid combustion. Contact with combustible material may cause fire. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

Hazardous thermal decomposition products : No specific data.

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Large spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Section 7. Handling and storage

Protective measures : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid breathing gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Avoid contact with eyes, skin and clothing. Empty containers retain product residue and can be hazardous. Keep away from clothing, incompatible materials and combustible materials. Keep reduction valves free from grease and oil.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). Separate from reducing agents and combustible materials. Store away from grease and oil. Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
oxygen	None.

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Section 8. Exposure controls/personal protection

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Gas. [Compressed gas.]

Color : Colorless. Blue.

Odor : Odorless.

Odor threshold : Not available.

pH : Not available.

Melting point : -218.4°C (-361.1°F)

Boiling point : -183°C (-297.4°F)

Critical temperature : -118.15°C (-180.7°F)

Flash point : [Product does not sustain combustion.]

Evaporation rate : Not available.

Flammability (solid, gas) : Extremely flammable in the presence of the following materials or conditions: reducing materials, combustible materials and organic materials.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : 1.1 (Air = 1)

Specific Volume (ft ^{3}/lb) : 12.0482

Gas Density (lb/ft ^{3}) : 0.083

Relative density : Not applicable.

Solubility : Not available.

Solubility in water : Not available.

Partition coefficient: n-octanol/water : 0.65

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not applicable.

Flow time (ISO 2431) : Not available.

Molecular weight : 32 g/mole

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Hazardous reactions or instability may occur under certain conditions of storage or use.
Conditions may include the following:
contact with combustible materials
Reactions may include the following:
risk of causing fire

Section 10. Stability and reactivity

Conditions to avoid : No specific data.

Incompatible materials : Highly reactive or incompatible with the following materials:
combustible materials
reducing materials
grease
oil

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity
Not available.

Irritation/Corrosion
Not available.

Sensitization
Not available.

Mutagenicity
Not available.

Carcinogenicity
Not available.

Reproductive toxicity
Not available.

Teratogenicity
Not available.

Specific target organ toxicity (single exposure)
Not available.

Specific target organ toxicity (repeated exposure)
Not available.

Aspiration hazard
Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.

Inhalation : No known significant effects or critical hazards.

Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.

Ingestion : As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics

Section 11. Toxicological information

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
oxygen	0.65	-	low

Mobility in soil

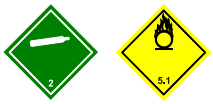
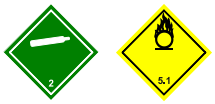
Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1072	UN1072	UN1072	UN1072	UN1072
UN proper shipping name	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED
Transport hazard class(es)	2.2 (5.1)	2.2	2.2 (5.1)	2.2 (5.1) 	2.2 (5.1) 
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Additional information

DOT Classification : **Limited quantity** Yes.
Quantity limitation Passenger aircraft/rail: 75 kg. Cargo aircraft: 150 kg.
Special provisions A52

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2), 2.23-2.25 (Class 5).
Explosive Limit and Limited Quantity Index 0.125
ERAP Index 3000
Passenger Carrying Vessel Index 50
Passenger Carrying Road or Rail Index 75
Special provisions 42

IATA : **Quantity limitation** Passenger and Cargo Aircraft: 75 kg. Cargo Aircraft Only: 150 kg.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: This material is listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

State regulations

Massachusetts : This material is listed.

New York : This material is not listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia : This material is listed or exempted.

Canada : This material is listed or exempted.

China : This material is listed or exempted.

Europe : This material is listed or exempted.

Japan : **Japan inventory (ENCS)**: Not determined.
Japan inventory (ISHL): Not determined.

New Zealand : This material is listed or exempted.

Philippines : This material is listed or exempted.

Section 15. Regulatory information

Republic of Korea : This material is listed or exempted.

Taiwan : This material is listed or exempted.

Thailand : Not determined.

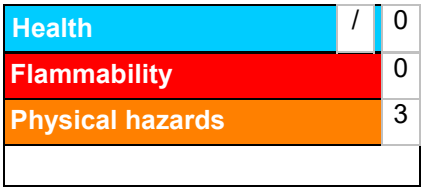
Turkey : Not determined.

United States : This material is active or exempted.

Viet Nam : This material is listed or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)

Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
OXIDIZING GASES - Category 1 GASES UNDER PRESSURE - Compressed gas	Expert judgment According to package

History

Date of printing : 9/22/2020

Date of issue/Date of revision : 9/22/2020

Date of previous issue : 2/3/2018

Version : 1

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient

Section 16. Other information

MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Safety Data Sheet

20ppm H2S, 60ppm CO, 1.45% METHANE, 15% OXYGEN in NITROGEN

Date of first issue: 11/01/2011 Revised date: 28/04/2020 Supersedes: 21/05/2015 Version: 3.0

SDS reference: MSA-10048280

Warning

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

SDS no : MSA-10048280

1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses : Industrial and professional. Perform risk assessment prior to use.
Test gas/Calibration gas.
Laboratory use.
Contact supplier for more information on uses.

Uses advised against : Consumer use.

1.3. Details of the supplier of the safety data sheet

Company identification : MSA (AUST) Pty Limited
11 Columbia Way Norwest Business Park
2153 Baulkham Hills NSW Australia
+61 2 9688 0333

1.4. Emergency telephone number

Emergency telephone number : Tel : 1800 812 588 (24 hour contact)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to WHS Regulation

Physical hazards	Gases under pressure : Compressed gas	H280

2.2. Label elements

Classification according to WHS Regulation

Hazard pictograms :

GHS04

Signal word : Warning

Hazard statements : H280 - Contains gas under pressure; may explode if heated..

Precautionary statements

- Storage : P403 - Store in a well-ventilated place..

2.3. Other hazards

: Asphyxiant in high concentrations.

SECTION 3: Composition/information on ingredients

3.1. Substances : Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to WHS Regulation
Nitrogen	(CAS-No.) 7727-37-9 (EC-No.) 231-783-9 (EC Index-No.) (REACH-no) *1	83.542	Press. Gas (Comp.), H280
Oxygen	(CAS-No.) 7782-44-7 (EC-No.) 231-956-9 (EC Index-No.) 008-001-00-8 (REACH-no) *1	15	Ox. Gas 1, H270 Press. Gas (Comp.), H280
Methane	(CAS-No.) 74-82-8 (EC-No.) 200-812-7 (EC Index-No.) 601-001-00-4 (REACH-no) 01-2119474442-39	1.45	Flam. Gas 1, H220 Press. Gas (Comp.), H280
Carbon monoxide	(CAS-No.) 630-08-0 (EC-No.) 211-128-3 (EC Index-No.) 006-001-00-2 (REACH-no) 01-2119480165-39	0.006	Flam. Gas 1, H220 Press. Gas (Comp.), H280 Acute Tox. 3 (Inhalation:gas), H331 Repr. 1A, H360D STOT RE 1, H372
Hydrogen sulphide	(CAS-No.) 7783-06-4 (EC-No.) 231-977-3 (EC Index-No.) 016-001-00-4 (REACH-no) 01-2119445737-29	0.002	Flam. Gas 1, H220 Press. Gas (Liq.), H280 Acute Tox. 2 (Inhalation:gas), H330 STOT SE 3, H335 Aquatic Acute 1, H400

Full text of R- and H-statements: see section 16

Contains no other components or impurities which will influence the classification of the product.

**1: Listed in Annex IV / V REACH, exempted from registration.*

**2: Registration deadline not expired.*

**3: Registration not required: Substance manufactured or imported < 1t/y.*

SECTION 4: First aid measures

4.1. Description of first aid measures

- Inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Perform cardiopulmonary resuscitation if breathing stopped.
- Skin contact : Adverse effects not expected from this product.
- Eye contact : Adverse effects not expected from this product.
- Ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed

: In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation.
Refer to section 11.

4.3. Indication of any immediate medical attention and special treatment needed

: None.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Water spray or fog.

- Unsuitable extinguishing media : Do not use water jet to extinguish.

5.2. Special hazards arising from the substance or mixture

Specific hazards : Exposure to fire may cause containers to rupture/explode.

Hazardous combustion products : None that are more hazardous than the product itself.

5.3. Advice for fire-fighters

Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.
If possible, stop flow of product.
Use water spray or fog to knock down fire fumes if possible.
Move containers away from the fire area if this can be done without risk.

Special protective equipment for fire fighters : Use self-contained breathing apparatus.
Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
Standard EN 469 - Protective clothing for firefighters. Standard - EN 659: Protective gloves for firefighters.

Hazchem Code : 2TE

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

: Try to stop release.
Evacuate area.
Monitor concentration of released product.
Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
Ensure adequate air ventilation.
Act in accordance with local emergency plan.
Stay upwind.

6.2. Environmental precautions

: Try to stop release.

6.3. Methods and material for containment and cleaning up

: Ventilate area.

6.4. Reference to other sections

: See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Safe use of the product	:	The product must be handled in accordance with good industrial hygiene and safety procedures. Only experienced and properly instructed persons should handle gases under pressure. Consider pressure relief device(s) in gas installations. Ensure the complete gas system was (or is regularily) checked for leaks before use. Do not smoke while handling product. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Use only oxygen approved lubricants and oxygen approved sealings. Avoid suck back of water, acid and alkalis. Do not breathe gas. Avoid release of product into atmosphere.
Safe handling of the gas receptacle	:	Refer to supplier's container handling instructions. Do not allow backfeed into the container. Protect cylinders from physical damage; do not drag, roll, slide or drop. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Keep container valve outlets clean and free from contaminants particularly oil and water. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to transfer gases from one cylinder/container to another. Never use direct flame or electrical heating devices to raise the pressure of a container. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents. Suck back of water into the container must be prevented. Open valve slowly to avoid pressure shock. Containers should be stored in the vertical position and properly secured to prevent them from falling over.

7.2. Conditions for safe storage, including any incompatibilities

: Observe all regulations and local requirements regarding storage of containers.
Containers should not be stored in conditions likely to encourage corrosion.
Container valve guards or caps should be in place.
Containers should be stored in the vertical position and properly secured to prevent them from falling over.
Stored containers should be periodically checked for general condition and leakage.
Keep container below 50°C in a well ventilated place.
Store containers in location free from fire risk and away from sources of heat and ignition.
Keep away from combustible materials.

7.3. Specific end use(s)

: None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Hydrogen sulphide (7783-06-4)		
OEL : Occupational Exposure Limits		
Australia	TWA (mg/m³)	14 mg/m³
	TWA (ppm)	10 ppm
	STEL (mg/m³)	21 mg/m³
	STEL (ppm)	15 ppm

Carbon monoxide (630-08-0)		
OEL : Occupational Exposure Limits		
Australia	TWA (mg/m³)	34 mg/m³
	TWA (ppm)	30 ppm

Carbon monoxide (630-08-0)	
DNEL: Derived no effect level (Workers)	
Acute - local effects, inhalation	100 ppm
Acute - systemic effects, inhalation	117 mg/m³
Long-term - local effects, inhalation	20 ppm
Long-term - systemic effects, inhalation	23 mg/m³

Carbon monoxide (630-08-0)

8.2. Exposure controls

8.2.1. Appropriate engineering controls

: Provide adequate general and local exhaust ventilation.
Systems under pressure should be regularly checked for leakages.
Ensure exposure is below occupational exposure limits (where available).
Oxygen detectors should be used when asphyxiating gases may be released.
Consider the use of a work permit system e.g. for maintenance activities.

8.2.2. Individual protection measures, e.g. personal protective equipment

: A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered:
PPE compliant to the recommended EN/ISO standards should be selected.

• Eye/face protection : Wear safety glasses with side shields.
Standard EN 166 - Personal eye-protection - specifications

• Skin protection

- Hand protection : Wear working gloves when handling gas containers.
Standard EN 388 - Protective gloves against mechanical risk.

- Other : Wear safety shoes while handling containers.
Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

• Respiratory protection : Gas filters may be used if all surrounding conditions e.g. type and concentration of the contaminant(s) and duration of use are known.
Use gas filters with full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers.
Gas filters do not protect against oxygen deficiency.
Self contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmospheres.
Standard EN 14387 - Gas filter(s), combined filter(s) and full face mask - EN 136.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

• Thermal hazards : None necessary.

8.2.3. Environmental exposure controls

: Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

- Physical state at 20°C / 101.3kPa : Gas.
- Colour : Mixture contains one or more component(s) which have the following colour(s):
Colourless.

Odour : There may be no odour warning properties, odour is subjective and inadequate to warn of overexposure.
Mixture contains one or more component(s) which have the following odour:
Rotten eggs.

Odour threshold	:	Odour threshold is subjective and inadequate to warn of overexposure.
pH value	:	Not applicable for gas mixtures.
Molar mass	:	Not applicable for gas mixtures.
Melting point	:	Not applicable for gas mixtures.
Boiling point	:	Not applicable for gas mixtures.
Flash point	:	Not applicable for gas mixtures.
Evaporation rate (ether=1)	:	Not applicable for gas mixtures.
Flammability range	:	Non flammable.
Vapour pressure [20°C]	:	Not applicable.
Vapour pressure [50°C]	:	Not applicable.
Relative density, gas (air=1)	:	Lighter or similar to air.
Solubility in water	:	No data available
Partition coefficient n-octanol/water [log Kow]	:	Not applicable for gas mixtures.
Auto-ignition temperature	:	Non flammable.
Decomposition point [°C]	:	Not applicable.
Viscosity [20°C]	:	Not applicable.
Explosive Properties	:	Not applicable.
Oxidising Properties	:	Not applicable.

9.2. Other information

Other data : None.

SECTION 10: Stability and reactivity

10.1. Reactivity

: No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

: Stable under normal conditions.

10.3. Possibility of hazardous reactions

: None.

10.4. Conditions to avoid

: Avoid moisture in installation systems.

10.5. Incompatible materials

: None.
For additional information on compatibility refer to ISO 11114.

10.6. Hazardous decomposition products

: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Classification criteria are not met.
Toxicological effects not expected from this product if occupational exposure limit values are not exceeded.

Hydrogen sulphide (7783-06-4)	
LC50 inhalation rat (ppm)	356 ppm/4h

Carbon monoxide (630-08-0)	
LC50 inhalation rat (ppm)	3760 ppm/1h 1300 ppm/4h

Skin corrosion/irritation : No known effects from this product.

Serious eye damage/irritation : No known effects from this product.

Respiratory or skin sensitisation : No known effects from this product.

Germ cell mutagenicity : No known effects from this product.

Carcinogenicity : No known effects from this product.

Toxic for reproduction : Fertility : No known effects from this product.

Toxic for reproduction : unborn child : No known effects from this product.

STOT-single exposure : No known effects from this product.

STOT-repeated exposure : No known effects from this product.

Aspiration hazard : Not applicable for gases and gas mixtures.

SECTION 12: Ecological information

12.1. Toxicity

Assessment : Classification criteria are not met.

12.2. Persistence and degradability

Assessment : No data available.

12.3. Bioaccumulative potential

Assessment : No data available.

12.4. Mobility in soil

Assessment : No data available.

Assessment : Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.

12.5. Results of PBT and vPvB assessment

Assessment : Not classified as PBT or vPvB.

12.6. Other adverse effects

: No known effects from this product.

Effect on the ozone layer : None.

Effect on global warming : Contains greenhouse gas(es).

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Contact supplier if guidance is required.
Do not discharge into any place where its accumulation could be dangerous.
Ensure that the emission levels from local regulations or operating permits are not exceeded.
Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at http://www.eiga.org for more guidance on suitable disposal methods.
Return unused product in original cylinder to supplier.

List of hazardous waste codes (from Commission Decision 2001/118/EC) : 16 05 05 : Gases in pressure containers other than those mentioned in 16 05 04.

13.2. Additional information

: None.
External treatment and disposal of waste should comply with applicable local and/or national regulations

SECTION 14: Transport information

14.1. UN number

UN-No. : 1956

14.2. UN proper shipping name

Transport by road/rail (ADR/RID) : COMPRESSED GAS, N.O.S. (Nitrogen, Methane)

Transport by air (ICAO-TI / IATA-DGR) : Compressed gas, n.o.s. (Nitrogen, Methane)

Transport by sea (IMDG) : COMPRESSED GAS, N.O.S. (Nitrogen, Methane)

14.3. Transport hazard class(es)

Labelling :

2.2 : Non-flammable, non-toxic gases

Transport by road/rail (ADG)

Class : 2
Hazchem Code : 2TE
Hazard identification number : 20
Tunnel Restriction : E - Passage forbidden through tunnels of category E

Transport by air (ICAO-TI / IATA-DGR)

Class / Div. (Sub. risk(s)) : 2.2

Transport by sea (IMDG)

Class / Div. (Sub. risk(s)) : 2.2
Emergency Schedule (EmS) - Fire : F-C
Emergency Schedule (EmS) - Spillage : S-V

14.4. Packing group

Transport by road/rail (ADR/RID) : Not applicable
Transport by air (ICAO-TI / IATA-DGR) : Not applicable
Transport by sea (IMDG) : Not applicable

14.5. Environmental hazards

Transport by road/rail (ADR/RID) : None.

Transport by air (ICAO-TI / IATA-DGR) : None.

Transport by sea (IMDG) : None.

14.6. Special precautions for user

Packing Instruction(s)

Transport by road/rail (ADR/RID)	:	P200
Transport by air (ICAO-TI / IATA-DGR)		
Passenger and Cargo Aircraft	:	200
Cargo Aircraft only	:	200
Transport by sea (IMDG)	:	P200

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment.
Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.
Before transporting product containers:
- Ensure there is adequate ventilation.
- Ensure that containers are firmly secured.
- Ensure cylinder valve is closed and not leaking.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Ensure valve protection device (where provided) is correctly fitted.

HAZCHEM CODE : 2TE

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

: Not applicable.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations

Ensure all national/local regulations are observed.

15.2. Chemical safety assessment

: A CSA does not need to be carried out for this product.

For the following substances of this mixture a chemical safety assessment has been carried out
Carbon monoxide

SECTION 16: Other information

Indication of changes : Revised safety data sheet in accordance with commission regulation (EU) No 453/2010.

Abbreviations and acronyms : ATE - Acute Toxicity Estimate. CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008. REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006. EINECS - European Inventory of Existing Commercial Chemical Substances. CAS# - Chemical Abstract Service number. PPE - Personal Protection Equipment. LC50 - Lethal Concentration to 50 % of a test population. RMM - Risk Management Measures. PBT - Persistent, Bioaccumulative and Toxic. vPvB - Very Persistent and Very Bioaccumulative. STOT- SE : Specific Target Organ Toxicity - Single Exposure. CSA - Chemical Safety Assessment. EN - European Standard. UN - United Nations. ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road. IATA - International Air Transport Association. IMDG code - International Maritime Dangerous Goods. RID - Regulations concerning the International Carriage of Dangerous Goods by Rail. WGK - Water Hazard Class. STOT - RE : Specific Target Organ Toxicity - Repeated Exposure.

Training advice : Receptacle under pressure.

Full text of H-statements

Acute Tox. 2 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 2
Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3
Aquatic Acute 1	Hazardous to the aquatic environment — Acute Hazard, Category 1
Flam. Gas 1	Flammable gases, Category 1
Ox. Gas 1	Oxidising Gases, Category 1
Press. Gas (Comp.)	Gases under pressure : Compressed gas
Press. Gas (Liq.)	Gases under pressure : Liquefied gas
Repr. 1A	Reproductive toxicity, Category 1A
STOT RE 1	Specific target organ toxicity — Repeated exposure, Category 1
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
H220	Extremely flammable gas.
H270	May cause or intensify fire; oxidiser.
H280	Contains gas under pressure; may explode if heated.
H330	Fatal if inhaled.
H331	Toxic if inhaled.
H335	May cause respiratory irritation.
H360D	May damage the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.

DISCLAIMER OF LIABILITY : Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.
Details given in this document are believed to be correct at the time of going to press.
Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

End of document

SAFETY DATA SHEET

Oxygen

Section 1. Identification

GHS product identifier : Oxygen

Chemical name : oxygen

Other means of identification : Molecular oxygen; Oxygen molecule; Pure oxygen; O2; UN 1072; Dioxygen; Oxygen USP, Aviator's Breathing Oxygen (ABO)

Product type : Gas.

Product use : Synthetic/Analytical chemistry.

Synonym : Molecular oxygen; Oxygen molecule; Pure oxygen; O2; UN 1072; Dioxygen; Oxygen USP, Aviator's Breathing Oxygen (ABO)

SDS # : 001043

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : OXIDIZING GASES - Category 1
GASES UNDER PRESSURE - Compressed gas

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : May cause or intensify fire; oxidizer.
Contains gas under pressure; may explode if heated.

Precautionary statements

General : Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Open valve slowly. Use only with equipment cleaned for Oxygen service.

Prevention : Keep away from clothing and other combustible materials. Keep reduction valves, valves and fittings free from oil and grease.

Response : In case of fire: Stop leak if safe to do so.

Storage : Protect from sunlight. Store in a well-ventilated place.

Disposal : Not applicable.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : oxygen

Other means of identification : Molecular oxygen; Oxygen molecule; Pure oxygen; O2; UN 1072; Dioxygen; Oxygen USP, Aviator's Breathing Oxygen (ABO)

Product code : 001043

CAS number/other identifiers

CAS number : 7782-44-7

Ingredient name	%	CAS number
oxygen	100	7782-44-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : As this product is a gas, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.

Inhalation : No known significant effects or critical hazards.

Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : As this product is a gas, refer to the inhalation section.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Section 4. First aid measures

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. Oxidizing material. This material increases the risk of fire and may aid combustion. Contact with combustible material may cause fire. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

Hazardous thermal decomposition products : No specific data.

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Large spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Section 7. Handling and storage

Protective measures : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid breathing gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Avoid contact with eyes, skin and clothing. Empty containers retain product residue and can be hazardous. Keep away from clothing, incompatible materials and combustible materials. Keep reduction valves free from grease and oil.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). Separate from reducing agents and combustible materials. Store away from grease and oil. Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
oxygen	None.

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Section 8. Exposure controls/personal protection

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Gas. [Compressed gas.]

Color : Colorless. Blue.

Odor : Odorless.

Odor threshold : Not available.

pH : Not available.

Melting point : -218.4°C (-361.1°F)

Boiling point : -183°C (-297.4°F)

Critical temperature : -118.15°C (-180.7°F)

Flash point : [Product does not sustain combustion.]

Evaporation rate : Not available.

Flammability (solid, gas) : Extremely flammable in the presence of the following materials or conditions: reducing materials, combustible materials and organic materials.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : 1.1 (Air = 1)

Specific Volume (ft ^{3}/lb) : 12.0482

Gas Density (lb/ft ^{3}) : 0.083

Relative density : Not applicable.

Solubility : Not available.

Solubility in water : Not available.

Partition coefficient: n-octanol/water : 0.65

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not applicable.

Flow time (ISO 2431) : Not available.

Molecular weight : 32 g/mole

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Hazardous reactions or instability may occur under certain conditions of storage or use.
Conditions may include the following:
contact with combustible materials
Reactions may include the following:
risk of causing fire

Section 10. Stability and reactivity

Conditions to avoid : No specific data.

Incompatible materials : Highly reactive or incompatible with the following materials:
combustible materials
reducing materials
grease
oil

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity
Not available.

Irritation/Corrosion
Not available.

Sensitization
Not available.

Mutagenicity
Not available.

Carcinogenicity
Not available.

Reproductive toxicity
Not available.

Teratogenicity
Not available.

Specific target organ toxicity (single exposure)
Not available.

Specific target organ toxicity (repeated exposure)
Not available.

Aspiration hazard
Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.

Inhalation : No known significant effects or critical hazards.

Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.

Ingestion : As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics

Section 11. Toxicological information

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
oxygen	0.65	-	low

Mobility in soil

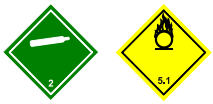
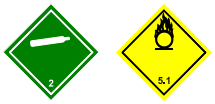
Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1072	UN1072	UN1072	UN1072	UN1072
UN proper shipping name	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED
Transport hazard class(es)	2.2 (5.1)	2.2	2.2 (5.1)	2.2 (5.1) 	2.2 (5.1) 
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Additional information

DOT Classification : **Limited quantity** Yes.
Quantity limitation Passenger aircraft/rail: 75 kg. Cargo aircraft: 150 kg.
Special provisions A52

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2), 2.23-2.25 (Class 5).
Explosive Limit and Limited Quantity Index 0.125
ERAP Index 3000
Passenger Carrying Vessel Index 50
Passenger Carrying Road or Rail Index 75
Special provisions 42

IATA : **Quantity limitation** Passenger and Cargo Aircraft: 75 kg. Cargo Aircraft Only: 150 kg.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: This material is listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

State regulations

Massachusetts : This material is listed.

New York : This material is not listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia : This material is listed or exempted.

Canada : This material is listed or exempted.

China : This material is listed or exempted.

Europe : This material is listed or exempted.

Japan : **Japan inventory (ENCS)**: Not determined.
Japan inventory (ISHL): Not determined.

New Zealand : This material is listed or exempted.

Philippines : This material is listed or exempted.

Section 15. Regulatory information

Republic of Korea : This material is listed or exempted.

Taiwan : This material is listed or exempted.

Thailand : Not determined.

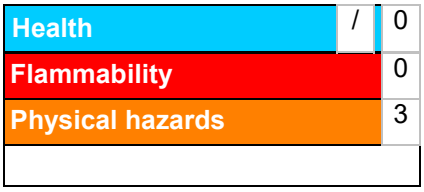
Turkey : Not determined.

United States : This material is active or exempted.

Viet Nam : This material is listed or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)

Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
OXIDIZING GASES - Category 1 GASES UNDER PRESSURE - Compressed gas	Expert judgment According to package

History

Date of printing : 9/22/2020

Date of issue/Date of revision : 9/22/2020

Date of previous issue : 2/3/2018

Version : 1

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient

Section 16. Other information

MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

POLY-DRILL LINSEED SOAP

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
POLY-DRILL LINSEED SOAP

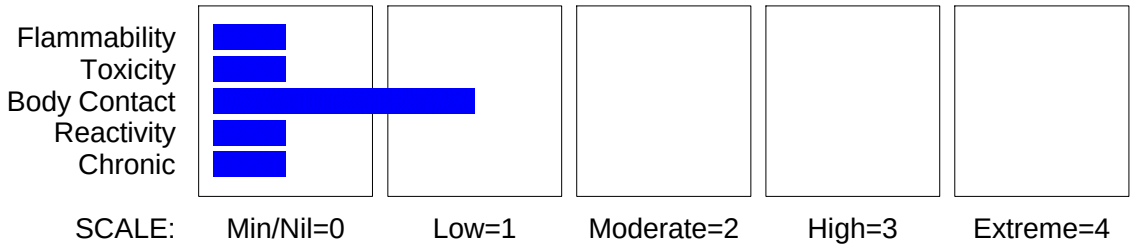
STATEMENT OF HAZARDOUS NATURE
Not considered a hazardous substance according to the Controlled Products Regulations

SUPPLIER
Company: Poly- Drill
Address:
2192 - 8800 Venture Ave SE
Calgary
Alberta, T3S 0A2
CAN
Telephone: +1 403 259 5112
Emergency Tel: +1 403 540 7080
Fax: +1 403 255 7185

PRODUCT USE
Core barrel lubricant.

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS



CANADIAN WHMIS SYMBOLS
None

EMERGENCY OVERVIEW

RISK

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED
■ The material has NOT been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. The material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (e.g liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract

continued...

discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.

EYE
■ Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).
■ The liquid may produce eye discomfort causing transient smarting, blinking.

SKIN
■ The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.
■ Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

INHALED
■ The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

CHRONIC HEALTH EFFECTS
■ Principal routes of exposure are by accidental skin and eye contact and by inhalation of vapours especially at higher temperatures.
As with any chemical product, contact with unprotected bare skin; inhalation of vapour, mist or dust in work place atmosphere; or ingestion in any form, should be avoided by observing good occupational work practice.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
natural fatty acids		100

Section 4 - FIRST AID MEASURES

SWALLOWED
• Immediately give a glass of water.
• First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

EYE
■ If this product comes in contact with the eyes:
• Wash out immediately with fresh running water.
• Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
• Seek medical attention without delay; if pain persists or recurs seek medical attention.
• Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN
■ If skin or hair contact occurs:
• Flush skin and hair with running water (and soap if available).
• Seek medical attention in event of irritation.

INHALED
• If fumes or combustion products are inhaled remove from contaminated area.

continued...

• Other measures are usually unnecessary.

NOTES TO PHYSICIAN
■ Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (kPa): Not Available
Upper Explosive Limit (%): Not Available
Specific Gravity (water=1): 1.0-1.01
Lower Explosive Limit (%): Not Available

EXTINGUISHING MEDIA
• There is no restriction on the type of extinguisher which may be used.
• Use extinguishing media suitable for surrounding area.

FIRE FIGHTING
• Alert Fire Brigade and tell them location and nature of hazard.
• Wear breathing apparatus plus protective gloves for fire only.
• Prevent, by any means available, spillage from entering drains or water courses.
• Use fire fighting procedures suitable for surrounding area.
• DO NOT approach containers suspected to be hot.
• Cool fire exposed containers with water spray from a protected location.
• If safe to do so, remove containers from path of fire.
• Equipment should be thoroughly decontaminated after use.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS
■ May emit poisonous fumes.

FIRE INCOMPATIBILITY
■ None known.

PERSONAL PROTECTION

Glasses:	Gloves:
Chemical goggles.	PVC chemical resistant type.

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
■ Slippery when spilt.
• Clean up all spills immediately.
• Avoid breathing vapours and contact with skin and eyes.
• Control personal contact by using protective equipment.
• Contain and absorb spill with sand, earth, inert material or vermiculite.
• Wipe up.
• Place in a suitable, labelled container for waste disposal.

MAJOR SPILLS
■ Slippery when spilt.
Moderate hazard.
• Clear area of personnel and move upwind.
• Alert Fire Brigade and tell them location and nature of hazard.
• Wear breathing apparatus plus protective gloves.
• Prevent, by any means available, spillage from entering drains or water course.
• Stop leak if safe to do so.
• Contain spill with sand, earth or vermiculite.

continued...

- Collect recoverable product into labelled containers for recycling.
- Neutralise/decontaminate residue.
- Collect solid residues and seal in labelled drums for disposal.
- Wash area and prevent runoff into drains.
- After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
- If contamination of drains or waterways occurs, advise emergency services.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- DO NOT allow material to contact humans, exposed food or food utensils.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately. Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

RECOMMENDED STORAGE METHODS

- Polyethylene or polypropylene container.
- Packing as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS

+	+	+	+	X	+

+: May be stored together
O: May be stored together with specific preventions
X: Must not be stored together

continued...

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

MATERIAL DATA
POLY-DRILL LINSEED SOAP:
Not available

PERSONAL PROTECTION

EYE
- Safety glasses with side shields
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET
■ Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:
- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739).
- When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended.
- When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended.
- Contaminated gloves should be replaced.

Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.
- Wear chemical protective gloves, eg. PVC.
- Wear safety footwear or safety gumboots, eg. Rubber.

OTHER
- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.
- Eye wash unit.

continued...

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.
Use appropriate NIOSH-certified respirator based on informed professional judgement. In conditions where no reasonable estimate of exposure can be made, assume the exposure is in a concentration IDLH and use NIOSH-certified full face pressure demand SCBA with a minimum service life of 30 minutes, or a combination full facepiece pressure demand SAR with auxiliary self-contained air supply. Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.

ENGINEERING CONTROLS
■ General exhaust is adequate under normal operating conditions. If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES
Liquid.
Mixes with water.

State	Liquid	Molecular Weight	Not Applicable
Melting Range (℃)	0 (freezing pt)	Viscosity	Not Available
Boiling Range (℃)	100	Solubility in water (g/L)	Miscible
Flash Point (℃)	Not Available	pH (1% solution)	Not Available
Decomposition Temp (℃)	Not Available	pH (as supplied)	9.5-11
Autoignition Temp (℃)	Not Available	Vapour Pressure (kPa)	Not Available
Upper Explosive Limit (%)	Not Available	Specific Gravity (water=1)	1.0-1.01
Lower Explosive Limit (%)	Not Available	Relative Vapour Density (air=1)	Not Available
Volatile Component (%vol)	Not Available	Evaporation Rate	Not Available

APPEARANCE
Amber-brown liquid with a faint soap odour; mixes with water.

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY
• Presence of incompatible materials.
• Product is considered stable.
• Hazardous polymerisation will not occur.

STORAGE INCOMPATIBILITY
■ None known.

For incompatible materials - refer to Section 7 - Handling and Storage.

continued...

Section 11 - TOXICOLOGICAL INFORMATION

Poly-Drill Linseed Soap

TOXICITY AND IRRITATION
■ Not available. Refer to individual constituents.

Section 12 - ECOLOGICAL INFORMATION

Refer to data for ingredients, which follows:

POLY-DRILL LINSEED SOAP:
■ DO NOT discharge into sewer or waterways.
May be harmful to fauna if not disposed of according to Section 13 and legislative requirements. [AMC]

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Instructions
All waste must be handled in accordance with local, state and federal regulations.
¦ Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.
A Hierarchy of Controls seems to be common - the user should investigate:
• Reduction
• Reuse
• Recycling
• Disposal (if all else fails)
This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.
• DO NOT allow wash water from cleaning or process equipment to enter drains.
• It may be necessary to collect all wash water for treatment before disposal.
• In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
• Where in doubt contact the responsible authority.
• Recycle wherever possible.
• Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.
• Dispose of by: burial in a land-fill specifically licenced to accept chemical and / or pharmaceutical wastes or incineration in a licenced apparatus (after admixture with suitable combustible material).
• Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

Section 14 - TRANSPORTATION INFORMATION

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: TDG, IATA, IMDG

continued...

Section 15 - REGULATORY INFORMATION

REGULATIONS

No data for Poly-Drill Linseed Soap (CW: 16-8181)

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Section 16 - OTHER INFORMATION

■ Classification of the mixture and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references. A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

■ For detailed advice on Personal Protective Equipment, refer to the following Canadian Standards:
CAN/CSA-Z195 - Protective Footwear
Z195.1 - Guideline on Selection, Use, and Care of Protective Footwear
CAN/CSA-Z94.3 - Industrial Eye and Face Protectors
Z94.3.1 - Protective Eyewear User's Guide
CSA-Z94.4 - Selection, Use, and Care of Respirators
CAN/CSA-Z180.1 - Compressed Breathing Air and Systems.

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Issue Date: 7-Oct-2008
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SAFETY DATA SHEET

Propane

Section 1. Identification

GHS product identifier : Propane

Chemical name : propane

Other means of identification : Propyl hydride; n-Propane; Dimethyl methane; Bottled gas; propane in gaseous state; propane liquefied, n-Propane; Dimethylmethane; Freon 290; Liquefied petroleum gas; Lpg; Propyl hydride; R 290; C3H8; UN 1075; UN 1978; A-108; Hydrocarbon propellant.

Product type : Liquefied gas

Product use : Synthetic/Analytical chemistry.

Synonym : Propyl hydride; n-Propane; Dimethyl methane; Bottled gas; propane in gaseous state; propane liquefied, n-Propane; Dimethylmethane; Freon 290; Liquefied petroleum gas; Lpg; Propyl hydride; R 290; C3H8; UN 1075; UN 1978; A-108; Hydrocarbon propellant.

SDS # : 001045

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE GASES - Category 1
GASES UNDER PRESSURE - Liquefied gas

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Extremely flammable gas.
Contains gas under pressure; may explode if heated.
May cause frostbite.
May displace oxygen and cause rapid suffocation.
May form explosive mixtures with air.

Precautionary statements

General : Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Always keep container in upright position. Approach suspected leak area with caution.

Prevention : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Response : Leaking gas fire: Do not extinguish, unless leak can be stopped safely. In case of leakage, eliminate all ignition sources.

Storage : Protect from sunlight. Store in a well-ventilated place.

Section 2. Hazards identification

Disposal : Not applicable.

Hazards not otherwise classified : Liquid can cause burns similar to frostbite.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : propane

Other means of identification : Propyl hydride; n-Propane; Dimethyl methane; Bottled gas; propane in gaseous state; propane liquefied, n-Propane; Dimethylmethane; Freon 290; Liquefied petroleum gas; Lpg; Propyl hydride; R 290; C3H8; UN 1075; UN 1978; A-108; Hydrocarbon propellant.

Product code : 001045

CAS number/other identifiers

CAS number : 74-98-6

Ingredient name	%	CAS number
Propane	100	74-98-6

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Wash contaminated skin with soap and water. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Get medical attention if symptoms occur. In case of contact with liquid, warm frozen tissues slowly with lukewarm water and get medical attention. Do not rub affected area. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if adverse health effects persist or are severe. Ingestion of liquid can cause burns similar to frostbite. If frostbite occurs, get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. As this product rapidly becomes a gas when released, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Liquid can cause burns similar to frostbite.

Inhalation : No known significant effects or critical hazards.

Skin contact : Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.

Section 4. First aid measures

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : Ingestion of liquid can cause burns similar to frostbite.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:, frostbite

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:, frostbite

Ingestion : Adverse symptoms may include the following:, frostbite

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. Extremely flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Gas may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back, causing fire or explosion.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. For incidents involving large quantities, thermally insulated undergarments and thick textile or leather gloves should be worn.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Accidental releases pose a serious fire or explosion hazard. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Section 6. Accidental release measures

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Large spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Do not get in eyes or on skin or clothing. Avoid breathing gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Eliminate all ignition sources. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Propane	**NIOSH REL (United States, 10/2016).** TWA: 1800 mg/m³ 10 hours. TWA: 1000 ppm 10 hours. **OSHA PEL (United States, 5/2018).** TWA: 1800 mg/m³ 8 hours. TWA: 1000 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** TWA: 1800 mg/m³ 8 hours. TWA: 1000 ppm 8 hours. **ACGIH TLV (United States, 3/2019). Oxygen Depletion [Asphyxiant]. Explosive potential.**

Section 8. Exposure controls/personal protection

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. If contact with the liquid is possible, insulated gloves suitable for low temperatures should be worn. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Thermal hazards : If there is a risk of contact with the liquid, all protective equipment worn should be suitable for use with extremely low temperature materials.

Section 9. Physical and chemical properties

Appearance

Physical state : Gas.

Color : Colorless.

Odor : Odorless.BUT MAY HAVE SKUNK ODOR ADDED.

Odor threshold : Not available.

pH : Not available.

Melting point : -187.6°C (-305.7°F)

Boiling point : -42.1°C (-43.8°F)

Section 9. Physical and chemical properties

Critical temperature : 96.55°C (205.8°F)

Flash point : Closed cup: -104°C (-155.2°F)
Open cup: -104°C (-155.2°F)

Evaporation rate : Not available.

Flammability (solid, gas) : Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and oxidizing materials.

Lower and upper explosive (flammable) limits : Lower: 1.8%
Upper: 8.4%

Vapor pressure : 109 (psig)

Vapor density : 1.6 (Air = 1)

Specific Volume (ft^3/lb) : 8.6206

Gas Density (lb/ft^3) : 0.116 (25°C / 77 to °F)

Relative density : Not applicable.

Solubility : Not available.

Solubility in water : 0.0244 g/l

Partition coefficient: n-octanol/water : 1.09

Auto-ignition temperature : 287°C (548.6°F)

Decomposition temperature : Not available.

Viscosity : Not applicable.

Flow time (ISO 2431) : Not available.

Molecular weight : 44.11 g/mole

Aerosol product

Heat of combustion : -46012932 J/kg

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow gas to accumulate in low or confined areas.

Incompatible materials : Oxidizers

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Not available.

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Liquid can cause burns similar to frostbite.

Inhalation : No known significant effects or critical hazards.

Skin contact : Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.

Ingestion : Ingestion of liquid can cause burns similar to frostbite.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:, frostbite

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:, frostbite

Ingestion : Adverse symptoms may include the following:, frostbite

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Section 11. Toxicological information

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Propane	1.09	-	low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1978	UN1978	UN1978	UN1978	UN1978
UN proper shipping name	PROPANE SEE ALSO PETROLEUM GASES, LIQUEFIED	PROPANE	PROPANE SEE ALSO PETROLEUM GASES, LIQUEFIED (propane)	PROPANE	PROPANE
Transport hazard class(es)	2.1	2.1	2.1	2.1	2.1
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Additional information

DOT Classification : **Limited quantity**
Yes.

Packaging instruction
Passenger aircraft
Quantity limitation: Forbidden.

Cargo aircraft
Quantity limitation: 150 kg

Special provisions
19, T50

For domestic transportation only, UN1075 may be substituted for the UN number shown as long as the substitution is consistent on package markings, shipping papers, and emergency response information. See 49 CFR 172.102 Special Provision 19.
Containers of NON-ODORIZED liquefied petroleum gas must be marked either NON-ODORIZED or NOT ODORIZED as of September 30, 2006. [49 CFR 172.301(f), 326(d), 330(c) and 338(e)]

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2).
Explosive Limit and Limited Quantity Index 0.125
ERAP Index 3000
Passenger Carrying Vessel Index 65
Passenger Carrying Road or Rail Index Forbidden
Special provisions 29, 42

IATA : **Quantity limitation** Passenger and Cargo Aircraft: Forbidden. Cargo Aircraft Only: 150 kg.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 14. Transport information

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

Clean Air Act (CAA) 112 regulated flammable substances: propane

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

State regulations

Massachusetts : This material is listed.

New York : This material is not listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia : This material is listed or exempted.

Canada : This material is listed or exempted.

China : This material is listed or exempted.

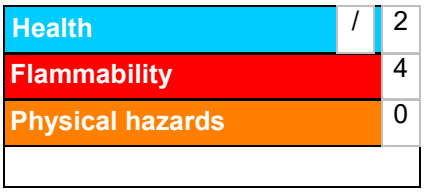
Europe : This material is listed or exempted.

Section 15. Regulatory information

Japan	:	**Japan inventory (ENCS)**: This material is listed or exempted. **Japan inventory (ISHL)**: This material is listed or exempted.
New Zealand	:	This material is listed or exempted.
Philippines	:	This material is listed or exempted.
Republic of Korea	:	This material is listed or exempted.
Taiwan	:	This material is listed or exempted.
Thailand	:	Not determined.
Turkey	:	This material is listed or exempted.
United States	:	This material is active or exempted.
Viet Nam	:	This material is listed or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)

Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
FLAMMABLE GASES - Category 1 GASES UNDER PRESSURE - Liquefied gas	Expert judgment Expert judgment

History

Date of printing	:	11/15/2020
Date of issue/Date of revision	:	11/15/2020
Date of previous issue	:	10/5/2020
Version	:	1.02

Section 16. Other information

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Other special considerations : The information below is given to call attention to the issue of “Naturally occurring radioactive materials”. Although Radon-222 levels in the product represented by this MSDS do not present any direct Radon exposure hazard, customers should be aware of the potential for Radon daughter build up within their processing systems, whatever the source of their product streams. Radon-222 is a naturally occurring radioactive gas which can be a contaminant in natural gas. During subsequent processing , Radon tends to be concentrated in Liquefied Petroleum Gas streams and in product streams having a similar boiling point range. Industry experience has shown that this product may contain small amounts of Radon-222 and its radioactive decay products, called Radon “daughters”. The actual concentration of Radon-222 and radioactive daughters in the delivered product is dependent on the geographical source of the natural gas and storage time prior to delivery. Process equipment (i.e. lines, filters, pumps and reaction units) may accumulate significant levels of radioactive daughters and show a gamma radiation reading during operation. A potential external radiation hazard exists at or near any pipe valve or vessel containing a Radon enriched stream, or containing internal deposits of radioactive material due to the transmission of gamma radiation through its wall. Field studies reported in the literature have not shown any conditions that subject workers to cumulative exposures in excess of general population limits. Equipment emitting gamma radiation should be presumed to be internally contaminated with alpha emitting decay products which may be a hazard if inhaled or ingested. Protective equipment such as coveralls, gloves, and respirator (NIOSH/MHSA approved for high efficiency particulates and radionuclides, or supplied air) should be worn by personnel entering a vessel or working on contaminated process equipment to prevent skin contamination, ingestion, or inhalation of any residues containing alpha radiation. Airborne contamination may be minimized by handling scale and/or contaminated materials in a wet state.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Material Safety Data Sheet

RINSE DRY

Section 1. Chemical product and company identification

Trade name : RINSE DRY

Product use : Rinse Additive

Supplier : Ecolab Co.
5105 Tomken Road
Mississauga ON L4W 2X5
1-800-352-5326

Code : 913590

Date of issue **30-June-2009**

EMERGENCY HEALTH INFORMATION: 1-800-328-0026
Outside United States and Canada CALL 1-651-222-5352 (in USA)

Section 2. Hazards identification

Physical state : Liquid. [Liquid.]

Emergency overview : CAUTION !

MAY CAUSE EYE IRRITATION.

Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Routes of entry : Skin contact, Eye contact, Inhalation, Ingestion

Potential acute health effects

Eyes : Moderately irritating to eyes.

Skin : Slightly irritating to the skin.

Inhalation : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

See toxicological information (section 11)

Section 3. Composition/information on ingredients

Name	CAS number	% by weight
alcohols, c10-16, ethoxylated	68002-97-1	3 - 7

Section 4. First-aid measures

Eye contact : In case of contact, immediately flush eyes with plenty of water. Remove contact lenses and flush again. Get medical attention if irritation persists.

Skin contact : In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Inhalation : If inhaled, remove to fresh air.

Ingestion : Do not induce vomiting. Never give anything by mouth to an unconscious person. If irritation persists, get medical attention.

Section 5. Fire-fighting measures

Auto-ignition temperature : Not available.

Flash point : > 100°C

Flammable limits : Not available.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Fire-fighting media and instructions : Use an extinguishing agent suitable for the surrounding fire.

Dyke area of fire to prevent runoff.

In a fire or if heated, a pressure increase will occur and the container may burst.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Risk of explosion of the product in the presence of mechanical impact: Not available.

Risk of explosion of the product in the presence of static discharge: Not available.

Section 6. Accidental release measures

Personal precautions : Use suitable protective equipment (section 8). Do not allow to enter drains or watercourses.

Environmental precautions : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up : For small spills, add absorbent (soil may be used in the absence of other suitable materials), scoop up material and place in a sealable, liquid-proof container for disposal. For large spills, dyke spilt material or otherwise contain it to ensure runoff does not reach a waterway. Place spilt material in an appropriate container for disposal.

Section 7. Handling and storage

Handling : Avoid contact with eyes. Wash thoroughly after handling.

Storage : Keep out of reach of children. Keep container in a cool, well-ventilated area. Keep container tightly closed.

Do not store above the following temperature: 50°C

Section 8. Exposure controls/personal protection

Engineering measures : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protection :

Eyes : Eye protection recommended.

Hands : No protective equipment is needed under normal use conditions.

Skin : No protective equipment is needed under normal use conditions.

Respiratory : A respirator is not needed under normal and intended conditions of product use.

Consult local authorities for acceptable exposure limits.

Section 9. Physical and chemical properties

Physical state : Liquid. [Liquid.]

Colour : Green. [Light]

Odour : Faint odour.

pH : 2.701 [Conc. (% w/w): 100%]

Boiling/condensation point : Not available.

Melting/freezing point : Not available.

Relative density : 1.0153

Vapour pressure : Not available.

Vapour density : Not available.

Odour threshold : Not available.

Evaporation rate : Not available.

LogK_{ow} : Not available.

Section 10. Stability and reactivity

Stability : The product is stable. Under normal conditions of storage and use, hazardous polymerisation will not occur.

Conditions of instability : Not available.

Reactivity : Not available.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerisation : Under normal conditions of storage and use, hazardous polymerisation will not occur.

Section 11. Toxicological information

Potential acute health effects

Eyes : Moderately irritating to eyes.

Skin : Slightly irritating to the skin.

Inhalation : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Potential chronic health effects

Carcinogenic effects : No known significant effects or critical hazards.

Mutagenic effects : No known significant effects or critical hazards.

Teratogenic effects : No known significant effects or critical hazards.

Reproductive effects : No known significant effects or critical hazards.

Sensitization to Product : No known significant effects or critical hazards.

Synergistic products (toxicologically) : Not available.

Toxicity data

Not applicable.

Target organs : Not available.

Section 12. Ecological information

Ecotoxicity

Ingredient name	Species	Period	Result
alcohols, c10-16, ethoxylated	Algae	72 hours	Acute IC50 <1 mg/L
	Fish	96 hours	Acute LC50 1 to 10 mg/L

Section 13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimised wherever possible. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Consult your local or regional authorities.

Section 14. Transport information

Certain shipping modes or package sizes may have exceptions from the transport regulations. The classification provided may not reflect those exceptions and may not apply to all shipping modes or package sizes.

UN Classification Not regulated.

See shipping documents for specific transportation information.

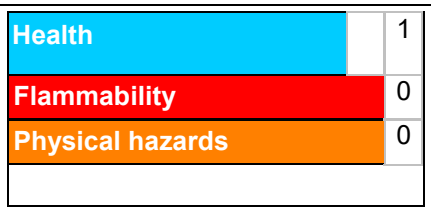
Section 15. Regulatory information

WHMIS : Class D-2B: Material causing other toxic effects (Toxic).
Canada inventory : All components are listed or exempted.

This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* and the MSDS contains all the information required by the *Controlled Products Regulations*.

Section 16. Other information

Hazardous Material Information System (U.S.A.) :



Date of issue : **30-June-2009.**
Responsible name : **Regulatory Affairs**
1-800-352-5326
Date of previous issue : **11-August-2006.**

Notice to reader

The above information is believed to be correct with respect to the formula used to manufacture the product in the country of origin. As data, standards, and regulations change, and conditions of use and handling are beyond our control, NO WARRANTY, EXPRESS OR IMPLIED, IS MADE AS TO THE COMPLETENESS OR CONTINUING ACCURACY OF THIS INFORMATION.

Rock Drill Oil

Material Safety Data Sheet

1. Product and Company Identification

Product Name: Rock Drill Oil

MSDS Number: 775697

Synonyms/Other Means of Identification:
Conoco Rock Drill Oil 32
Conoco Rock Drill Oil 46
Conoco Rock Drill Oil 68
Conoco Rock Drill Oil 100
Conoco Rock Drill Oil 150
Conoco Rock Drill Oil 220
Conoco Rock Drill Oil 320

Intended Use: Rock Drill Oil

Manufacturer:
ConocoPhillips Lubricants
600 N. Dairy Ashford, 2W900
Houston, Texas 77079-1175

Emergency Health and Safety Number: Chemtrec: 800-424-9300 (24 Hours)

Customer Service: U.S.: 1-800-822-6457 or International: +1-83-2486-3363

Technical Information: 1-877-445-9198

MSDS Information:
Phone: 800-762-0942
Email: MSDS@conocophillips.com
http://www.conocophillips.com/EN/products/Pages/msds.aspx

2. Hazards Identification

Emergency Overview

This material is not considered hazardous according to OSHA criteria.

NFPA

Appearance: Clear and bright
Physical Form: Liquid
Odor: Petroleum

Potential Health Effects
Eye: Contact may cause mild eye irritation including stinging, watering, and redness.

Skin: Contact may cause mild skin irritation including redness and a burning sensation. Repeated exposure may cause skin dryness or cracking. No harmful effects from skin absorption are expected.

Inhalation (Breathing): Not expected to be toxic.

Ingestion (Swallowing): Low degree of toxicity by ingestion.

Signs and Symptoms: Inhalation of oil mists or vapors generated at elevated temperatures may cause respiratory irritation. Accidental ingestion can result in minor irritation of the digestive tract, nausea and diarrhea.

Pre-Existing Medical Conditions: Conditions which may be aggravated by exposure include skin disorders.

See Section 11 for additional Toxicity Information.

3. Composition / Information on Ingredients

Component	CASRN	Concentration*
Lubricant Base Oil (Petroleum)	VARIOUS	>95
Additives	PROPRIETARY	<5

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First Aid Measures

Eye Contact: If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

Skin Contact: Remove contaminated shoes and clothing and cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops and persists, seek medical attention.

Inhalation (Breathing): First aid is not normally required. If breathing difficulties develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. Seek immediate medical attention.

Ingestion (Swallowing): First aid is not normally required; however, if swallowed and symptoms develop, seek medical attention.

Notes to Physician: Acute aspirations of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Inhalation exposure to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities.

5. Fire-Fighting Measures

NFPA 704 Hazard Class

Health: 0 **Flammability:** 1 **Instability:** 0 (0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

Unusual Fire & Explosion Hazards: This material may burn, but will not ignite readily. If container is not properly cooled, it can rupture in the heat of a fire.

Extinguishing Media: Dry chemical, carbon dioxide, foam, or water spray is recommended. Water or foam may cause frothing of materials heated above 212°F / 100°C. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces.

Fire Fighting Instructions: For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely. Avoid spreading burning liquid with water used for cooling purposes.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of sulfur, nitrogen or phosphorus may also be formed.
See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

6. Accidental Release Measures

Personal Precautions: This material may burn, but will not ignite readily. Keep all sources of ignition away from spill/release. Stay upwind and away from spill/release. Notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use water sparingly to minimize environmental contamination and reduce disposal requirements. If spill occurs on water notify appropriate authorities and advise shipping of any hazard. Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Center (phone number 800-424-8802).

Methods for Containment and Clean-Up: Notify relevant authorities in accordance with all applicable regulations. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal. If spilled on water remove with appropriate methods (e.g. skimming, booms or absorbents).

7. Handling and Storage

Precautions for safe handling: Keep away from flames and hot surfaces. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment.

Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes.

Conditions for safe storage: Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated area away from heat and all sources of ignition. Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

8. Exposure Controls / Personal Protection

Component	US-ACGIH	OSHA	Other
Lubricant Base Oil (Petroleum)	TWA: 5mg/m^3 STEL: 10 mg/m^3 as Oil Mist, if generated	TWA: 5 mg/m^3 as Oil Mist, if generated	---

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Eye/Face Protection: The use of eye protection that meets or exceeds ANSI Z.87.1 is recommended to protect against potential eye contact, irritation, or injury. Depending on conditions of use, a face shield may be necessary.

Skin/Hand Protection: The use of gloves impervious to the specific material handled is advised to prevent skin contact. Users should check with manufacturers to confirm the breakthrough performance of their products. Suggested protective materials: Nitrile

Respiratory Protection: Where there is potential for airborne exposure above the exposure limit a NIOSH certified air purifying respirator equipped with R or P95 filters may be used.

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health (IDLH).

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

9. Physical and Chemical Properties

9. Physical and Chemical Properties

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

Appearance:	Clear and bright
Physical Form:	Liquid
Odor:	Petroleum
Odor Threshold:	No data
pH:	Not applicable
Vapor Pressure:	<1 mm Hg
Vapor Density (air=1):	>1
Boiling Point/Range:	No data
Melting/Freezing Point:	<5°F / <-15°C
Pour Point:	<5°F / <-15°C
Solubility in Water:	Soluble upon agitation (emusifiable)
Partition Coefficient (n-octanol/water) (Kow):	No data
Specific Gravity (water=1):	0.85 - 0.88 @ 60ºF (15.6ºC)
Bulk Density:	7.2 - 7.5 lbs/gal
Viscosity:	5 - 25 cSt @ 100°C; 32 - 320 cSt @ 40°C
Percent Volatile:	Negligible
Evaporation Rate (nBuAc=1):	<1
Flash Point:	>302°F / >150°C
Test Method:	Pensky-Martens Closed Cup (PMCC), ASTM D93, EPA 1010
LEL (vol % in air):	No data
UEL (vol % in air):	No data
Autoignition Temperature:	No data

10. Stability and Reactivity

Stability: Stable under normal ambient and anticipated conditions of use.

Conditions to Avoid: Extended exposure to high temperatures can cause decomposition. Avoid all possible sources of ignition.

Materials to Avoid (Incompatible Materials): Avoid contact with strong oxidizing agents and strong reducing agents.

Hazardous Decomposition Products: Not anticipated under normal conditions of use.

Hazardous Polymerization: Not known to occur.

11. Toxicological Information

Chronic Toxicity:

Lubricant Base Oil (Petroleum)

Carcinogenicity: The petroleum base oils contained in this product have been highly refined by a variety of processes including severe hydrocracking/hydroprocessing to reduce aromatics and improve performance characteristics. All of the oils meet the IP-346 criteria of less than 3 percent PAH's and are not considered carcinogens by NTP, IARC, or OSHA.

Acute Toxicity:

Component	Oral LD50	Dermal LD50	Inhalation LC50
Lubricant Base Oil (Petroleum)	> 5 g/kg	> 2 g/kg	> 5 mg/L

12. Ecological Information

Ecotoxicity: Experimental studies show that acute aquatic toxicity values are greater than 1000 mg/l. These values are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon compositions.

Mobility: Volatilization to air is not expected to be a significant fate process due to the low vapor pressure of this material. In water, base oils will float and spread over the surface at a rate dependent upon viscosity. There will be significant removal of hydrocarbons from the water by sediment adsorption. In soil and sediment, hydrocarbon components will show low mobility with adsorption to sediments being the predominant physical process. The main fate process is expected to be slow biodegradation of base oil components in soil and sediment.

Persistence and degradability: The hydrocarbons in this material are not readily biodegradable, but since they can be degraded by microorganisms, they are regarded as inherently biodegradable.

Bioaccumulation Potential: Log Kow values measured for the hydrocarbon components of this material range from 4 to over 6, and therefore regarded as having the potential to bioaccumulate. In practice, metabolic processes may reduce bioconcentration.

13. Disposal Considerations

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations.

This material, if discarded as produced, would not be a federally regulated RCRA "listed" hazardous waste and is not believed to exhibit characteristics of hazardous waste. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed in the MSDS but could affect the hazardous waste determination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste.

This material under most intended uses would become "Used Oil" due to contamination by physical or chemical impurities. Whenever possible, Recycle Used Oil in accordance with applicable federal and state or local regulations. Container contents should be completely used and containers should be emptied prior to discard.

14. Transportation Information

U.S. Department of Transportation (DOT)

Shipping Description: ***Not regulated***
Note: ***If shipped by land in a packaging having a capacity of 3,500 gallons or more, the provisions of 49 CFR, Part 130 apply. (Contains oil)***

International Maritime Dangerous Goods (IMDG)

Shipping Description: ***Not regulated***
Note: ***U.S. DOT compliance requirements may apply. See 49 CFR 171.22, 23 & 25.***

International Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)

UN/ID #: ***Not regulated***
Note: ***U.S. DOT compliance requirements may apply. See 49 CFR 171.22, 23 & 24.***

	LTD. QTY	Passenger Aircraft	Cargo Aircraft Only
Packaging Instruction #:	---	---	---
Max. Net Qty. Per Package:	---	---	---

15. Regulatory Information

CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):
This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

CERCLA/SARA - Section 311/312 (Title III Hazard Categories)

Acute Health:	No
Chronic Health:	No
Fire Hazard:	No
Pressure Hazard:	No
Reactive Hazard:	No

CERCLA/SARA - Section 313 and 40 CFR 372:
This material does not contain any chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372.

EPA (CERCLA) Reportable Quantity (in pounds):
This material does not contain any chemicals with CERCLA Reportable Quantities.

California Proposition 65:
This material does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the warning requirements of California Proposition 65.

Canadian Regulations:
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the Regulations.

WHMIS Hazard Class
None

National Chemical Inventories:
All components are either listed on the US TSCA Inventory, or are not regulated under TSCA.
All components are either on the DSL, or are exempt from DSL listing requirements.

U.S. Export Control Classification Number: EAR99

16. Other Information

Date of Issue:	19-Jan-2010
Status:	FINAL
Previous Issue Date:	26-Feb-2007
Revised Sections or Basis for Revision:	NFPA ratings (Sections 2&5) Environmental hazards (Section 12)
MSDS Number:	775697

Guide to Abbreviations:
ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; IARC = International Agency for Research on Cancer; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

Disclaimer of Expressed and implied Warranties:
The information presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

29 CFR 1910.1200 (OSHA HazCom 2012)

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Trade name : Kubota® SAE 15W-40 KUBOTA # 70000-10033 ENGINE OIL

Recommended use of the chemical and restrictions on use

Details of the supplier of the safety data sheet	**Emergency telephone number**
Ashland P.O. Box 2219 Columbus, OH 43216 United States of America EHS Customer Requests@ashland.com	1-800-ASHLAND (1-800-274-5263) **Regulatory Information Number** 1-800-325-3751 **Product Information** 614-790-3333

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Eye irritation : Category 2A

Reproductive toxicity : Category 2

GHS Label element

Hazard pictograms :

Signal Word : Warning

Hazard Statements : Causes serious eye irritation.
Suspected of damaging fertility or the unborn child.

Precautionary Statements : **Prevention:**
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wash skin thoroughly after handling.
Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/ attention.
If eye irritation persists: Get medical advice/ attention.
Storage:
Store locked up.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Chemical nature : Defatter

Hazardous components

Chemical Name	CAS-No.	Classification	Concentration (%)
DISTILLATES (PETROLEUM), SOLVENT-DEWAXED HEAVY PARAFFINIC	64742-65-0	Asp. Tox. 1; H304	8.30
HYDROTREATED LIGHT PARAFFINIC DISTILLATE	64742-55-8	Asp. Tox. 1; H304	1.62
ZINC DIALKYLDITHIOPHOSPHATE	93819-94-4	Skin Irrit. 2; H315 Eye Dam. 1; H318	1.11
DODECYLPHENOL, MIXED ISOMERS	121158-58-5	Skin Irrit. 2; H315 Eye Irrit. 2A; H319 Repr. 2; H361 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	0.16

SECTION 4. FIRST AID MEASURES

General advice	:	Move out of dangerous area. Call a POISON CENTRE or doctor/physician if exposed or you feel unwell. Show this safety data sheet to the doctor in attendance. Do not leave the victim unattended.
If inhaled	:	If breathed in, move person into fresh air. If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.
In case of skin contact	:	Remove contaminated clothing. If irritation develops, get medical attention. If on skin, rinse well with water. Wash contaminated clothing before re-use.
In case of eye contact	:	Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye.
If swallowed	:	Obtain medical attention. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.
Most important symptoms and effects, both acute and delayed	:	Acute aspiration of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Repeated aspiration of small quantities of mineral oil can produce chronic inflammation of the lungs (i.e. lipoid pneumonia) that may progress to pulmonary fibrosis. Symptoms are often subtle and radiological changes appear worse than clinical abnormalities. Occasionally, persistent cough, irritation of the upper respiratory tract, shortness of breath with exertion, fever, and bloody sputum occur. Inhalation exposure to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities. Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: stomach or intestinal upset (nausea, vomiting, diarrhea) irritation (nose, throat, airways) Causes serious eye irritation. Suspected of damaging fertility or the unborn child.
Notes to physician	:	No hazards which require special first aid measures.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Water spray Foam Carbon dioxide (CO2) Dry chemical
Unsuitable extinguishing media	:	High volume water jet
Specific hazards during firefighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	:	carbon dioxide and carbon monoxide Hydrocarbons hydrogen sulfide zinc oxide Sulphur oxides mercaptans
Specific extinguishing methods	:	Product is compatible with standard fire-fighting agents.
Further information	:	Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment. Ensure adequate ventilation. Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.
Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

Other information : Comply with all applicable federal, state, and local regulations.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling : Do not breathe vapours/dust.
Do not smoke.
Container hazardous when empty.
Avoid contact with skin and eyes.
Smoking, eating and drinking should be prohibited in the application area.
For personal protection see section 8.
Dispose of rinse water in accordance with local and national regulations.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Observe label precautions.
Electrical installations / working materials must comply with the technological safety standards.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
DISTILLATES (PETROLEUM), SOLVENT-DEWAXED HEAVY PARAFFINIC	64742-65-0	PEL	500 ppm 2,000 mg/m3	OSHA_TRANS
		REL	5 mg/m3 Mist.	NIOSH/GUIDE
		STEL	10 mg/m3 Mist.	NIOSH/GUIDE
		PEL	5 mg/m3 Mist.	OSHA_TRANS
		TWA	5 mg/m3 Mist.	Z1A
		TWA	400 ppm 1,600 mg/m3	Z1A
HYDROTREATED LIGHT PARAFFINIC DISTILLATE	64742-55-8	REL	5 mg/m3 Mist.	NIOSH/GUIDE
		STEL	10 mg/m3 Mist.	NIOSH/GUIDE
		PEL	5 mg/m3	OSHA_TRA

			Mist.	NS

Engineering measures : Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.

Personal protective equipment

Respiratory protection : A NIOSH-approved air-purifying respirator with an appropriate cartridge and/or filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits (if applicable) or if overexposure has otherwise been determined. Protection provided by air-purifying respirators is limited. Use a positive pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are not known or any other circumstances where an air-purifying respirator may not provide adequate protection.

Hand protection
Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection : Wear chemical splash goggles when there is the potential for exposure of the eyes to liquid, vapor or mist.

Skin and body protection : Wear as appropriate:
impervious clothing
Safety shoes
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Wear resistant gloves (consult your safety equipment supplier).

Hygiene measures : Wash hands before breaks and at the end of workday.
When using do not eat or drink.
When using do not smoke.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state : liquid

Odour : No data available

Odour Threshold : No data available

pH : No data available

Melting point/freezing point : No data available

Boiling point/boiling range : No data available

Flash point	:	> 390 °F / > 199 °C Method: Cleveland open cup
Evaporation rate	:	No data available
Flammability (solid, gas)	:	No data available
Upper explosion limit	:	6 %(V) GLP: Calculated Explosive Limit
Lower explosion limit	:	1 %(V) GLP: Calculated Explosive Limit
Vapour pressure	:	0.055 hPa (20 °C) Calculated Vapor Pressure
Relative vapour density	:	No data available
Relative density	:	No data available
Density	:	No data available
Solubility(ies)		
Water solubility	:	No data available
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Thermal decomposition	:	No data available
Viscosity		
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	> 20.5 mm2/s (40 °C)
Oxidizing properties	:	No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No decomposition if stored and applied as directed.
Chemical stability	:	Stable under recommended storage conditions.
Possibility of hazardous reactions	:	Product will not undergo hazardous polymerization.
Conditions to avoid	:	excessive heat

Incompatible materials	:	Strong oxidizing agents
Hazardous decomposition products		carbon dioxide and carbon monoxide Hydrocarbons hydrogen sulfide Sulphur oxides zinc oxide fumes mercaptans

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation Skin contact Eye Contact Ingestion

Acute toxicity
Not classified based on available information.
Components:
DISTILLATES (PETROLEUM), SOLVENT-DEWAXED HEAVY PARAFFINIC:
Acute oral toxicity : LD 50 (Rat): > 5,000 mg/kg

Acute dermal toxicity : LD 50 (Rabbit): > 5,000 mg/kg

ZINC DIALKYLDITHIOPHOSPHATE:
Acute oral toxicity : LD 50 (Rat): 2,600 mg/kg

Skin corrosion/irritation
Not classified based on available information.
Product:
Remarks: May cause skin irritation in susceptible persons.

Result: Repeated exposure may cause skin dryness or cracking.

Components:
DISTILLATES (PETROLEUM), SOLVENT-DEWAXED HEAVY PARAFFINIC:
Result: Mildly irritating to skin

HYDROTREATED LIGHT PARAFFINIC DISTILLATE:
Result: Mildly irritating to skin

ZINC DIALKYLDITHIOPHOSPHATE:
Result: Irritating to skin

DODECYLPHENOL, MIXED ISOMERS:
Result: Irritating to skin

Serious eye damage/eye irritation
Causes serious eye irritation.
Product:
Remarks: Vapours may cause irritation to the eyes, respiratory system and the skin., Causes serious eye irritation.

Components:
DISTILLATES (PETROLEUM), SOLVENT-DEWAXED HEAVY PARAFFINIC:
Result: Mildly irritating to eyes

HYDROTREATED LIGHT PARAFFINIC DISTILLATE:
Result: Mildly irritating to eyes

ZINC DIALKYLDITHIOPHOSPHATE:
Result: Corrosive to eyes

DODECYLPHENOL, MIXED ISOMERS:
Result: Irritating to eyes

Respiratory or skin sensitisation
Skin sensitisation: Not classified based on available information.
Respiratory sensitisation: Not classified based on available information.
Germ cell mutagenicity
Not classified based on available information.
Carcinogenicity
Not classified based on available information.
Reproductive toxicity
Suspected of damaging fertility or the unborn child.
Components:
DODECYLPHENOL, MIXED ISOMERS:
Reproductive toxicity - Assessment : Suspected of damaging fertility.

STOT - single exposure
Not classified based on available information.
STOT - repeated exposure
Not classified based on available information.
Aspiration toxicity
Not classified based on available information.
Components:
DISTILLATES (PETROLEUM), SOLVENT-DEWAXED HEAVY PARAFFINIC:
May be fatal if swallowed and enters airways.

HYDROTREATED LIGHT PARAFFINIC DISTILLATE:
May be fatal if swallowed and enters airways.

Further information
Product:
Remarks: No data available

Carcinogenicity:
IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed

human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

ZINC DIALKYLDITHIOPHOSPHATE:

Toxicity to fish : LL50 (Oncorhynchus mykiss (rainbow trout)): 4.5 mg/l
Exposure time: 96 h
Test Type: semi-static test

Toxicity to daphnia and other aquatic invertebrates : EC 50 (Water flea (Daphnia magna)): 5.4 mg/l
Exposure time: 48 h
Test Type: static test

Toxicity to algae : EC 50 (Selenastrum capricornutum (green algae)): 2.1 mg/l
End point: Growth inhibition
Exposure time: 72 h
Test Type: static test

DODECYLPHENOL, MIXED ISOMERS:

M-Factor (Acute aquatic toxicity) : 1

M-Factor (Chronic aquatic toxicity) : 1

Ecotoxicology Assessment
Acute aquatic toxicity : Very toxic to aquatic life.

Chronic aquatic toxicity : Very toxic to aquatic life with long lasting effects.

Persistence and degradability

ZINC DIALKYLDITHIOPHOSPHATE:

Biodegradability : Biodegradation: 1.5 %
Exposure time: 28 d
Remarks: Not readily biodegradable.

Bioaccumulative potential

ZINC DIALKYLDITHIOPHOSPHATE:

Partition coefficient: n- : log Pow: 0.59 - 1.2 (23 °C)

octanol/water

Mobility in soil

No data available

Other adverse effects

No data available

Product:

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Harmful to aquatic life with long lasting effects.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

General advice : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.

Dispose of in accordance with all applicable local, state and federal regulations.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Empty containers should be taken to an approved waste handling site for recycling or disposal.
Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International transport regulations

REGULATION

ID NUMBER	PROPER SHIPPING NAME	*HAZARD CLASS	SUBSIDIARY HAZARDS	PACKING GROUP	MARINE POLLUTANT / LTD. QTY.

U.S. DOT - ROAD

Not dangerous goods

U.S. DOT - RAIL

Not dangerous goods

U.S. DOT - INLAND WATERWAYS

Not dangerous goods

TRANSPORT CANADA - ROAD

Not dangerous goods

TRANSPORT CANADA - RAIL

Not dangerous goods

TRANSPORT CANADA - INLAND WATERWAYS

Not dangerous goods

INTERNATIONAL MARITIME DANGEROUS GOODS

Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO

Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER

Not dangerous goods

MEXICAN REGULATION FOR THE LAND TRANSPORT OF HAZARDOUS MATERIALS AND WASTES

Not dangerous goods

***ORM = ORM-D, CBL = COMBUSTIBLE LIQUID**

Marine pollutant		no

Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
ARSENIC	7440-38-2	1	62500

SARA 311/312 Hazards : Acute Health Hazard
Chronic Health Hazard

SARA 313 Component(s)

ZINC BIS[O-(6-METHYLHELPTYL)]BIS[O-SEC-BUTYL)]BIS(DITHIOPHOSPATE)	93819-94-4	1.11 %

Pennsylvania Right To Know

HEAVY PARAFFINIC DISTILLATE	64742-54-7	90.00 - 100.00 %
LUBRICANT ADDITIVE	Not Assigned	10.00 - 20.00 %
DISTILLATES (PETROLEUM), SOLVENT-DEWAXED HEAVY PARAFFINIC	64742-65-0	5.00 - 10.00 %
HYDROTREATED LIGHT PARAFFINIC DISTILLATE	64742-55-8	1.00 - 5.00 %

New Jersey Right To Know

HEAVY PARAFFINIC DISTILLATE	64742-54-7	90.00 - 100.00 %
LUBRICANT ADDITIVE	Not Assigned	10.00 - 20.00 %
DISTILLATES (PETROLEUM), SOLVENT-DEWAXED HEAVY PARAFFINIC	64742-65-0	5.00 - 10.00 %
HYDROTREATED LIGHT PARAFFINIC DISTILLATE	64742-55-8	1.00 - 5.00 %
ZINC DIALKYLDITHIOPHOSPHATE	93819-94-4	1.00 - 5.00 %

California Prop 65 Proposition 65 warnings are not required for this product based on the results of a risk assessment.

The components of this product are reported in the following inventories:

TSCA : On TSCA Inventory

DSL : All components of this product are on the Canadian DSL.

AUSTR : On the inventory, or in compliance with the inventory

NZIOC : On the inventory, or in compliance with the inventory

ENCS : Not in compliance with the inventory

KECL : On the inventory, or in compliance with the inventory

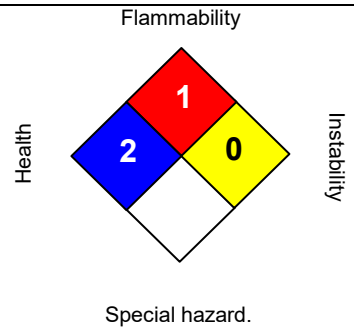
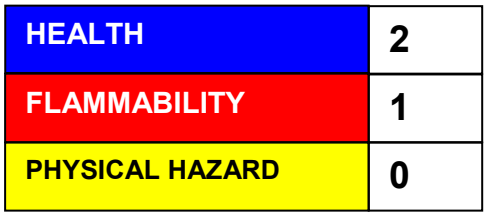
PICCS : On the inventory, or in compliance with the inventory

IECSC : On the inventory, or in compliance with the inventory

Inventories
AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TSCA (USA)

SECTION 16. OTHER INFORMATION

Further information
Revision Date: 05/22/2015

NFPA:	HMIS III:
	 0 = not significant, 1 =Slight, 2 = Moderate, 3 = High 4 = Extreme, * = Chronic

NFPA Flammable and Combustible Liquids Classification
Combustible Liquid Class IIIB

Full text of H-Statements referred to under sections 2 and 3.

H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H361	Suspected of damaging fertility or the unborn child.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

Sources of key data used to compile the Safety Data Sheet
Ashland internal data including own and sponsored test reports
The UNECE administers regional agreements implementing harmonised classification for labelling (GHS) and transport.

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the

information is current, applicable, and suitable to their circumstances. This SDS has been prepared by Ashland's Environmental Health and Safety Department (1-800-325-3751).

List of abbreviations and acronyms that could be, but not necessarily are, used in this safety data sheet :
ACGIH : American Conference of Industrial Hygienists
BEI : Biological Exposure Index
CAS : Chemical Abstracts Service (Division of the American Chemical Society).
CMR : Carcinogenic, Mutagenic or Toxic for Reproduction
FG : Food grade
GHS : Globally Harmonized System of Classification and Labeling of Chemicals.
H-statement : Hazard Statement
IATA : International Air Transport Association.
IATA-DGR : Dangerous Goods Regulation by the “International Air Transport Association” (IATA).

ICAO : International Civil Aviation Organization
ICAO-TI (ICAO) : Technical Instructions by the “International Civil Aviation Organization”
IMDG : International Maritime Code for Dangerous Goods
ISO : International Organization for Standardization
logPow : octanol-water partition coefficient
LCxx : Lethal Concentration, for xx percent of test population
LDxx : Lethal Dose, for xx percent of test population.
ICxx : Inhibitory Concentration for xx of a substance
Ecxx : Effective Concentration of xx
N.O.S.: Not Otherwise Specified
OECD : Organization for Economic Co-operation and Development
OEL : Occupational Exposure Limit
P-Statement : Precautionary Statement
PBT : Persistent , Bioaccumulative and Toxic
PPE : Personal Protective Equipment
STEL : Short-term exposure limit
STOT : Specific Target Organ Toxicity
TLV : Threshold Limit Value
TWA : Time-weighted average
vPvB : Very Persistent and Very Bioaccumulative
WEL : Workplace Exposure Level

CERCLA : Comprehensive Environmental Response, Compensation, and Liability Act
DOT : Department of Transportation
FIFRA : Federal Insecticide, Fungicide, and Rodenticide Act
HMIRC : Hazardous Materials Information Review Commission
HMIS : Hazardous Materials Identification System
NFPA : National Fire Protection Association
NIOSH : National Institute for Occupational Safety and Health
OSHA : Occupational Safety and Health Administration
PMRA : Health Canada Pest Management Regulatory Agency
RTK : Right to Know
WHMIS : Workplace Hazardous Materials Information System

Safety Data Sheet

SALT (Sodium Chloride)

SECTION 1. IDENTIFICATION

Product Identifier	Salt
Other Means Of Identification	Sodium Chloride, Raw Salt, Road Salt, De-icing Salt, Water Softening Salt, Feed Salt, Industrial Salt, Hide Salt, Rocanville Coarse, Rocanville Standard, Rocanville Fine, Vanscoy Coarse, Vanscoy Standard, Bath Salt, Exfoliant, Ice Biter, SALTZ ALL Coarse Salt, Fine Salt
Recommended Use	Industrial, De-Icer, Feed, Hide, Water softening, Bath Salt
Restrictions on Use	Not for Ingestion
Initial Supplier Identifier	NSC Minerals Ltd. 2241 Speers Ave Saskatoon, SK CANADA S7L 5X6 www.nscminerals.com Email: nsc@nscminerals.com
Emergency Telephone Number	1-306-934-6477 / 1-888-668-7258

SECTION 2. HAZARD IDENTIFICATION

Classification	Not classified as a dangerous substance or mixture according to the Globally Harmonized System (GHS)
Label Elements	Keep out of reach of children. Harmful if swallowed. Avoid skin and eye contract.
Label Other	Pictograms & Signal Words Not Applicable.
Other Hazards	

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

Common Name / Synonyms	Salt, Sodium Chloride, NaCl, Raw Salt, De-Icing Salt, Rocanville Coarse

INGREDIENT NAME	% (W/W)	CAS NO.
Sodium Chloride	Not available	7647-14-5

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, which the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.
Occupational exposure limits, if available, are listed in Section 8.

Other Identifiers	Eco-Friendly

SECTION 4. FIRST AID MEASURES

4.1 FIRST AID BY ROUTE OF EXPOSURE

General	If medical advice is needed, have product container or label at hand.
Inhalation	If inhaled, remove to fresh air and keep at rest in a position comfortable for breathing. Give oxygen or artificial respiration if needed. Obtain medical attention if breathing difficulty persists.
Skin Contact	Wash Skin thoroughly with mild soap and water. Obtain medical attention if irritation develops or persists.

Eye Contact	Immediately rinse with water for a prolonged period (15 minutes) while holding the eyelids wide open including upper and lower lids. Obtain medical attention if pain and irritation develops or persists.
Ingestion	Do not induce vomiting. Administer water if patient is conscious. Ingesting salt will usually cause purging of the stomach by vomiting. Seek medical attention if a large amount is swallowed. Get medical advice and attention if you feel unwell.

4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Symptoms/injuries	Irritation to eyes, skin and respiratory tract.
Symptoms/injuries after inhalation	Overexposure may be irritating to the respiratory system.
Symptoms/injuries after skin contact	May cause skin irritation.
Symptoms/injuries after eye contact	May cause eye irritation.
Symptoms/injuries after ingestion	If a large quantity has been ingested : Abdominal pain; Diarrhea; Nausea; Vomiting; Tingling in hands and feet; Weak pulse; Circulatory disturbances
Chronic symptoms	Prolonged inhalation of dust may cause respiratory irritation.

4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

No additional information.

SECTION 5. FIRE-FIGHTING MEASURE

5.1 EXTINGUISHING MEDIA

Suitable Extinguishing Media	Not Flammable. Use extinguishing media appropriate for surrounding fire.
Unsuitable Extinguishing Media	None known.

5.2 SPECIFIC HAZARDS ARISING FROM PRODUCT

Fire Hazard	Under conditions of fire this material may produce toxic fumes.
Explosion Hazard	Product is not explosive
Reactivity	Stable at ambient temperature and under normal conditions of use.

5.3 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE-FIGHTERS

Fire-fighting Instructions	Keep Upwind. Under conditions of fire this material may produce: Potassium oxides; Hydrogen chloride; Chlorine gas
Protection during fire-fighting	Wear full fire-fighting turn out gear (full Bunker gear) and respiratory protection (SCBA).
Other Information	Do not allow run-off from fire fighting to enter drains or water courses.

SECTION 6. ACCIDENTAL RELEASE MEASURE

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

General Measures	Do not breathe fumes from fires or vapors from decomposition
Protective Equipment for Emergency & Non-Emergency Personnel	Wear suitable protective clothing, gloves and eye/face protection including tight fitting goggles in areas of high dust concentration. Wear NIOSH approved respiratory protective equipment when workplace conditions warrant use of respirator.
Emergency Procedures	If possible, stop flow of product. Contain and collect as any solid. Ventilate area.

6.2 ENVIRONMENTAL PRECAUTIONS

If spill could potentially enter any waterway, including intermittent dry creeks, contact the U.S. COAST GUARD NATIONAL RESPONSE CENTER at 800-424-8802. In case of accident or road spill notify CHEMTREC at 800-424-9300 (in USA) or CANUTEC at 613-996-6666 (in Canada). In other countries call CHEMTREC at (International code) +1-703-527-3887.

6.3 METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING-UP

For Containment	Contain and collect as any solid. Do not allow into drains or water courses or dispose of where ground or surface waters may be affected.
Methods for Cleaning Up	Recover the product by vacuuming, shovelling or sweeping. Avoid generation of dust during clean-up of spills. If uncontaminated, recover and reuse as product.

6.4 REFERENCE TO OTHER SECTIONS

No additional information available.

SECTION 7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING

Additional Hazards when processed:	When heated, material emits irritating fumes.
Precautions for safe handling:	Handle in accordance with good industrial hygiene and safety procedures. Avoid contact with skin and eyes. Do no eat, drink or smoke when using this product. Always wash hands after handling the product.
Hygiene Measures:	Emergency eye wash fountains should be available in the immediate vicinity of any potential exposure.

7.2 CONDITIONS FOR SAFE STORAGE

Storage Conditions:	Store tightly closed in a dry, cool and well-ventilated place. Protect from moisture and preferably below 70% relative humidity.
Special Rules on Packaging:	Avoid contact with aluminum or carbon steel to minimize corrosion.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS

Highly soluble – No ACGIH TWA, Particulate Not Otherwise Specified (PNOS) not appropriate for highly soluble material.

8.2 EXPOSURE CONTROLS

Appropriate engineering controls:	Ensure adequate ventilation (especially in confined areas), eye wash stations.
Personal protective equipment:	Gloves. Safety glasses. Protective clothing.

Hand Protection:	Impermeable protective gloves.
Eye Protection:	Protective goggles and safety glasses
Skin and Body Protection:	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Wear suitable protective clothing. Wash contaminated clothing before reuse. Handle in accordance with good industrial hygiene and safety practice. Wash clothing frequently.
Footwear:	Normal

Respiratory Protection:	Use NIOSH-approved air-purifying or supplied-air respirator where airborne concentrations of dust are expected to exceed exposure limits.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid (Crystalline)
Color	White to Red
Odour	None
Odour Threshold	No Data Available
pH	6-8
Relative Evaporation Rate (Butylacetate=1)	No Data Available
Melting Point	1473.8ºF (801°C)
Freezing Point	No Data Available
Boiling Point	2669ºF (1465°C)
Flash Point	No Data Available
Self-Ignition temperature:	Not Flammable
Decomposition Temperature:	No Data Available
Flammability (solid/gas):	Not Flammable
Vapour Pressure:	No Data Available
Relative Vapor Density at 20ºC:	No Data Available
Relative Density:	2.14
Density:	No Data Available
Solubility:	26%
Log Pow or Log Kow	No Data Available
Viscosity	No Data Available
Explosive Properties	None Known
Oxidizing Properties	None Known
Explosive Limits	Not Explosive

9.2 OTHER INFORMATION

VOC Content	No Data Available
Bulk Density	71-77lbs/ft^3 (1137-1234kg/m3)
Molecular Formula	NaCl

SECTION 10. STABILITY AND REACTIVITY

Reactivity	Stable at ambient temperature and under normal conditions of use.
Chemical Stability	Stable at standard temperature and pressure.
Possibility of Hazardous Reactions	Hazardous polymerization will not occur.

Conditions to Avoid	Protect from moisture.
Incompatible Materials	Contact with acids liberates toxic gas (chlorine). Lithium, interhalogens (bromide, triflourite, etc.), acids, oxidizing agents.
Hazardous Decomposition Products	Contact with strong acids may produce hydrogen chlorine gas.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute Toxicity Not Classified

SODIUM CHLORIDE (7647-14-5)

LC50 3g/kg LD50 (oral) >10g/kg LD50 (dermal) >42g/m3 (Exposure time: 1h)

Skin Corrosion / Irritation	Mild
Serious Eye Damage / Irritation	Mild - Salt dust can cause eye irritation.
STOT (Specific Target Organ Toxicity) - Single Exposure	Not Classified
STOT (Specific Target Organ Toxicity) - Repeated Exposure	Not Classified
Aspiration Hazard	Not Classified
Respiratory and/or Skin Sensitization	Not Classified
Reproductive Toxicity	Not Classified
Germ Cell Mutagenicity	Not Classified
Carcinogenicity	Not Classified
Target Organ Effects	Kidneys, Eyes, Skin, Respiratory system.

SECTION 12. ECOLOGICAL INFORMATION

Eco toxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Environmental Fate	No Data Available
Toxicity	No Data Available
Degradation Products	No Data Available

SECTION 13. DISPOSAL CONSIDERATIONS

Sewage Disposal Recommendations	This material may be hazardous to the aquatic environment. Keep out of sewers and waterways.
Waste Disposal Recommendations	Place in an appropriate container and dispose of the contaminated material at a licensed site.
Additional Information	Dispose of waste material in accordance with all local, regional, national, and international regulations.

SECTION 14. TRANSPORT INFORMATION

In accordance with DOT / TDG / ADR / RID / ADNR / IMDG / ICAO / IATA

UN number - No dangerous good in terms of transport regulations.

UN proper shipping name - Not applicable

Overland Transport No additional Information available.

Transport by Sea No Additional Information available.

Air Transport No Additional Information available.

SECTION 15. REGULATORY INFORMATION

15.1 US FEDERAL REGULATIONS

Sodium Chloride (7647-14-5) – Listed on the United States TSCA (Toxic Substances Control Act) Inventory

15.2 US STATE REGULATIONS

The following states have an OSH program approved by OSHA. If you are located in any of these states you may be under state jurisdiction rather than federal jurisdiction and your state may have more stringent requirements than OSHA. You should consult your state regulations to ensure compliance.

Alaska	Indiana	Nevada	Puerto Rico	Virginia
Arizona	Iowa	New Mexico	South Carolina	Washington
California	Kentucky	*New Jersey	Tennessee	Wyoming
*Connecticut	Maryland	*New York	Utah	
Hawaii	Michigan	North Carolina	Vermont	
*Illinois	Minnesota	Oregon	*Virgin Islands	

*The state plans in these states apply only to public sector employees. In these states private sector employers are subject to USOL – OSHA jurisdiction. All other state plans apply to both public and private sector employers.

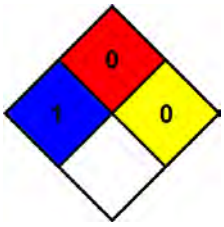
Sodium Chloride (7647-14-5) – U.S. Texas – Effects Screening Levels – Short Term & Long Term

SECTION 16. OTHER INFORMATION

NFPA Health Hazard 1 – Exposure could cause irritation but only minor residual injury even if not treatment is given.

NFPA Fire Hazard 0 – Materials that will no burn.

NFPA Reactivity 0 – Normally stable, even under fire exposure conditions, and are not reactive with water.



Date of Latest Revision April, 2018

Prepared by NSC Minerals Ltd

The data contained herein is believed to be accurate and reliable, but no expressed or implied warranty is made with regard to the accuracy of such data or its sustainability for a given situation. Such data relates only to the specific product described and not to such product in combination with any other product. We disclaim all liability for any actions taken or forgone on reliance upon such data. Users should make their own investigation to determine the suitability of the information for the particular purposes.

SAFETY DATA SHEET

1. Identification

Product identifier **Spray Nine Heavy Duty Cleaner/Disinfectant**

Other means of identification

Synonyms C26804, C26802, C26820, C26822, C26832, C26845, C26946, C26832
Registered Product: DIN 2160331

Recommended use Cleaner

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name ITW Permatex

Address 6875 Parkland Blvd.
Solon, Ohio 44139
United States

Supplier

Company name ITW Permatex Canada
c/o ITW Global Brands Canada

Address 2360 Bristol Circle, Suite 101
Oakville L6H 6M5 CA

e-mail literature.canada@permatex.com

Phone 905-693-8900 General
1-877-504-9352 Emergency

2. Hazard identification

Physical hazards Not classified.

Health hazards Skin corrosion/irritation Category 2

Serious eye damage/eye irritation Category 1

Environmental hazards Not classified.

Label elements

Signal word Danger

Hazard statement Causes skin irritation.
Causes serious eye damage.

Precautionary statement

Prevention Wash thoroughly after handling.
Wear protective gloves, eye protection, and face protection.

Response IF ON SKIN: Wash with plenty of water. If skin irritation occurs: Get medical attention. Take off contaminated clothing and wash it before reuse. Specific treatment (see information on this label).
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.

Storage Store away from incompatible materials.

Disposal Dispose of container in accordance with local, regional, national and international regulations.

Other hazards None known.

Supplemental information Exempt - Registered product - (DIN 2160331).
This product is not subject to the Hazardous Products Act (HPA) Part II (Hazardous Products) as per paragraph 12(j); Schedule 1 (Non-Application of Part II). This restriction states that Part II does not apply in respect of the sale or importation of anything listed in Schedule 1 which includes any cosmetic, device, drug or food, as defined in section 2 of the Food and Drugs Act, or any consumer product as defined in section 2 of the Canada Consumer Product Safety Act.

Refer to product label for further information.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Lauryldimethylamine oxide		1643-20-5	0.1 - 1 *
Alcohols, C9-11, ethoxylated		68439-46-3	1 - 5 *
Quaternary ammonium compounds, benzyl-C12-18-alkyldimethyl, chlorides		68391-01-5	0.1 - 1 *
Quaternary ammonium compounds, C12-18-alkyl[(ethylphenyl)methyl]di methyl, chlorides		68956-79-6	0.1 - 1 *
Sodium hydroxide		1310-73-2	0.1 - 1 *
Sodium metasilicate		6834-92-0	0.1 - 1 *
Tetrasodium ethylenediamine tetraacetate		64-02-8	0.1 - 1 *
Tetrasodium pyrophosphate		7722-88-5	0.1 - 1 *

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Composition comments *CANADA GHS: The exact percentage (concentration) of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation If symptoms develop move victim to fresh air. If symptoms persist, obtain medical attention.

Skin contact IF ON SKIN: Wash with plenty of water. If skin irritation occurs: Get medical attention. Take off contaminated clothing and wash it before reuse. Specific treatment (see information on this label).

Eye contact IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTRE or doctor.

Ingestion Rinse mouth. Do not induce vomiting. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Never give anything by mouth if victim is unconscious or is convulsing. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Skin irritation. May cause redness and pain.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed. Treat patient symptomatically.

General information If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

5. Fire-fighting measures

Suitable extinguishing media Water fog. Foam. Dry chemical powder. Carbon dioxide.

Unsuitable extinguishing media Not available.

Specific hazards arising from the chemical During fire, gases hazardous to health may be formed.

Hazardous combustion products May include and are not limited to: Oxides of carbon.

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions Move containers from fire area if you can do so without risk.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up	Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Clean surface thoroughly to remove residual contamination. For waste disposal, see section 13 of the SDS.
Environmental precautions	Do not discharge into lakes, streams, ponds or public waters.

7. Handling and storage

Precautions for safe handling	Do not get this material in contact with eyes. Wear appropriate personal protective equipment. Provide adequate ventilation. Observe good industrial hygiene practices. Wash thoroughly after handling. When using do not eat or drink.
Conditions for safe storage, including any incompatibilities	Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS). Keep out of reach of children.

8. Exposure controls/Personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3
Tetrasodium pyrophosphate (CAS 7722-88-5)	TWA	5 mg/m3

Canada. Quebec OELs. (Ministry of Labour - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3
Tetrasodium pyrophosphate (CAS 7722-88-5)	TWA	5 mg/m3

Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Ensure adequate ventilation.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves. Confirm with a reputable supplier first.
Other	As required by employer code.

Respiratory protection	Where exposure guideline levels may be exceeded, use an approved NIOSH respirator. Respirator should be selected by and used under the direction of a trained health and safety professional following requirements found in OSHA's respirator standard (29 CFR 1910.134), CAN/CSA-Z94.4 and ANSI's standard for respiratory protection (Z88.2).
Thermal hazards	Not applicable.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practices. Wash hands before breaks and immediately after handling the product. When using do not eat or drink.

9. Physical and chemical properties

Appearance	Clear
Physical state	Liquid.
Form	Liquid.
Colour	Not available.
Odour	Citrus
Odour threshold	Not available.
pH	12 - 12.8
Melting point/freezing point	Not available.
Initial boiling point and boiling range	100 °C (212 °F)
Flash point	> 93.0 °C (> 199.4 °F)
Evaporation rate	< 1 (BuAc = 1)
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit – upper (%)	Not available.
Vapour pressure	18 mm Hg
Vapour density	> 1 (Air = 1)
Relative density	1.02 g/mL
Solubility(ies)	
Solubility (Water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.
VOC (Weight %)	< 0.5 %

10. Stability and reactivity

Reactivity	May react with incompatible materials.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerisation does not occur.
Conditions to avoid	Do not mix with other chemicals.
Incompatible materials	Strong oxidising agents.
Hazardous decomposition products	May include and are not limited to: Oxides of carbon.

11. Toxicological information

Information on likely routes of exposure

Inhalation	No adverse effects due to inhalation are expected.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye damage.
Ingestion	May cause stomach distress, nausea or vomiting.
Symptoms related to the physical, chemical and toxicological characteristics	Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity

Components	Species	Test results
Alcohols, C9-11, ethoxylated (CAS 68439-46-3)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg, 24 Hours, ECHA
		2216 mg/kg, 24 Hours, ECHA
		2000 mg/kg, 24 Hours, ECHA
	Rat	> 5000 mg/kg, HMIRA
		> 2000 mg/kg, 24 Hours, ECHA
Inhalation		
LC50	Rat	> 1600 mg/m3, 4 Hours, ECHA
		> 100 mg/m³, 6 hours, ECHA
		> 20 mg/L, 1 hours, Shell
		> 1.6 mg/L, 4 Hours, ECHA
Oral		
LD50	Rat	> 5050 mg/kg, ECHA
		5130 mg/kg, ECHA
		4600 mg/kg, ECHA
		3488 mg/kg, ECHA
		1400 mg/kg, Air products
		1378 mg/kg, SAX
Lauryldimethylamine oxide (CAS 1643-20-5)		
Acute		
Dermal		
LD50	Rat	> 2000 mg/kg, ECHA
Inhalation		
LC50	Not available	
Oral		
LD50	Mouse	2700 mg/kg, Sigma Aldrich
	Rat	1064 mg/kg, ECHA
Quaternary ammonium compounds, benzyl-C12-18-alkyldimethyl, chlorides (CAS 68391-01-5)		
Acute		
Dermal		
LD50	Rat	1420 mg/kg, HSDB
Inhalation		
LC50	Not available	
Oral		
LD50	Mouse	150 mg/kg, HSDB
	Rat	300 mg/kg, HSDB
		240 mg/kg, HSDB

Components	Species	Test results
Quaternary ammonium compounds, C12-18-alkyl[(ethylphenyl)methyl]dimethyl, chlorides (CAS 68956-79-6)		
Acute		
Dermal		
LD50	Not available	
Inhalation		
LC50	Not available	
Oral		
LD50	Rat	250 mg/kg
Sodium hydroxide (CAS 1310-73-2)		
Acute		
Dermal		
LD50	Not available	
Inhalation		
LC50	Not available	
Oral		
LD50	Rabbit	325 mg/kg, ECHA
Sodium metasilicate (CAS 6834-92-0)		
Acute		
Dermal		
LD50	Rat	> 5000 mg/kg, 24 Hours
Inhalation		
LC50	Rat	> 2.1 mg/L, 4 Hours
Oral		
LD50	Mouse	770 - 820 mg/kg, ECHA
		666.7 - 1008.6 mg/kg, ECHA
		2400 mg/kg, Patty's Industrial Hygiene and Toxicology
		770 - 820 mg/kg, ECHA
		666.7 - 1008.6 mg/kg, ECHA
		661.5 - 896.3 mg/kg
	Rat	1189.6 - 1530 mg/kg, ECHA
		1152 - 1349 mg/kg, ECHA
		1280 mg/kg, Patty's Industrial Hygiene and Toxicology
		1189.6 - 1530 mg/kg, ECHA
		1152 - 1349 mg/kg, ECHA
		994.7 - 1335.9 mg/kg
Tetrasodium ethylenediamine tetraacetate (CAS 64-02-8)		
Acute		
Dermal		
LD50	Not available	
Inhalation		
LC50	Not available	
Oral		
LD50	Rat	> 2000 mg/kg, HSDB
		3200 mg/kg, ECHA
		2700 mg/kg, ECHA
		2581 mg/kg, ECHA
		2150 mg/kg, ECHA
		1913 mg/kg, ECHA
		1780 mg/kg, ECHA
		1700 mg/kg, ECHA

Components	Species	Test results
		1658 mg/kg
Tetrasodium pyrophosphate (CAS 7722-88-5)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg, 24 Hours, ECHA
	Rat	> 2000 mg/kg, 24 Hours, ECHA
		> 2 mg/kg, 24 Hours, ECHA
		7940 mg/kg, Sigma Aldrich
Inhalation		
LC50	Rat	> 1.1 mg/L, 4 Hours, ECHA
		> 0.6 mg/L, 4 Hours, ECHA
Oral		
LD50	Rat	300 - 2000 mg/kg, ECHA
		> 2 mg/kg, ECHA
		1624 mg/kg, ECHA

Skin corrosion/irritation Causes skin irritation.

Exposure minutes Not available.

Erythema value Not available.

Oedema value Not available.

Serious eye damage/eye irritation Causes serious eye damage.

Corneal opacity value Not available.

Iris lesion value Not available.

Conjunctival reddening value Not available.

Conjunctival oedema value Not available.

Recover days Not available.

Respiratory or skin sensitisation

Canada - Alberta OELs: Irritant

Sodium hydroxide (CAS 1310-73-2) Irritant

Respiratory sensitisation Not a respiratory sensitizer.

Skin sensitisation This product is not expected to cause skin sensitisation.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Not classified.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not an aspiration hazard.

Chronic effects Not available.

Further information Not available.

12. Ecological information

Ecotoxicity See below

Ecotoxicological data

Components		Species	Test results
Alcohols, C9-11, ethoxylated (CAS 68439-46-3)			
Fish		Rainbow trout	70.7 mg/L, 96 Hours
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	2.9 - 8.5 mg/L, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)	6 - 12 mg/L, 96 hours

Components		Species	Test results
Sodium hydroxide (CAS 1310-73-2)			
Aquatic			
Crustacea	EC50	Water flea (Ceriodaphnia dubia)	34.59 - 47.13 mg/L, 48 hours
Fish	LC50	Western mosquitofish (Gambusia affinis)	125 mg/L, 96 hours
Sodium metasilicate (CAS 6834-92-0)			
Aquatic			
Crustacea	EC50	Water flea (Ceriodaphnia dubia)	0.28 - 0.57 mg/L, 48 hours
Fish	LC50	Western mosquitofish (Gambusia affinis)	1800 mg/L, 96 hours
Tetrasodium ethylenediamine tetraacetate (CAS 64-02-8)			
Algae	EC50	Algae	1.01 mg/L, 72 Hours
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	610 mg/L, 24 hours
Fish	LC50	Bluegill (Lepomis macrochirus)	472 - 500 mg/L, 96 hours
Tetrasodium pyrophosphate (CAS 7722-88-5)			
Aquatic			
Fish	LC50	Western mosquitofish (Gambusia affinis)	1380 mg/L, 96 hours

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential No data available.

Mobility in soil No data available.

Mobility in general Not available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

General Canada: TDG Proof of Classification: Classification Method: Classified as per Part 2, Sections 2.1 – 2.8 of the Transportation of Dangerous Goods Regulations. If applicable, the technical name and the classification of the product will appear below.

Transportation of Dangerous Goods (TDG - Canada)

Not regulated as dangerous goods.

15. Regulatory information

Canadian federal regulations Exempt - Registered product - (DIN 2160331).
This product is not subject to the Hazardous Products Act (HPA) Part II (Hazardous Products) as per paragraph 12(j); Schedule 1 (Non-Application of Part II). This restriction states that Part II does not apply in respect of the sale or importation of anything listed in Schedule 1 which includes any cosmetic, device, drug or food, as defined in section 2 of the Food and Drugs Act, or any consumer product as defined in section 2 of the Canada Consumer Product Safety Act.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Not regulated.

International regulations Exempt DIN 2160331

WHMIS classification Exempt - Registered product - (DIN 2160331)

Inventory status

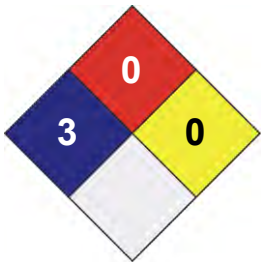
Country(s) or region	Inventory Name	On Inventory (Yes/No)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other information

LEGEND	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

HEALTH	/ 3
FLAMMABILITY	0
PHYSICAL HAZARD	0
PERSONAL PROTECTION	X



Issue date 20-February-2019

Revision date 20-February-2019

Version No. 01

Other information For an updated SDS, please contact the supplier/manufacturer listed on the first page of the document.

Disclaimer Information contained herein was obtained from sources considered technically accurate and reliable. While every effort has been made to ensure full disclosure of product hazards, in some cases data is not available and is so stated. Since conditions of actual product use are beyond control of the supplier, it is assumed that users of this material have been fully trained according to the requirements of all applicable legislation and regulatory instruments. No warranty, expressed or implied, is made and supplier will not be liable for any losses, injuries or consequential damages which may result from the use of or reliance on any information contained in this document.

Prepared by Emmanual Investments, Inc. Phone: 574-293-5141

SAFETY DATA SHEET

SUPREME ™ SYNTHETIC BLEND 2-STROKE SMALL ENGINE OIL

000003002389

Version 2.4 | Revision Date 2021/02/08 | Print Date 2021/02/08

SECTION 1. IDENTIFICATION

Product name : SUPREME ™ SYNTHETIC BLEND 2-STROKE SMALL ENGINE OIL

Product code : TWOSTRBLK, TWOSTRDRM, TWOSTRC12, TWOSTRC16, TWOSTRC24, TWOSTR

Manufacturer or supplier's details

Petro-Canada Lubricants Inc.
2310 Lakeshore Road West
Mississauga ON L5J 1K2
Canada

Telephone : 1-905-403-6785

Emergency telephone number

Emergency telephone number : CHEMTREC: 1-800-424-9300;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : A low ash synthetic blend 2-stroke small engine oil designed to lubricate conventional pre-mixed fuel/oil as well as oil injection lubricated engines powering air-cooled two-stroke cycle engines such as motorcycles, mopeds, snowmobiles, chain saws, generators, lawn mowers, weed trimmers and other landscaping equipment.

Prepared by : Product Safety: +1 905-491-0565

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the Hazardous Products Regulations

Not a hazardous substance or mixture.

GHS label elements

Not a hazardous substance or mixture.

Other hazards

None known.

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

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Components

Chemical name	CAS-No.	Concentration (% w/w)
Distillates (petroleum), hydrotreated light paraffinic; Baseoil — unspecified	64742-55-8	30 - 50
Lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based; Baseoil — unspecified	72623-87-1	30 - 50
Phenol, polyisobutylene derivs.		5 - 10
Mineral oil		1 - 5

SECTION 4. FIRST AID MEASURES

If inhaled : Move to fresh air.
Artificial respiration and/or oxygen may be necessary.
Seek medical advice.

In case of skin contact : In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash clothing before reuse.
Seek medical advice.

In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.

If swallowed : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Seek medical advice.

Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : No information available.

Specific hazards during firefighting : Cool closed containers exposed to fire with water spray.

Hazardous combustion products : Carbon oxides (CO, CO2), nitrogen oxides (NOx), sulphur oxides (SOx), phosphorus oxides (POx), hydrocarbons, smoke and irritating vapours as products of incomplete com-

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bustion.

Further information	:	Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. Material can create slippery conditions. Mark the contaminated area with signs and prevent access to unauthorized personnel. Only qualified personnel equipped with suitable protective equipment may intervene.
Environmental precautions	:	If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	:	Prevent further leakage or spillage if safe to do so. Remove all sources of ignition. Soak up with inert absorbent material. Non-sparking tools should be used. Ensure adequate ventilation. Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	None known.
Advice on safe handling	:	For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin, eyes and clothing. Do not ingest. Keep away from heat and sources of ignition. Keep container closed when not in use.
Conditions for safe storage	:	Store in original container. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in a dry, cool and well-ventilated place. Keep in properly labelled containers. To maintain product quality, do not store in heat or direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

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Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based; Baseoil — unspecified	72623-87-1	TWA (Mist)	5 mg/m3	CA AB OEL
		STEL (Mist)	10 mg/m3	CA AB OEL
		TWAEV (Mist)	5 mg/m3	CA QC OEL
		STEV (Mist)	10 mg/m3	CA QC OEL
		TWA (Mist)	1 mg/m3	CA BC OEL
		TWA (Inhalable particulate matter)	5 mg/m3	ACGIH

Engineering measures : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type : organic vapour filter

Hand protection

Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).

Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye protection : Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Protective measures : Wash hands and face before breaks and immediately after handling the product.
Wash contaminated clothing before re-use.

Hygiene measures : Remove and wash contaminated clothing and gloves, including the inside, before re-use.
Wash face, hands and any exposed skin thoroughly after handling.

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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	viscous liquid
Colour	:	blue green
Odour	:	Mild petroleum oil like.
Odour Threshold	:	No data available
pH	:	No data available
Pour point	:	-51 °C (-60 °F)
Boiling point/boiling range	:	No data available
Flash point	:	151 °C (304 °F) Method: Cleveland open cup
Fire Point	:	No data available
Evaporation rate	:	No data available
Flammability	:	Remarks: Low fire hazard. This material must be heated before ignition will occur.
Auto-Ignition Temperature	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	No data available
Relative vapour density	:	No data available
Relative density	:	No data available
Density	:	0.8475 kg/l (15 °C)
Solubility(ies)		
Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity		
Viscosity, kinematic	:	34.7 cSt (40 °C / 104 °F)

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6.8 cSt (100 °C / 212 °F)

Explosive properties : Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions : Hazardous polymerisation does not occur.
Stable under normal conditions.

Conditions to avoid : No data available

Incompatible materials : Reactive with oxidising agents, reducing agents and acids.

Hazardous decomposition products : May release COx, NOx, SOx, hydrocarbons, methacrylate monomers, asphyxiants, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Information on likely routes of exposure : Eye contact
Ingestion
Inhalation
Skin contact

Acute toxicity

Product:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

Components:

Distillates (petroleum), hydrotreated light paraffinic; Baseoil — unspecified:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg,

Acute inhalation toxicity : LC50 (Rat): > 5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg,

Lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based; Baseoil — unspecified:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg,

Acute inhalation toxicity : LC50 (Rat): > 5.2 mg/l
Exposure time: 4 h

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Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg,

Skin corrosion/irritation

Product:

Remarks : No data available

Serious eye damage/eye irritation

Product:

Remarks : No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae/aquatic plants : Remarks: No data available

Toxicity to microorganisms : Remarks: No data available

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

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Bioaccumulative potential
No data available

Mobility in soil
No data available

Other adverse effects
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	The product should not be allowed to enter drains, water courses or the soil. Offer surplus and non-recyclable solutions to a licensed disposal company. Waste must be classified and labelled prior to recycling or disposal. Send to a licensed waste management company. Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

National Regulations

TDG
Not regulated as a dangerous good

SECTION 15. REGULATORY INFORMATION

The components of this product are reported in the following inventories:

DSL	:	On the inventory, or in compliance with the inventory
TSCA	:	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
IECSC	:	On the inventory, or in compliance with the inventory

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SECTION 16. OTHER INFORMATION

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
CA AB OEL	:	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
CA BC OEL	:	Canada. British Columbia OEL
CA QC OEL	:	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
ACGIH / TWA	:	8-hour, time-weighted average
CA AB OEL / TWA	:	8-hour Occupational exposure limit
CA AB OEL / STEL	:	15-minute occupational exposure limit
CA BC OEL / TWA	:	8-hour time weighted average
CA QC OEL / TWAEV	:	Time-weighted average exposure value
CA QC OEL / STEV	:	Short-term exposure value

AICS - Australian Inventory of Chemical Substances; AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); Ecx - Concentration associated with x% response; Elx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

For Copy of SDS : Internet: lubricants.petro-canada.com/sds
Western Canada, telephone: 1-800-661-1199; fax: 1-800-378-4518
Ontario & Central Canada, telephone: 1-800-268-5850; fax: 1-800-201-6285
Quebec & Eastern Canada, telephone: 1-800-576-1686; fax:

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1-800-201-6285
For Product Safety Information: 1 905-491-0565

Prepared by	:	Product Safety: +1 905-491-0565
Revision Date	:	2021/02/08
Date format	:	yyyy/mm/dd

The information is considered as correct, but not exhaustive, and will be used only as a guide, which is based in the current knowledge of the substance or mixture, and is applicable to proper safety precautions for the product.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

CA / EN

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The Procter & Gamble Company
P&G Household Care
Fabric & Home Care Innovation Center
5299 Spring Grove Avenue
Cincinnati, OH 45217-1087

MATERIAL SAFETY DATA SHEET

MSDS #: RQ1003745, RQ1000736 Revision Date: 1/27/11
Supersedes: FH/H/2007/ECCE-732RF9 Issue Date: 9/1/04

SECTION I - PRODUCT IDENTIFICATION

Identity: **GRANULAR LAUNDRY DETERGENT FINISHED PRODUCT**

Brands: **TIDE ULTRA** (ALL SCENTS: REGULAR, MOUNTAIN SPRING, CLEAN BREEZE, SPRING LAVENDER)

P&G Telephone Number: 1-800-879-8433 or call Local Poison Control Center or your physician.

Transportation Emergency (24 hour) Telephone Number – CHEMTREC: 1-800-424-9300 – U.S. and Canada; 1-703-527-3887 – for calls originating elsewhere.

SECTION II - HAZARDS IDENTIFICATION

Potential Health Hazards (Acute and Chronic): (See Section 11 for more information)

Ingestion: May cause transient gastrointestinal irritation.

Eye Contact: Contact may cause mild, transient irritation.

Skin Contact: Prolonged contact may cause mild, transient irritation.

Inhalation: Heavy exposure to dust may cause transient respiratory tract irritation. Prolonged or repeated heavy exposure to dust may cause respiratory sensitization or symptomatic responses.

Signs and Symptoms of Exposure:

Ingestion: Possible mild gastrointestinal irritation with nausea, vomiting, and/or diarrhea.

Eye Contact: Eye contact with the product or its aqueous solution may produce transient superficial irritation.

Skin Contact: Prolonged contact with the product or its aqueous solution may produce transient superficial irritation.

Inhalation: Heavy exposure to dust may cause transient respiratory tract irritation.

Medical Conditions Generally Known to be Aggravated by Exposure: N/K.

Potential Environmental Effects: (See Section 12 for more information)

SECTION III - COMPOSITION AND INGREDIENTS

Ingredients listed on the product label are: biodegradable anionic surfactants and enzymes.

Hazardous Ingredients as defined by OSHA, 29 CFR 1910.1200. and/or WHMIS under the HPA:

This product is hazardous under U.S. OSHA Hazard Communication (eye irritant). With increased exposure compared with consumer use, this mixture, when tested as a whole, is considered an inhalation hazard (enzymes).

Common Name	Chemical Name	CAS No.	Composition Range	LD50/LC50
Soda Ash	Sodium Carbonate	497-19-8	15-40%	1.9 g/kg (rats, oral)
Anionic Surfactants	Alkyl Sulfate, Sodium Salt	68955-19-1 & Proprietary	10-30% total anionic surfactant	1.3 - 2.1 g/kg (rats, oral)
	Linear Alkyl Sulfonate	68081-81-2		0.7 – 1.3 g/kg (rats, oral)
	Alcohol Ethoxysulfate, sodium salt	68585-34-2		>2 g/kg (rats, oral)
	Benzene sulfonic acid, monoethanolamine salt	68910-32-7		Not available
Percarbonate	Sodium Carbonate Peroxide	15630-89-4	3-7%	1.0 - 3 g/kg (rats, oral)
Silicate	Silicate	1344-09-8	3-7%	1.3 g/kg (rats, oral)
Zeolite	Silicic acid, aluminum salt	1344-00-9	10-30%	N/A

SECTION IV – FIRST AID INFORMATION

First Aid Procedures:

Ingestion: Dilute by drinking 1-2 glasses of water. Do NOT induce vomiting. If symptoms persist, consult a physician.

Eye Contact: Flush eyes thoroughly with lukewarm water for 15 minutes. If irritation persists, consult a physician.

Skin Contact: Rinse exposed area with water. If irritation persists, consult a physician.

Inhalation: Leave dusty area. In rare cases a respiratory reaction can occur which may include tightness of chest and difficulty breathing. If this occurs, seek medical attention immediately.

Note to Physician: (if applicable):

Other: Consumer product package has the following precautionary statement:

US: FRONT LABEL: "CAUTION: EYE IRRITANT. MAY BE HARMFUL IF SWALLOWED. SEE CAUTION ON BACK PANEL."

BACK PANEL: "CAUTION: In case of eye contact, flush with water. If swallowed, give a glassful of water or milk. Call a physician. KEEP OUT OF REACH OF CHILDREN."

CANADA: "CAUTION: MAY IRRITATE EYES. Do not get in eyes. KEEP OUT OF REACH OF CHILDREN. MAY BE HARMFUL IF SWALLOWED. FIRST AID TREATMENT: Contains biodegradable anionic surfactants and enzymes. If swallowed, give a glassful of water or milk and call a Poison Control Centre or doctor immediately. Do not induce vomiting. If in eyes, rinse them well with water for 15 minutes.

SECTION V - FIRE FIGHTING INFORMATION

Flash Point (Method Used): N/A

Flammable Properties:

Upper Flammable/Explosive Limit: N/A

Lower Flammable/Explosive Limit: N/A

Auto-ignition Temperature: N/A

Hazardous Combustion Products: N/K

Explosion Data (Sensitivity to Mechanical Impact): N/K

Explosion Data (Sensitivity to Static Discharge): N/K

Extinguishing Media:

Suitable: CO2, water, or dry chemical

Unsuitable: N/K

Protection of Firefighters:

Specific Hazards Arising from the Material: N/K

Protective Equipment and Precautions for Firefighters: Firefighters should be equipped with self-contained breathing apparatus and normal turnout gear.

SECTION VI - ACCIDENTAL RELEASE MEASURES

Personal Precautions: Minimize dust levels while collecting product (see "Inhalation" health effects). Prevent exposure to dust with NIOSH approved respirators with HEPA filters. Minimize prolonged skin contact by using gloves.

Environmental Precautions: DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH FEDERAL, STATE/PROVINCIAL AND LOCAL REGULATIONS. Small (household) solutions may be disposed of in sewer. Dry product may be landfilled if permitted by local regulations. Discard empty container in trash. Waste water containing product may be sewered in compliance with all federal and state/provincial regulations, and local ordinances.

Methods for Containment: For dry product spills, collect material in an approved container while minimizing dust generation. Vacuum, as appropriate, remaining dust on floor.

Methods for Cleanup: Recycle or dispose of product, as necessary, in accordance with regulations. Flush small (household) quantities down acceptable sanitary/process sewer. Wipe up small spills with a damp cloth. Dispose of according to local regulations.

Other Information: (if applicable):

SECTION VII – HANDLING AND STORAGE

Precautions To Be Taken in Handling: Avoid breathing product dust.

Precautions To B e Taken in Storage: Store in a cool, dry place. Keep product dry to maintain free-flowing granules.

SECTION VIII - EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines: Minimize dust.

Engineering Controls: N/A

Personal Protective Equipment (PPE):

Eye/Face Protection: None required for normal handling.

Skin Protection: None required for normal handling.

Respiratory Protection: None required for normal handling.

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

Appearance (color, physical form, shape):
White powder with or without colored speckles

Odor: Scented and/or unscented.

Odor Threshold: N/A

Physical State: Solid granules at 68°F (20°C)

Vapor Pressure (mm Hg): N/A

Vapor Density (Air=1): N/A

Boiling Point: N/A

Partition Coefficient (n-octanol/water): N/A

Flash Point (Method Used): N/A

Reserve Alkalinity: ~ 5-8.75 g NaOH/100 mL (at pH=9.5)

Solubility in Water: Mostly soluble at 68°F (20°C)

Decomposition Temperature: N/A

Evaporation Rate (nBuOAc=1): N/A

Specific Gravity/Density: Density 420–650 g/L

Melting/Freezing Point: N/A

pH (of a 1% solution): 10–11.5

Volatile Organic Compound (VOC): Not Applicable - Product not regulated for VOC Content at State or Federal level.

SECTION X - STABILITY AND REACTIVITY

Chemical Stability: Stable.
Conditions to Avoid: Open flame.
Incompatible Materials: N/K
Hazardous Decomposition Products: N/K
Possibility of Hazardous Reactions: N/K

SECTION XI - TOXICOLOGICAL INFORMATION

Granular detergent has a relative low order of toxicity. If ingested, it may result in mild gastrointestinal irritation, diarrhea, and/or vomiting. Eye contact with the product or its aqueous solution may produce transient superficial irritation.

Chronic Effects: No chronic health effects reported.

Target Organs: No target organs reported.

Carcinogenicity: This finished consumer product is not carcinogenic.
NTP: No*
IARC: No*
*NTP and IARC information confirmed via Ariel.

SECTION XII - ECOLOGICAL INFORMATION

Based on ecotoxicity and chemical fate data the ingredients in this product are not expected to harm the environment when disposed of through normal routes of use. The surfactants in this detergent are readily biodegradable and well removed during sewage treatment processing.

SECTION XIII - DISPOSAL CONSIDERATIONS

Waste Disposal Method: DISPOSAL SHOULD BE IN ACCORDANCE WITH FEDERAL, STATE/PROVINCIAL AND LOCAL REGULATIONS.

Non-Household Setting (federal): Products covered by this MSDS, in their original form, when disposed as waste, are considered non-hazardous waste according to Federal RCRA regulations (40 CFR 261). Disposal should be in accordance with local, state and federal regulations.

Non-Household Setting (California): Hazardous, in accordance with 22 CCR 66261.20 through 22 CCR 66261.24

Household Use: Consumer may discard empty container in trash, or recycle where facilities exist. Consumer produced household solutions may be disposed of down the drain with running water. Product used in household may be disposed of in refuse or in sewer.

SECTION XIV - TRANSPORT INFORMATION

Products covered by this MSDS, in their original form, are not regulated for transportation.

Ground Transport (US DOT): Not regulated

Air Transport (IATA): Not regulated

Marine/Water Transport (IMDG): Not regulated

SECTION XV - REGULATORY INFORMATION

United States

All intentionally added components of this product are listed on the US TSCA Inventory.

EPA Registration Number: Not Applicable.

SARA 313/302/304/311/312 chemicals: None

California: This product has been evaluated and does not require warning labeling under California Proposition 65.

California Registration Number: Not Applicable.

State Right-to-Know and CERCLA:

The following ingredients present in the finished product are listed on state right-to-know lists or state worker exposure lists:

Ingredient	CAS#	Level	CERCLA RQ	State				
				IL	MA	NJ	PA	RI
Zeolite	1344-00-9	10-30%	N/A				X	

CANADA

All ingredients are CEPA approved for import to Canada by Procter & Gamble. This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and this MSDS contains all information required by the Controlled Products Regulations.

Sodium carbonate (CAS# 497-19-8) is listed on the Canadian WHMIS Ingredient Disclosure List (IDL) as item 1431, with a threshold of 1%.

SECTION XVI - OTHER INFORMATION

Perfumes contained within the products covered by this MSDS comply with appropriate IFRA guidance.

P&G Hazard Rating:	Health:	1	4=EXTREME
	Flammability:	1	3=HIGH
	Reactivity:	0	2=MODERATE
			1=SLIGHT
			0=NOT SIGNIFICANT

*N/A. - Not Applicable *N/K. - Not Known

Data supplied is for use only in connection with occupational safety and health.

DISCLAIMER: This MSDS is intended to provide a brief summary of our knowledge and guidance regarding the use of this material. The information contained here has been compiled from sources considered by Procter & Gamble to be dependable and is accurate to the best of the Company's knowledge. It is not meant to be an all-inclusive document on worldwide hazard communication regulations.

This information is offered in good faith. Each user of the material needs to evaluate the conditions of use and design the appropriate protective mechanisms to prevent employee exposures, property damage or release to the environment. Procter & Gamble assumed no responsibility for injury to the recipient or third persons, or for any damage to any property resulting from misuse of the product.

SECTION 1. IDENTIFICATION

Product name	:	GASOLINE, UNLEADED
Synonyms	:	Regular, Unleaded Gasoline (US Grade), Mid-Grade, Plus, Super, WinterGas, SummerGas, Supreme, SuperClean, SuperClean WinterGas, RegularClean, PlusClean, Premium, marked or dyed gasoline, TQRUL, transitional quality regular unleaded, BOB, Blendstock for Oxygenate Blending, Conventional Gasoline, RUL, MUL, SUL, PUL.
Product code	:	100127, 100126, 101823, 100507, 101811, 101814, 100141, 101813, 101810, 101812, 100063, 101822, 100138, 101821, 100064, 101820, 101819, 100506, 101818, 101816, 101817, 100488
Manufacturer or supplier's details		Petro-Canada P.O. Box 2844, 150 - 6th Avenue South-West Calgary Alberta T2P 3E3 Canada
Emergency telephone number		Suncor Energy: +1 403-296-3000; Canutec Transportation: 1-888- 226-8832 (toll-free) or 613-996-6666; Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use	:	Unleaded gasoline is used in spark ignition engines including motor vehicles, inboard and outboard boat engines, small engines such as chain saws and lawn mowers, and recreational vehicles.
Prepared by	:	Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	Clear liquid.
Colour	Clear to slightly yellow or green, undyed liquid. May be dyed red for taxation purposes.
Odour	Gasoline

GHS Classification

Flammable liquids	:	Category 1
Skin irritation	:	Category 2

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Germ cell mutagenicity	:	Category 1B
Carcinogenicity	:	Category 1A
Reproductive toxicity	:	Category 2
Specific target organ toxicity - single exposure	:	Category 3 (Central nervous system)
Specific target organ toxicity - repeated exposure	:	Category 1
Aspiration hazard	:	Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Extremely flammable liquid and vapour.
May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause drowsiness or dizziness.
May cause genetic defects.
May cause cancer.
Suspected of damaging the unborn child.
Causes damage to organs () through prolonged or repeated exposure.

Precautionary statements : **Prevention:**
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
IF SWALLOWED: Immediately call a POISON CENTER/doctor.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable

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for breathing. Call a POISON CENTER/doctor if you feel unwell.
IF exposed or concerned: Get medical advice/ attention.
Do NOT induce vomiting.
If skin irritation occurs: Get medical advice/ attention.
Take off contaminated clothing and wash before reuse.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
Storage:
Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Potential Health Effects

Primary Routes of Entry	:	Eye contact Ingestion Inhalation Skin contact
Target Organs	:	Blood Immune system
Inhalation	:	Inhalation may cause central nervous system effects. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.
Skin	:	Causes skin irritation.
Eyes	:	May irritate eyes.
Ingestion	:	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Aspiration hazard if swallowed - can enter lungs and cause damage.
Chronic Exposure	:	Chronic exposure to benzene may result in increased risk of leukemia and other blood disorders.
Aggravated Medical Condition	:	None known.

Other hazards

None known.

IARC	Group 1: Carcinogenic to humans	
	Benzene	71-43-2
OSHA	OSHA specifically regulated carcinogen	
	Benzene	71-43-2

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NTP	Known to be human carcinogen	
	Benzene	71-43-2

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration
gasoline, natural	8006-61-9	95 - 100 %
toluene	108-88-3	1 - 40 %
benzene	71-43-2	0.5 - 1.5 %
ethanol	64-17-5	0.1 - 0.3 %

SECTION 4. FIRST AID MEASURES

If inhaled : Artificial respiration and/or oxygen may be necessary.
Move to fresh air.
Seek medical advice.

In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash clothing before reuse.
Seek medical advice.

In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.

If swallowed : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Seek medical advice.

Most important symptoms and effects, both acute and delayed : None known.

Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing
It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

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SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Dry chemical Carbon dioxide (CO2) Water fog. Foam
Unsuitable extinguishing media	:	Do NOT use water jet.
Specific hazards during fire-fighting	:	Cool closed containers exposed to fire with water spray.
Hazardous combustion products	:	Carbon oxides (CO, CO2), nitrogen oxides (NOx), polynuclear aromatic hydrocarbons, phenols, aldehydes, ketones, smoke and irritating vapours as products of incomplete combustion.
Further information	:	Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. Material can create slippery conditions.
Environmental precautions	:	If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	:	Prevent further leakage or spillage if safe to do so. Remove all sources of ignition. Soak up with inert absorbent material. Non-sparking tools should be used. Ensure adequate ventilation. Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling	:	For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Use only with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Avoid contact with skin, eyes and clothing. Do not ingest. Keep away from heat and sources of ignition. Keep container closed when not in use.

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Conditions for safe storage : Store in original container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
To maintain product quality, do not store in heat or direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
gasoline, natural	8006-61-9	TWA	300 ppm 900 mg/m3	OSHA P0
		STEL	500 ppm 1,500 mg/m3	OSHA P0
		TWA	500 ppm 2,000 mg/m3	OSHA Z-1
		STEL	500 ppm 1,500 mg/m3	CAL PEL
		PEL	300 ppm 900 mg/m3	CAL PEL
toluene	108-88-3	TWA	20 ppm	ACGIH
		TWA	100 ppm 375 mg/m3	NIOSH REL
		ST	150 ppm 560 mg/m3	NIOSH REL
		TWA	200 ppm	OSHA Z-2
		CEIL	300 ppm	OSHA Z-2
		Peak	500 ppm (10 minutes)	OSHA Z-2
		TWA	100 ppm 375 mg/m3	OSHA P0
		STEL	150 ppm 560 mg/m3	OSHA P0
		PEL	10 ppm 37 mg/m3	CAL PEL
		C	500 ppm	CAL PEL
		STEL	150 ppm 560 mg/m3	CAL PEL
benzene	71-43-2	TWA	0.5 ppm	ACGIH
		STEL	2.5 ppm	ACGIH
		TWA	0.1 ppm	NIOSH REL
		ST	1 ppm	NIOSH REL
		TWA	10 ppm	OSHA Z-2
		CEIL	25 ppm	OSHA Z-2
		Peak	50 ppm (10 minutes)	OSHA Z-2
		PEL	1 ppm	OSHA CARC
		STEL	5 ppm	OSHA CARC

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		PEL	1 ppm	CAL PEL
		STEL	5 ppm	CAL PEL
ethanol	64-17-5	TWA	1,000 ppm 1,900 mg/m3	NIOSH REL
		TWA	1,000 ppm 1,900 mg/m3	OSHA Z-1
		TWA	1,000 ppm 1,900 mg/m3	OSHA P0
		STEL	1,000 ppm	ACGIH
		PEL	1,000 ppm 1,900 mg/m3	CAL PEL

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sam-pling time	Permissible concentra-tion	Basis
Toluene	108-88-3	Toluene	In blood	Prior to last shift of work-week	0.02 mg/l	ACGIH BEI
		Toluene	Urine	End of shift (As soon as possible after exposure ceases)	0.03 mg/l	ACGIH BEI

Engineering measures : Use only in well-ventilated areas.
Ensure that eyewash station and safety shower are proximal to the work-station location.

Personal protective equipment

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type : A NIOSH-approved air-purifying respirator with an organic vapour cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circum-stances where air-purifying respirators may not provide ade-quate protection.

Hand protection
Material : polyvinyl alcohol (PVA), Viton(R). Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns. It should be realized that eventually any material regardless of their imperviousness,

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		will get permeated by chemicals. Therefore, protective gloves should be regularly checked for wear and tear. At the first signs of hardening and cracks, they should be changed.
Remarks	:	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Eye protection	:	Wear face-shield and protective suit for abnormal processing problems.
Skin and body protection	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Protective measures	:	Wash contaminated clothing before re-use.
Hygiene measures	:	Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Clear liquid.
Colour	:	Clear to slightly yellow or green, undyed liquid. May be dyed red for taxation purposes.
Odour	:	Gasoline
Odour Threshold	:	No data available
pH	:	No data available
Pour point	:	No data available
Boiling point/boiling range	:	25 - 225 °C (77 - 437 °F)
Flash point	:	-50 - -38 °C (-58 - -36 °F) Method: Tagliabue.
Auto-Ignition Temperature	:	257 °C (495 °F)
Evaporation rate	:	No data available
Flammability	:	Extremely flammable in presence of open flames, sparks, shocks, and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. Rapid escape of vapour may generate static charge causing ignition. May accumulate in confined spaces.
Upper explosion limit	:	7.6 %(V)

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Lower explosion limit	:	1.3 %(V)
Vapour pressure	:	< 802.5 mmHg (20 °C / 68 °F)
Relative vapour density	:	3
Relative density	:	0.685 - 0.8
Solubility(ies)		
Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity		
Explosive properties	:	Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Containers may explode in heat of fire. Vapours may form explosive mixtures with air.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	:	Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	:	Extremes of temperature and direct sunlight.
Incompatible materials	:	Reactive with oxidising agents, acids and interhalogens.
Hazardous decomposition products	:	May release COx, NOx, phenols, polycyclic aromatic hydrocarbons, aldehydes, ketones, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure
Eye contact
Ingestion
Inhalation
Skin contact

Acute toxicity

Product:

Acute oral toxicity	:	Remarks: No data available
Acute inhalation toxicity	:	Remarks: No data available
Acute dermal toxicity	:	Remarks: No data available

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Components:

toluene:

Acute oral toxicity	:	LD50 (Rat): 5,580 mg/kg,
Acute inhalation toxicity	:	LC50 (Rat): 7585 ppm Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	:	LD50 (Rabbit): 12,125 mg/kg,

benzene:

Acute oral toxicity	:	LD50 (Rat): 2,990 mg/kg,
Acute inhalation toxicity	:	LC50 (Rat): 13700 ppm Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	:	LD50 (Rabbit): > 8,240 mg/kg,

ethanol:

Acute oral toxicity	:	LD50 (Rat): 7,060 mg/kg,
Acute inhalation toxicity	:	LC50 (Rat): > 32380 ppm Exposure time: 4 h Test atmosphere: vapour

Skin corrosion/irritation

Product:

Remarks: No data available

Serious eye damage/eye irritation

Product:

Remarks: No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

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STOT - repeated exposure

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish	:	Remarks: No data available
Toxicity to daphnia and other aquatic invertebrates	:	Remarks: No data available
Toxicity to algae	:	Remarks: No data available
Toxicity to bacteria	:	Remarks: No data available

Persistence and degradability

Product:

Biodegradability	:	Remarks: No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	The product should not be allowed to enter drains, water courses or the soil. Offer surplus and non-recyclable solutions to a licensed disposal company. Waste must be classified and labelled prior to recycling or disposal. Send to a licensed waste management company. Dispose of as hazardous waste in compliance with local and national regulations. Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.
Contaminated packaging	:	Do not re-use empty containers.

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SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

UN/ID No.	:	UN 1203
Proper shipping name	:	Gasoline
Class	:	3
Packing group	:	II
Labels	:	Class 3 - Flammable Liquid
Packing instruction (cargo aircraft)	:	364

IMDG-Code

UN number	:	UN 1203
Proper shipping name	:	GASOLINE
Class	:	3
Packing group	:	II
Labels	:	3
EmS Code	:	F-E, S-E
Marine pollutant	:	no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

National Regulations

49 CFR

UN/ID/NA number	:	UN 1203
Proper shipping name	:	Gasoline
Class	:	3
Packing group	:	II
Labels	:	Class 3 - Flammable Liquid
ERG Code	:	128
Marine pollutant	:	no

SECTION 15. REGULATORY INFORMATION

The components of this product are reported in the following inventories:

DSL	On the inventory, or in compliance with the inventory
TSCA	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
EINECS	On the inventory, or in compliance with the inventory

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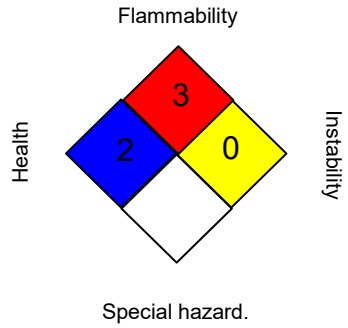
SECTION 16. OTHER INFORMATION

Further information

NFPA:



HMIS III:

HEALTH	3*
FLAMMABILITY	3
PHYSICAL HAZARD	0
PERSONAL PROTECTION	H

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

For Copy of SDS : Internet: www.petro-canada.ca/msds
Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228
For Product Safety Information: 1 905-804-4752

Prepared by : Product Safety: +1 905-804-4752

Revision Date : 2017/04/20

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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Safety Data Sheet
California CARB Compliant

1 - Identification

Product Name: WD-40 Multi-Use Product Aerosol **Product Use: Lubricant, Penetrant, Drives Out Moisture, Removes and Protects Surfaces From Corrosion** **Restrictions on Use: None identified** **SDS Date Of Preparation: August 2, 2021**	**Manufacturer: WD-40 Company** **Address: 9715 Businesspark Avenue San Diego, California, USA 92131** **Telephone:** **Emergency: 1-888-324-7596** **Information: 1-888-324-7596** **Chemical Spills: 1-800-424-9300 (Chemtrec)** **1-703-527-3887 (International Calls)**

2 – Hazards Identification

Hazcom 2012/GHS Classification:
Flammable Aerosol Category 1
Gas Under Pressure: Compressed Gas
Aspiration Toxicity Category 1
Specific Target Organ Toxicity Single Exposure Category 3 (nervous system effects)

Note: This product is a consumer product and is labeled in accordance with the US Consumer Product Safety Commission regulations which take precedence over OSHA Hazard Communication labeling. The actual container label will not include the label elements below. The labeling below applies to industrial/professional products.

Label Elements:

DANGER!
Extremely Flammable Aerosol.
Contains gas under pressure; may explode if heated.
May be fatal if swallowed and enters airways.
May cause drowsiness or dizziness.

Prevention
Keep away from heat, sparks, open flames, hot surfaces. – No smoking.
Do not spray on an open flame or other ignition source.
Pressurized container: Do not pierce or burn, even after use.
Avoid breathing vapors or mists.
Use only outdoors or in a well-ventilated area.

Response
IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.

Storage
Store locked up.
Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F. Store in a well-ventilated place.

Disposal
Dispose of contents and container in accordance with local and national regulations.

3 - Composition/Information on Ingredients

Ingredient	CAS #	Weight Percent	US Hazcom 2012/ GHS Classification
LVP Aliphatic Hydrocarbon	64742-47-8	45-50%	Aspiration Toxicity Category 1
Petroleum Base Oil	64742-56-9 64742-65-0 64742-53-6 64742-54-7 64742-71-8	<35%	Not Hazardous
Aliphatic Hydrocarbon	64742-47-8	<25%	Flammable Liquid Category 3 Aspiration Toxicity Category 1 Specific Target Organ Toxicity Single Exposure Category 3 (nervous system effects)
Carbon Dioxide	124-38-9	2-3%	Simple Asphyxiant Gas Under Pressure, Compressed Gas

Note: The specific chemical identity and exact percentages are a trade secret.

4 – First Aid Measures

Ingestion (Swallowed): Aspiration Hazard. DO NOT induce vomiting. Call physician, poison control center or the WD-40 Safety Hotline at 1-888-324-7596 immediately.
Eye Contact: Flush thoroughly with water. Remove contact lenses if present after the first 5 minutes and continue flushing for several more minutes. Get medical attention if irritation persists.
Skin Contact: Wash with soap and water. If irritation develops and persists, get medical attention.
Inhalation (Breathing): If irritation is experienced, move to fresh air. Get medical attention if irritation or other symptoms develop and persist.
Signs and Symptoms of Exposure: Harmful or fatal if swallowed. Aspiration of liquid into the lungs during swallowing or vomiting may cause lung damage. May cause eye and respiratory irritation. Inhalation of mists or vapors may cause drowsiness, dizziness and other nervous system effects. Skin contact may cause drying of the skin.
Indication of Immediate Medical Attention/Special Treatment Needed: Immediate medical attention is needed for ingestion.

5 – Fire Fighting Measures

Suitable (and unsuitable) Extinguishing Media: Use water fog, dry chemical, carbon dioxide or foam. Do not use water jet or flooding amounts of water. Burning product will float on the surface and spread fire.
Specific Hazards Arising from the Chemical: Extremely flammable aerosol. Contents under pressure. Keep away from ignition sources and open flames. Exposure of containers to extreme heat and flames can cause them to rupture often with violent force. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back. Combustion will produce oxides of carbon and hydrocarbons.
Special Protective Equipment and Precautions for Fire-Fighters: Firefighters should always wear positive pressure self-contained breathing apparatus and full protective clothing. Cool fire-exposed containers with water. Use shielding to protect against bursting containers.

6 – Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures: Wear appropriate protective clothing (see Section 8). Eliminate all sources of ignition and ventilate area.
Methods and Materials for Containment/Cleanup: Leaking cans should be placed in a plastic bag or open pail until the pressure has dissipated. Contain and collect liquid with an inert absorbent and place in a container for disposal. Clean spill area thoroughly. Report spills to authorities as required.

7 – Handling and Storage

Precautions for Safe Handling: Avoid contact with eyes. Avoid prolonged contact with skin. Avoid breathing vapors or aerosols. Use only with adequate ventilation. Keep away from heat, sparks, pilot lights, hot surfaces and open flames. Unplug electrical tools, motors and appliances before spraying or bringing the can near any source of electricity. Electricity can burn a hole in the can and cause contents to burst into flames. To avoid serious burn injury, do not let the can touch battery terminals, electrical connections on motors or appliances or any other source of electricity. Wash thoroughly with soap and water after handling. Keep containers closed when not in use. Keep out of the reach of children. Do not puncture, crush or incinerate containers, even when empty.
Conditions for Safe Storage: Store in a cool, well-ventilated area, away from incompatible materials. Do not store above 120°F or in direct sunlight. U.F.C (NFPA 30B) Level 3 Aerosol. Store away from oxidizers.

8 – Exposure Controls/Personal Protection

Chemical	Occupational Exposure Limits
LVP Aliphatic Hydrocarbon	1200 mg/m3 TWA (manufacturer recommended)
Petroleum Base Oil	5 mg/m3 TWA (Inhalable) ACGIH TLV (as Mineral oil) 5 mg/m3 TWA OSHA PEL (as Oil mist, mineral)
Aliphatic Hydrocarbon	1200 mg/m3 TWA (manufacturer recommended)
Carbon Dioxide	5000 ppm TWA, 30,000 ppm STEL ACGIH TLV 5000 ppm TWA OSHA PEL

The Following Controls are Recommended for Normal Consumer Use of this Product
Appropriate Engineering Controls: Use in a well-ventilated area.
Personal Protection:
Eye Protection: Avoid eye contact. Always spray away from your face.
Skin Protection: Avoid prolonged skin contact. Chemical resistant gloves recommended for operations where skin contact is likely.
Respiratory Protection: None needed for normal use with adequate ventilation.

For Bulk Processing or Workplace Use the Following Controls are Recommended
Appropriate Engineering Controls: Use adequate general and local exhaust ventilation to maintain exposure levels below that occupational exposure limits.
Personal Protection:
Eye Protection: Safety goggles recommended where eye contact is possible.
Skin Protection: Wear chemical resistant gloves.
Respiratory Protection: None required if ventilation is adequate. If the occupational exposure limits are exceeded, wear a NIOSH approved respirator. Respirator selection and use should be based on contaminant type, form and concentration. Follow OSHA 1910.134, ANSI Z88.2 and good Industrial Hygiene practice.
Work/Hygiene Practices: Wash with soap and water after handling.

9 – Physical and Chemical Properties

Appearance:	Light green to amber liquid	Flammable Limits: (Solvent Portion)	LEL: 0.6% UEL: 8%
Odor:	Mild petroleum odor	Vapor Pressure:	95-115 PSI @ 70°F
Odor Threshold:	Not established	Vapor Density:	Greater than 1 (air=1)
pH:	Not Applicable	Relative Density:	0.8 – 0.82 @ 60°F
Melting/Freezing Point:	Not established	Solubilities:	Insoluble in water
Boiling Point/Range:	361 - 369°F (183 - 187°C)	Partition Coefficient; n-octanol/water:	Not established
Flash Point:	138°F (59°C) Tag Closed Cup (liquid)	Autoignition Temperature:	Not established
Evaporation Rate:	Not established	Decomposition Temperature:	Not established
Flammability (solid, gas):	Flammable Aerosol	Viscosity:	2.79-2.96 cSt @ 100°F
VOC:	24.1%	Pour Point:	-63°C (-81.4°F) ASTM

	MIR=0.43gO3/gVOC		D-97

10 – Stability and Reactivity

Reactivity: Not reactive under normal conditions
Chemical Stability: Stable
Possibility of Hazardous Reactions: May react with strong oxidizers generating heat.
Conditions to Avoid: Avoid heat, sparks, flames and other sources of ignition. Do not puncture or incinerate containers.
Incompatible Materials: Strong oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide and carbon dioxide.

11 – Toxicological Information

Symptoms of Overexposure:
Inhalation: High concentrations may cause nasal and respiratory irritation and central nervous system effects such as headache, dizziness and nausea. Intentional abuse may be harmful or fatal.
Skin Contact: Prolonged and/or repeated contact may produce mild irritation and defatting with possible dermatitis.
Eye Contact: Contact may be irritating to eyes. May cause redness and tearing.
Ingestion: This product has low oral toxicity. Swallowing may cause gastrointestinal irritation, nausea, vomiting and diarrhea. This product is an aspiration hazard. If swallowed, can enter the lungs and may cause chemical pneumonitis, severe lung damage and death.
Chronic Effects: None expected.
Carcinogen Status: None of the components are listed as a carcinogen or suspect carcinogen by IARC, NTP, ACGIH or OSHA.
Reproductive Toxicity: None of the components is considered a reproductive hazard.

Numerical Measures of Toxicity:
Acute Toxicity Estimates: Oral > 5,000 mg/kg; Dermal >2,000 mg/kg based on an assessment of the ingredients. This product is not classified as toxic by established criteria. It is an aspiration hazard.

12 – Ecological Information

Ecotoxicity: No specific aquatic toxicity data is currently available; however components of this product are not expected to be harmful to aquatic organisms
Persistence and Degradability: Components are readily biodegradable.
Bioaccumulative Potential: Bioaccumulation is not expected based on an assessment of the ingredients.
Mobility in Soil: No data available
Other Adverse Effects: None known

13 - Disposal Considerations

If this product becomes a waste, it would be expected to meet the criteria of a RCRA ignitable hazardous waste (D001). However, it is the responsibility of the generator to determine at the time of disposal the proper classification and method of disposal. Do not puncture or incinerate containers, even empty. Dispose in accordance with federal, state, and local regulations.

14 – Transportation Information

DOT Surface Shipping Description: UN1950, Aerosols, 2.1 Ltd. Qty
(Note: Shipping Papers are not required for Limited Quantities unless transported by air or vessel – each package must be marked with the Limited Quantity Mark)
IMDG Shipping Description: UN1950, Aerosols, 2.1, LTD QTY
ICAO Shipping Description: UN1950, Aerosols, flammable, 2.1

NOTE: WD-40 Company does not test aerosol cans to assure that they meet the pressure and other requirements for transport by air. We do not recommend that our aerosol products be transported by air.

15 – Regulatory Information

U.S. Federal Regulations:
CERCLA 103 Reportable Quantity: This product is not subject to CERCLA reporting requirements, however, oil spills are reportable to the National Response Center under the Clean Water Act and many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.
SARA TITLE III:
Hazard Category For Section 311/312: Refer to Section 2 for the OSHA Hazard Classification.
Section 313 Toxic Chemicals: This product contains the following chemicals subject to SARA Title III Section 313 Reporting requirements: None
Section 302 Extremely Hazardous Substances (TPQ): None
EPA Toxic Substances Control Act (TSCA) Status: All of the components of this product are listed on the TSCA inventory.
California Safe Drinking Water and Toxic Enforcement Act (Proposition 65): This product does not require a California Proposition 65 warning.
VOC Regulations: This product complies with the consumer product VOC limits of CARB, the US EPA and states adopting the OTC VOC rules.
Canadian Environmental Protection Act: All of the ingredients are listed on the Canadian Domestic Substances List or exempt from notification

16 – Other Information

HMIS Hazard Rating:
Health – 1 (slight hazard), Fire Hazard – 4 (severe hazard), Physical Hazard – 0 (minimal hazard)

Revision Date: August 2, 2021 Supersedes: March 5, 2019

Revision Summary: Section 9: Appearance

Prepared by: Industrial Health & Safety Consultants, Inc. Shelton, CT, USA

Reviewed by: I. Kowalski Regulatory Affairs Dept.

1012200/No.0084706

MATERIAL SAFETY DATA SHEET

Trade Name: WOLO Handy Horn
MSDS NO. 490.
Revision Date:
Date Printed 08/31/2007

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: WOLO Handy Horn
Chemical Family: Refrigerant Gas
Synonyms: None
Emergency Telephone (24 hr.): CHEMTREC 1-800-424-9300

Supplier: WOLO Manufacturing Corp, Deer Park, NY, 11729

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	Weight %	OSHA TWA	OSHA STEL	OSHA SKIN
1,1,1,2-Tetrafluoroethane 811-97-2	98-100	Not Listed	Not Listed	Not Listed

Component	Weight %	OSHA Z PEL	OSHA Z TWA	OSHA Z Ceiling
1,1,1,2-Tetrafluoroethane 811-97-2	98-100	Not Listed	Not Listed	Not Listed

Component	ACGIH TLV TWA	ACGIH TLV STEL	ACGIH TLV Ceiling
1,1,1,2-Tetrafluoroethane 811-97-2	Not Listed	Not Listed	Not Listed

Other: Contains no other ingredients in concentrations >.1% that are now known to be hazardous as defined by OSHA.

3. HAZARDS IDENTIFICATION

Emergency Overview: Content under pressure. "Frostbite-like" effects may occur if the liquid or escaping vapors contact the eyes or skin. May decompose on contact with flames or extremely hot metal surfaces to produce toxic and corrosive products. Gross inhalation overexposure may cause heart irregularities, unconsciousness or death. Vapor reduces oxygen available for breathing and is heavier than air. Workers with heart disease or compromised heart function should limit exposure to this material. Keep away from heat, sparks and flame.

HMIS Classification: Health: 1 Flammability: 1 Reactivity: 0
NFPA Rating: Health: 2 Flammability: 1 Reactivity: 0

4. FIRST AID MEASURES

Eye Contact: In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing. In case of frostbite, water should be lukewarm, lifting eyelids occasionaly to facilitate irrigation

Ingestion: Not applicable - product is a gas at ambient temperatures.

Inhalation: If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult give oxygen. Get medical attention. Do not give adrenaline, epinephrin or similar drugs following exposure to this product.

Skin Contact: For exposure to liquid, immediately warm frostbite area with warm water (not to exceed 105'f). In case of massive exposure, remove clothing while showering with warm water. Get medical attention. Irritation may result from a defatting action on tissue

5. FIRE FIGHTING MEASURES

Flammable Properties

MATERIAL SAFETY DATA SHEET

Trade Name: WOLO Handy Horn
MSDS NO. 490.
Revision Date:
Date Printed 08/31/2007

5. FIRE FIGHTING MEASURES

Flash Point °F(°C): NA - Gas
Flash Point Method: Not Applicable
Flammable Limits in Air - Lower (%): Not Applicable
Flammable Limits in Air - Upper (%): Not Applicable
Autoignition Temperature °F(°C): 743 C
Extinguishing Media: Use water spray to keep containers cool that are exposed to heat or flames. Use extinguishing media appropriate for surrounding fire.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Warning!! Contents under pressure. Container may rupture under fire conditions. Decomposition may occur. Wear approved positive-pressure self-contained breathing apparatus and protective clothing.
Hazardous Combustion Products: May decompose on contact with flames or extremely hot metal surfaces to produce toxic and corrosive products. Liquid and gas under pressure, overheating or overpressurizing may cause gas release and/or violent cylinder bursting. Container may explode if heated due to resulting pressure rise. Some mixtures of HFCDs and/or HFCs, and air or oxygen may be combustible if pressurized and exposed to extreme heat or flame.
Aerosol Comments: NFPA Level 1 Aerosol

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear appropriate protective clothing and equipment to prevent skin and eye contact. Avoid breathing vapor. When airborne exposure limits are exceeded use NIOSH approved respiratory protection equipment appropriate to the material and/or its components.
Spill Procedures: Wear protective equipment specified. Avoid all sources of ignition; heat, sparks and open flames. Use Halogen leak detector or other suitable means to locate leaks or check atmosphere. Keep upwind. Evacuate enclosed spaces and disperse gas with floor-level forced-air ventilation. Exhaust vapors outdoors. Do not smoke or operate internal combustoin engines. Evacuate unprotected personnel
Action to be taken if material is released or spilled: Increase area ventilation. Do not puncture or incinerate container. Contents under pressure.
Environmental Precautions: Do not allow entry to the atmosphere. Recover, reclaim or recycle when practical.

7. HANDLING AND STORAGE

Handling and Storage: CAUTION: COMPRESSED GAS. Do not puncutre, incinerate or store above 120 F. Do not store in passenger compartment of automobile. Avoid breathing vapors, if exposed to high vapor concentration, leave area at once. Avoid contact with skin and eyes. Should not be mixed with air for leak testing or used for any other purpose above atmospheric pressure. Use only in a well ventilated area. Do not reuse this container. Keep away from heat and open flame. Protect from light and heat

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Local exhaust ventilation as necessary to maintain exposures to within applicable limits. Showers. Eyewash stations.
Eyes: Chemical goggles; also wear a face shield if splashing hazard exists.
Skin Protection: Avoid skin contact. Wear protective clothing and gloves.
Respiratory Protection: An approved respirator (i.e. NIOSH, etc.) should be worn when exposures are expected to exceed the applicable limits. Use in a well ventilated area.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear, colorless liquid and vapor
Odor: MILD ETHER LIKE
pH Value: Not Determined
Vapor Pressure: .665 MPa (6.66 bar) (25C)
Vapor Density (Air=1): 3.25
Boiling Point (°F): -26.4 C
Melting/Freezing Point: -160 C (Freezing Point)
Solubility in Water: .9 g/l @ 25 C.
Bulk Density at 20°C: 1.21 @ 25 C (g/cm3)
Molecular Weight: 102.03

MATERIAL SAFETY DATA SHEET

Trade Name: WOLO Handy Horn
MSDS NO. 490.
Revision Date:
Date Printed 08/31/2007

9. PHYSICAL AND CHEMICAL PROPERTIES

Specific Gravity (H20=1): 1.21 @ 4 C.
Viscosity: Not determined.
Evaporation Rate: Not Determined
VOC Content(%): Not determined.
Decomposition Temperature: >370 C

10. STABILITY AND REACTIVITY

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Do not expose to heat or store at temperatures above 120 F. Keep away from heat,sparks and flame.
Materials to Avoid: Avoid contact with alkali or alkaline earth metals. Avoid finely powdered metals such as aluminum, magnesium or zinc. Strong oxidizers.
Hazardous Decomposition Products: Thermal decompositoin products include hydrogen fluoride, hydrogen chloride, carbon monoxide, carbon dioxide and chlorine.
Hazardous Polymerization: WILL NOT OCCUR

11. TOXICOLOGICAL INFORMATION

Toxicological Data:

Component	Route	Species	Dose
1,1,1,2-Tetrafluoroethane 811-97-2	Inhalation	Rats	LC50 1500 gm/m^3/4H

Carcinogenicity:

Component	IARC	NTP	OSHA
1,1,1,2-Tetrafluoroethane 811-97-2	Not Listed	Not Listed	Not Listed

12. ECOLOGICAL INFORMATION

Remarks: Aquatic Toxicity: 48 hour EC50 - Daphnia magna: 980 mg/L, 96 hour LC50 - Rainbow trout: 450 mg/L

13. DISPOSAL CONSIDERATION

Waste Classification: Not determined.
Waste Management: Not determined.
Disposal Method: Disposal should be made in accordance with federal, state and local regulations. Recover, reclaim or recycle when practical.

14. TRANSPORTATION INFORMATION

U.S. DOT:
Proper Shipping Name: Consumer Commodity
Hazard Class: ORM-D
UN/NA Number: Not Applicable
DOT Packing Group: NA

IMDG:
Proper Shipping Name: Non flammable gas
Hazard Class: 2.2 (Limited Quantity)
Hazard Subclass: Not determined.
UN No.: UN3159
Packing Group: NA
Marine Pollutant: No

MATERIAL SAFETY DATA SHEET

Trade Name: WOLO Handy Horn
MSDS NO. 490.
Revision Date:
Date Printed 08/31/2007

15. REGULATORY INFORMATION

US Federal Regulations:

Component	SARA 313	SARA 302	TPQ	RQ
1,1,1,2-Tetrafluoroethane 811-97-2	Not Listed	Not Listed	Not Listed	Not Listed

SARA 311/312 Hazard Catagories: Acute, Chronic, Pressure

State Regulations:

Component	California Prop. 65 Cancer list	California - Prop 65 Developmental Toxicity	California Prop. 65 Reproductive Female	California Prop. 65 Reproductive Male
1,1,1,2-Tetrafluoroethane 811-97-2	Not Listed	Not Listed	Not Listed	Not Listed

U.S. TSCA: The components of this product are listed on the TSCA Inventory.
Canadian Inventory: The components of this product are listed on the Canadian DSL or NDSL Inventory.

16. OTHER INFORMATION

General Notes: Do not allow undiluted material or large quantities to reach groundwater, bodies of water or sewer system.
Disclaimer: The information and recommendations contained herein are based upon tests believed to be reliable. However, the manufacturer/distributor of this product does not guarantee their accuracy or completeness NOR SHALL ANY OF THIS INFORMATION CONSTITUTE A WARRANTY, WHETHER EXPRESSED OR IMPLIED, AS TO THE SAFETY OF THE GOODS, THE MERCHANTABILITY OF THE GOODS, OR THE FITNESS OF THE GOODS FOR A PARTICULAR PURPOSE. Adjustment to conform to actual conditions of usage may be required. The manufacturer/distributor assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied.

7480 Bath Road
Mississauga, Ontario L4T 1L2
Tel. 905 676-1777
Fax 905 676-0582

SAFETY DATA SHEET

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Trade Name: ALUMINUM SULPHATE, 48% SOLUTION
Synonyms: None
Chemical Family: Coagulant
Product Code: NC001

1.2 Recommended use and restrictions on use

Application: Laboratory Chemical
Uses Advised Against: No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier: Northland Chemical Inc.
7480 Bath Road
Mississauga, Ontario L4T 1L2
Tel. (905) 676 1777
Fax (905) 676-0582

1.4. Emergency telephone number

CANUTEC: (613) 996-6666
FOR CHEMICAL EMERGENCY ONLY

2. Hazard(s) Identification

2.1 Classification in accordance with the Hazardous Products Regulation, 2015

Corrosive to Metals, Category 1, May be corrosive to metals
Eye Irritation, Category 2A; Causes serious eye irritation

2.2. Label Elements

Hazard Pictogram(s)

Signal Word	Danger
Hazard Statements	H290 – May be corrosive to metals. H318 – Causes serious eye irritation

Precautionary Statements

Prevention	P280 - Wear protective gloves/protective clothing/eye protection/face protection P264 – Wash hands thoroughly after handling
Response	P305 + P351 + P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing. P310 – Immediately call a POISON CENTRE or doctor/physician. P390 Absorb spillage to prevent material damage.

2.3 Hazards not otherwise classified

Advice: Causes eye, skin and respiratory tract irritation. Gastrointestinal irritation.

3. Composition/information on Ingredients

Substance	CAS Number	PERCENT (w/w)	GHS Classification
Aluminum Sulphate Hydrate	10043-01-3	45 - 55	Corrosive to metals, Category 1 Serious Eye Irritation, Category 2A

4. First-Aid Measures

4.1. Description of first aid measures

Inhalation	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Eyes In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Skin Remove contaminated clothing. Wash with soap and water. Get medical attention if irritation persists. Launder clothing before reuse.

Ingestion Do not induce vomiting. Drink 1 or 2 glasses of water. Never give any liquids by mouth if person is unconscious or convulsing. Get immediate medical attention.

4.2 Most important symptoms/effects, acute and delayed

No information available.

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. Fire-fighting measures

5.1. Extinguishing media

Conditions of Flammability Not flammable or combustible

Suitable Extinguishing Media Product does not burn. As appropriate for surrounding materials, Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Extinguishing media which must not be used for safety reasons: None known.

5.2 Specific hazards arising from the substance or mixture

Special Exposure Hazards

Decomposition in fire may produce - Sulphur oxides, Aluminum oxide

5.3 Special protective equipment and precautions for fire-fighters

Special Protective Equipment for Fire-Fighters

Full protective clothing and approved self-contained breathing apparatus required for firefighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid creating and breathing dust. See Section 8 for additional information.

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas by using inert absorbent material (e.g. sand). Cover the drains.

6.3. Methods and material for containment and cleaning up

Clean-up methods - small spillage

Dilute residues with water and then neutralize with lime or limestone powder to a solid consistency. Shovel or sweep up. Must be disposed of in accordance with local and national regulations.

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Clean-up methods - large spillage

Remove spill using a vacuum truck. Dilute residues with water and then neutralize with lime or limestone powder to a solid consistency. Shovel or sweep up remaining material. Must be disposed of in accordance with local and national regulations.

7. Handling and storage

7.1. Precautions for Safe Handling

Danger for slipping. The work place and work methods shall be organized in such a way that direct contact with the product is prevented or minimized. For personal protection see SDS section 8.

Conditions for safe storage, including any incompatibilities
Avoid freezing. Keep away from incompatible materials. For quality reasons:
Keep at temperatures below 30 °C.
Keep at temperatures above 0 °C. Handling operations become difficult due to increased viscosity.

Materials for packaging
Suitable material: plastic (PE, PP, PVC), polyester with fibreglass reinforcement, concrete coated with epoxy, titanium, acid-resistant steel, rubber-coated steel

Materials to avoid:
Avoid contact with unalloyed steel or galvanized surfaces., non-acid proof metals (for example aluminium, copper and iron), hypochlorites, chlorites, sulphites, Bases

Storage stability:
Other data Stable under recommended storage conditions.

7.2. Conditions for safe storage, including any incompatibilities
Storage Information Close container when not in use. Do not reuse empty container.

8. Exposure Controls/Personal Protection
Special Exposure Hazards None anticipated

8.1 Occupational Exposure Limits

Substances	**CAS Number**	**Ontario TWAEV**	**ACGIH TLV-TWA**
Aluminum Sulphate	10043-01-3	2 mg/m^3	2 mg/ m^3

8.2 Appropriate engineering controls
Engineering Controls Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.

8.3 Individual protection measures, such as personal protective equipment
Personal Protective Equipment If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection	Not normally needed. Use a NIOSH/MSHA approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Hand Protection	Handle with appropriate work gloves such as PVC or neoprene.
Skin Protection	Wear chemical resistant clothing appropriate for the work environment. Cover exposed skin.
Eye Protection	Wear appropriate protective eyeglasses or chemical safety goggles to protect against exposure.
Other Precautions	None known.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State:	liquid
Color:	colourless, clear
Odor:	not significant
Odor Threshold:	No data available

Property Remarks/ - Method	**Values**
pH (1% Solution):	ca. 2
Freezing Point/Melting Point	-10°C
Boiling Point/Range	110 – 120 °C
Flash Point	Not applicable
Flammability (solid, gas)	Does not sustain combustion
Upper flammability limit	No data available.
Lower flammability limit	No data available
Evaporation rate	No data available
Vapour Pressure	No data available
Vapour Density	No data available
Specific Gravity	1.30 – 1.34 g/cm^3
Water Solubility	Completely soluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	Not oxidizing

9.2. Other information

VOC Content (%)	No data available

10. Stability and Reactivity

10.1. Reactivity

Corrosive to metals.

10.2. Chemical Stability
Stable under normal storage conditions.

10.3. Possibility of Hazardous Reactions
Contact with certain metals may form hydrogen gas, which in turn may form explosive mixtures of gases with air.

10.4. Conditions to Avoid
Avoid temperatures below crystallization range
Avoid storage at high temperatures.

10.5. Incompatible Materials
Avoid contact with unalloyed steel or galvanized surfaces, non-acid proof metals (e.g. aluminum, copper and iron). Hypochlorites, chlorites, sulphites. Bases.

10.6. Hazardous Decomposition Products
Hazardous decomposition products formed under fire conditions. - Sulphur oxides

11. Toxicological Information
11.1 Information on likely routes of exposure
Principle Route of Exposure Eye or skin contact, inhalation.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Acute Toxicity

Toxicology data for the components

Substances	CAS	LD50 Oral	LD50 Dermal	LC50 Inhalation
Aluminum Sulphate	10043-01-3	>2000 mg/kg (Rat)	>5000 mg/kg	No data available

Inhalation May be harmful if inhaled. Causes respiratory tract irritation.

Eye Contact May cause eye irreversible eye damage.

Skin Contact May causes skin irritation, dry skin.

Ingestion May be harmful if swallowed.

11.3 Toxicity data

Chronic Effects/Carcinogenicity

Carcinogen: No component of this product, present at levels greater than or equal to 0.1%, is identified as a probable, possible or confirmed human carcinogen by IARC, ACGIH, NTP, or OSHA.

Mutagen: Results are negative.

Reproductive Effects: Not believed to be toxic for reproduction.

Developmental Effects: No data available

Teratogen: No data available

Specific target organ toxicity - single exposure: No data available

Specific target organ toxicity - repeated exposure: No data available

Respiratory or Skin sensitization: No data available

Aspiration Hazard: No data available

Synergistic effects: No data available

12. Ecological Information Substances

12.1. Toxicity

Ecotoxicity Effects

Product Ecotoxicity Data No data available

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Aluminum Sulphate	10043-01-3	No information available	37 mg/L LC50 96H (freshwater fish)	No information available	136 mg/L EC50 15 min (Water flea) 38.2 mg/L EC50 48 H (Water flea)

12.2. Persistence and degradability
No information available

12.3. Bioaccumulative potential
This product is not expected to bioaccumulate.

12.4. Mobility in soil
No information available.

12.5 Other adverse effects
May lower the pH of water and thus be harmful to aquatic organisms.

13. Disposal Considerations
13.1. Waste treatment methods

Disposal Method	Classified as hazardous waste. Must be disposed of according to federal, state, and local regulations.
Contaminated Packaging	Follow all applicable national or local regulations.

14. Transport Information

Canadian TDG	UN number: 3264
TDG:	
Description of the goods:	UN3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S (ALUMINUM SULPHATE)
Class:	8
Packing Group:	III

15. Regulatory Information

Canadian DSL Inventory:	All components listed on inventory or are exempt.
US TSCA Inventory:	All components listed on inventory or are exempt.
California Proposition 65:	This product does not contain any Proposition 65 listed chemicals.

WHMIS Classification: E, Corrosive Material

HMIS Rating: Health: 2, Flammability: 0, Reactivity: 0

16. Other Information

Preparation Information
Prepared by: Technical Department
Tel. 905 676 1777

Key or legend to abbreviations and acronyms

bw	– body weight
CAS	– Chemical Abstracts Service
EC50	– Effective Concentration 50%
LC50	– Lethal Concentration 50%
LD50	– Lethal Dose 50%
mg/kg	– milligram/kilogram
mg/L	– milligram/liter
NIOSH	– National Institute for Occupational Safety and Health
NTP	– National Toxicology Program
OEL	– Occupational Exposure Limit
PEL	– Permissible Exposure Limit
ppm	– parts per million
STEL	– Short Term Exposure Limit
TWA	– Time-Weighted Average
TWAEV	– Time-Weighted Average Exposure Value
UN	– United Nations
H	– hour
mg/m3	– milligram/cubic meter
mm	– millimeter
mmHg	– millimeter mercury
w/w	– weight/weight
d	– day

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Safety Data Sheet

SECTION 1 – IDENTIFICATION

Name, Address, and Telephone of the Responsible Party

Dyno Nobel Inc.
6440 S. Millrock Drive, Suite 150
Salt Lake City, Utah 84121
Phone: 801-364-4800 Fax 801-321-6703
E-Mail: dnna.hse@am.dynonobel.com www.dynonobel.com

SDS #: 1020
Date: 07/20/2020
Supersedes: 09/10/2018

Product Identifier
Product Name: Superprill
Formula: NH4NO3

Other Means of Identification
Synonyms: Superprill™, Prilled Ammonium Nitrate, Industrial Grade LoDAN, Ammonium Nitrate, Industrial Grade HiDAN, Ammonium Nitrate, Agricultural Grade

Intended Use of the Product
Industrial applications

Emergency Telephone Number
FOR 24 HOUR EMERGENCY, CALL CHEMTREC (USA) 800-424-9300
CANUTEC (CANADA) 613-996-6666

SECTION 2 – HAZARD(S) IDENTIFICATION

Classification of the Substance or Mixture
Classification (GHS-US)

Ox. Sol. 3	H272
Eye Irrit. 2A	H319

Label Elements
GHS-US Labeling
Hazard Pictograms (GHS-US) :

GHS03 GHS07

Signal Word (GHS-US) : Warning
Hazard Statements (GHS-US) : H272 - May intensify fire; oxidizer
H319 - Causes serious eye irritation
Precautionary Statements (GHS-US) : P210 - Keep away from heat, sparks, open flames, hot surfaces. - No smoking
P220 - Keep/Store away from combustible materials, clothing, incompatible materials
P221 - Take any precaution to avoid mixing with combustibles, organic material, clothing, incompatible materials
P260 - Do not breathe fume, dust.
P264 - Wash hands, forearms, and other exposed areas thoroughly after handling
P270 - Do not eat, drink or smoke when using this product.
P273 - Avoid release to the environment.
P280 - Wear protective gloves, protective clothing, eye protection
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337+P313 - If eye irritation persists: Get medical advice/attention
P370+P378 - In case of fire: Use water only on AN fires.
P405 - Store locked up.
P501 - Dispose of contents/container according to local, regional, national,

DYNO Dyno Nobel
Groundbreaking Performance®

territorial, provincial, and international regulations*
*Do not perform hot work on contaminated equipment.

Other Hazards
Other Hazards: Aquatic Acute 3 H402
H402 – Harmful to aquatic life

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Name	Product identifier	% (w/w)	Ingredient Classification (GHS-US)
Ammonium nitrate	(CAS No) 6484-52-2	98 - 100	Ox. Sol. 3, H272 Eye Irrit. 2A, H319

Full text of H-phrases: see section 16

SECTION 4 - FIRST AID MEASURES

Description of First Aid Measures
General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
Inhalation: If symptoms occur, go into fresh air and ventilate suspected area. Seek medical attention.
Skin Contact: Remove contaminated clothing. Wash with soap and water followed by rinsing with water. Seek medical attention if irritation develops or persists. Wash contaminated clothing before reuse.
Eye Contact: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists.
Ingestion: Rinse mouth. Do NOT induce vomiting. Seek medical attention.

Most Important Symptoms and Effects Both Acute and Delayed
General: Irritation to eyes, skin and respiratory tract.
Inhalation: May cause irritation to the respiratory tract, sneezing, coughing, burning sensation of throat with constricting sensation of the larnyx and difficulty breathing.
Skin Contact: May cause skin irritation.
Eye Contact: Causes serious eye irritation.
Ingestion: Ingestion is likely to be harmful or have adverse effects.
Chronic Symptoms: None known.
Indication of Any Immediate Medical Attention and Special Treatment Needed
If exposed or concerned, get medical advice and attention. If ingested, may cause methemoglobenemia – emergency response should treat appropriately, such as by intravenous administration of methylene blue.

SECTION 5 - FIRE-FIGHTING MEASURES

Extinguishing Media
Suitable Extinguishing Media: Evacuate the area for 1 mile if ammonium nitrate is involved in a fire. Only water shall be used on ammonium nitrate fires. Dry chemical, foams, steam and smothering devices are not effective and can lead to possible explosion of the ammonium nitrate. General extinguishers may be used on fires **not involving the ammonium nitrate** such as conveyors, electrical equipment, tires, bearings, general plant equipment or the like when only minimal amounts of ammonium nitrate are present. For large fires use unmanned monitor nozzles if available.
Unsuitable Extinguishing Media: Dry chemical, carbon dioxide, or regular foam.
Special Hazards Arising From the Substance or Mixture In intense fires, the ammonium nitrate can melt and detonate from confinement or strong shocks. Evacuation of at least 1 mile is recommended if the ammonium nitrate is involved in a fire.
Fire Hazard: May intensify fire; oxidizer. Will accelerate the burning of other combustibles, resulting in more rapid spread of fire.
Explosion Hazard: Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and

injuries. Smothering, contact with organic material, or combustible material may cause an explosive situation.
Reactivity: May cause or intensify fire; oxidizer. May accelerate the burning of other combustible materials. Smothering, contact with organic material, or combustible material may cause an explosive situation.
Advice for Firefighters
Precautions for Firefighting: Evacuate the area for 1 mile if ammonium nitrate is involved in a fire. Only fires which are in the initial or beginning stage or those involving minimal amounts of ammonium nitrate in a manufacturing setting or in an area where ammonium nitrate is stored or in vehicles transporting ammonium nitrate should be attacked using manual fire extinguishing methods (fire extinguishers, hose streams, etc.) that require a human operator. If a fire in an area where ammonium nitrate is stored or in vehicles transporting ammonium nitrate progresses beyond the incipient stage or involves the ammonium nitrate, evacuation is required. Fire fighters downwind from a fire should wear self-contained breathing apparatus. Fire fighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves and rubber boots.
Hazardous Combustion Products: Nitrogen oxides. Toxic fumes are released. Carbon oxides (CO, CO_2). Ammonia.
Additional Information: If a fire has not reached the ammonium nitrate, cool the ammonium nitrate or container thereof to prevent the fire from reaching it. Ammonium nitrate does not burn by itself and thus needs to be kept separate from combustible materials. Ammonium nitrate is an oxidizer and will significantly increase the burning rate of combustible materials.
When in confinement and in the presence of a strong detonation sources the material can explode when subject to sudden shock, pressure, or high temperatures. Avoid temperatures above 210 C (410 F) which may cause thermal decomposition or explosion, especially in confined or poorly ventilated spaces.
Do not allow run-off from fire fighting to enter drains or water courses.
Reference to Other Sections: Refer to section 9 for flammability properties. Not flammable.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures
General Measures: Handle in accordance with good industrial hygiene and safety practice. Avoid breathing (dust, vapor, mist, gas). Avoid getting in eyes or on skin. Keep away from combustible material.
For Non-Emergency Personnel
Protective Equipment: Use appropriate personal protection equipment (PPE).
Emergency Procedures: Evacuate unnecessary personnel.
For Emergency Personnel
Protective Equipment: Use appropriate personal protection equipment (PPE).
Emergency Procedures: Ventilate area.

Environmental Precautions
Prevent entry to sewers and public waters.

Methods and Material for Containment and Cleaning Up
For Containment: Avoid generation of dust during clean-up of spills. Use a broom for small spills do not mix with other materials.
Methods for Cleaning Up: Collect spillage for possible reuse. Clean up spills immediately and dispose of waste safely. Contact competent authorities after a spill. Do not take up in combustible material such as: saw dust or cellulosic material.
Reference to Other Sections
See heading 8, Exposure Controls and Personal Protection

SECTION 7 - HANDLING AND STORAGE

Precautions for Safe Handling
Additional Hazards When Processed: When heated to decomposition, emits toxic fumes. Smothering, contact with organic material, or combustible material in a fire situation may be an explosive situation. Do not puncture or incinerate container.
Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work.

Conditions for Safe Storage, Including Any Incompatibilities
Technical Measures: Comply with applicable regulations 29 CFR 1910.109(i).
Storage Conditions: Store in a dry, cool and well-ventilated place. Keep container closed when not in use. Keep/Store away from combustible materials, ignition sources, and incompatible materials.
Incompatible Materials: Strong acids. Strong bases. Strong oxidizers. halogens (F, Cl, Br, I). Chlorine compounds, chlorinated inorganics (potassium, calcium and sodium hypochlorite) and hydrogen peroxides. Organic materials. Combustible materials.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters
No Occupational Exposure Limits (OELs) have been established for this product or its chemical components.

Exposure Controls
Appropriate Engineering Controls: Ensure all national/local regulations are observed. Ensure adequate ventilation, especially in confined areas.
Personal Protective Equipment: Approved safety glasses. Gloves. If insufficient ventilation: wear respiratory protection. Protective clothing when appropriate as indicated by air monitoring or if engineering controls are insufficient.

Materials for Protective Clothing: Chemically resistant materials and fabrics.
Hand Protection: Wear protective gloves.
Eye Protection: Approved safety glasses
Skin and Body Protection: Not available
Respiratory Protection: Use NIOSH-approved air-purifying or supplied-air respirator where airborne concentrations of vapor or mist are expected to exceed exposure limits.
Other Information: When using, do not eat, drink or smoke.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	:	Solid
Appearance	:	Colorless to off-white prills
Odor	:	Odorless
Odor Threshold	:	Not available
pH	:	Not available
Relative Evaporation Rate (butylacetate=1)	:	Not available
Melting Point	:	170 °C (337°F)
Freezing Point	:	Not available
Boiling Point	:	177 - 210 °C Decomposition (350 - 410°F)
Flash Point	:	Not available
Auto-ignition Temperature	:	Not available
Decomposition Temperature	:	Not available
Flammability (solid, gas)	:	Not flammable
Lower Flammable Limit	:	Not available
Upper Flammable Limit	:	Not available
Vapor Pressure	:	Not available
Relative Vapor Density at 20 °C	:	Not available
Relative Density	:	Not available

Specific Gravity	:	1.72 - 1.00 (Poured bulk density)
Solubility	:	Soluble in water. Water: 192 g/100 ml @ 20 °C (68 °F); 118 g/100 ml @ 0 °C (32 °F)
Partition coefficient: n-octanol/water	:	Not applicable. (inorganic)
Viscosity	:	Not available
Explosion Data – Sensitivity to Mechanical Impact	:	Not sensitive to mechanical impact. May be sensitive to supersonic explosively driven projectile impacts.
Explosion Data – Sensitivity to Static Discharge	:	Not sensitive to static discharge.

SECTION 10 - STABILITY AND REACTIVITY

Reactivity: May cause or intensify fire; oxidizer. May accelerate the burning of other combustible materials. Smothering, contact with organic material, or combustible material may cause an explosive situation.

Chemical Stability: May intensify fire; oxidizer.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: Extremely high temperatures. Overheating. Open flame. Combustible materials. Sources of ignition. Incompatible materials.

Incompatible Materials: Strong acids. Strong bases. Strong oxidizers. Halogens. Chlorine compounds, chlorinated inorganics (potassium, calcium and sodium hypochlorite) and hydrogen peroxides.

Hazardous Decomposition Products: Nitrogen oxides. Toxic vapors. Ammonia. Nitric acid

SECTION 11 - TOXICOLOGICAL INFORMATION

Information on Toxicological Effects – Product

Acute Toxicity: Not classified

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: Not classified

Serious Eye Damage/Irritation: Causes serious eye irritation.

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: May cause respiratory irritation.

Symptoms/Injuries After Skin Contact: May cause skin irritation.

Symptoms/Injuries After Eye Contact: Causes serious eye irritation.

Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: None known.

Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Ammonium nitrate (6484-52-2)	
LD50 Oral Rat	2217 mg/kg
LC50 Inhalation Rat	> 88.8 mg/l/4h
ATE CLP (oral)	2217.000 mg/kg body weight

SECTION 12: ECOLOGICAL INFORMATION

Toxicity Not classified
Persistence and Degradability

Superprill	
Persistence and Degradability	Not established.

Bioaccumulative Potential

Superprill	
Bioaccumulative Potential	Not established.

Ammonium nitrate (6484-52-2)	
BCF fish 1	(no bioaccumulation expected)
Log Pow	-3.1 (at 25 °C)

Mobility in Soil Not available
Other Adverse Effects
Other Information: Avoid release to the environment.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Collect spillage for possible reuse. Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.
Additional Information: Clean up even minor leaks or spills if possible without unnecessary risk.

SECTION 14 - TRANSPORT INFORMATION

14.1 In Accordance with DOT

Proper Shipping Name : AMMONIUM NITRATE with not more than 0.2% total combustible material, including any organic substance, calculated as carbon to the exclusion of any other added substance
Hazard Class : 5.1
Identification Number : UN1942
Label Codes : 5.1

Packing Group : III
ERG Number : 140

14.2 In Accordance with IMDG

Proper Shipping Name : AMMONIUM NITRATE
Hazard Class : 5.1
Identification Number : UN1942
Packing Group : III
Label Codes : 5.1
EmS-No. (Fire) : F-H
EmS-No. (Spillage) : S-Q

14.3 In Accordance with IATA

Proper Shipping Name : AMMONIUM NITRATE
Packing Group : III
Identification Number : UN1942
Hazard Class : 5
Label Codes : 5.1

ERG Code (IATA) : 5L

14.4 In Accordance with TDG

Proper Shipping Name	:	AMMONIUM NITRATE with not more than 0.2 per cent combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance
Packing Group	:	III
Hazard Class	:	5.1
Identification Number	:	UN1942
Label Codes	:	5.1

SECTION 15 - REGULATORY INFORMATION

US Federal Regulations

Superprill	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard

Ammonium nitrate (6484-52-2)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

US State Regulations

Ammonium nitrate (6484-52-2)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List

Canadian Regulations

Superprill	
WHMIS Classification	Class C - Oxidizing Material Class D Division 2 Subdivision B - Toxic material causing other toxic effects

Ammonium nitrate (6484-52-2)	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
WHMIS Classification	Class C - Oxidizing Material Class D Division 2 Subdivision B - Toxic material causing other toxic effects

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision date : 07/20/2020

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Ox. Sol. 3	Oxidizing solids Category 3
H272	May intensify fire; oxidizer

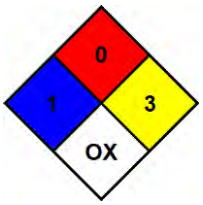
H319	Causes serious eye irritation

NFPA Health Hazard : 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.

NFPA Fire Hazard : 0 - Materials that will not burn.

NFPA Reactivity : 3 - Capable of detonation or explosive reaction, but requires a strong initiating source or must be heated under confinement before initiation, or reacts explosively with water.

NFPA Specific Hazard : OX - This denotes an oxidizer, a chemical which can greatly increase the rate of combustion/fire.



Party Responsible for the Preparation of This Document

Dyno Nobel Inc.
6440 S. Millrock Drive, Suite 150
Salt Lake City, Utah 84121
Phone: 801-364-4800

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SAFETY DATA SHEET	NORTHLAND CHEMICAL
NORFLOC 18816	SDS # Z0018816 Date: Oct 7-2021 Version: 02

SECTION 1: IDENTIFICATION

Trade Name: NORFLOC 18816 Flocculant

Recommended use of the chemical and restrictions on use:
Use of substance mixture: Flocculating agent

Details of Supplier	**Details of Manufacturer**
Northland Chemical Inc 7480 Bath Road Mississauga, Ontario L4T 1L2 www.northlandchemicalinc.com	**Solenis** **2475 Pinnacle Drive** **Wilmington, Delaware** **USA, 19803**
Emergency Telephone Number	**CANUTEC: 1-613-996-6666**

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the Hazardous Products Regulations

Skin Irritation: Category 2

Eye Irritation: Category 2B

GHS label elements

Hazard Pictogram
Signal Word: Warning

Hazard Statements:
H315 Causes skin Irritation
H320 Causes serious Eye irritation

Precautionary Statements:

Prevention:
P264 Wash skin thoroughly after handling
P280 Wear protective gloves/eye protection/face protection

Response
P302 + P352 **–** If on skin, wash with plenty of water
P305 + P351 + P338 – If in Eyes – Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing,
P332 + P313 **–** If skin irritation persists, get medical advice
P337 + P313 – If eye irritation persists, get medical advice
P362 + P364 – Take off contaminated clothing and wash before reuse.

Other Hazards
None known.

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SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance / Mixture: Mixture

Hazardous Components

Chemical Name	Cas No.	Classification	Concentration (% w/w)
ALIPHATIC HYDROCARBON	64742-47-89	This material is not considered hazardous under the OSHA Hazard communication Standard (HazCom 2012)	➢ = 20- < 30

SECTION 4: FIRST AID MEASURES

General Advice
Move out of dangerous area
Show this safety data sheet to the doctor in attendance
Do not leave the victim unattended.

If inhaled
If breathed in, move person to fresh air
If unconscious – place in recovery position and seek medical advice
If symptoms persist, call a physician

In case of skin contact :
Remove contaminated clothing,
If irritation develops, get medical attention
First aid is not normally required. However, it is recommended that exposed areas be cleaned by wash with soap and water.
Wash contaminated clothing before re-use

In case of eye contact :
Flush eyes with water as a precaution
Remove contact lenses.
Protect unharmed eye.
If irritation persists, call a physician

If swallowed :
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious perso
If symptoms persist, call a physician.

Most important symptoms and effects, both acute and delayed :
Causes skin and eye irritation
Signs and symptoms of exposure to this material throu breathing, swallowing, and/or passage of the material through the skin may include:
Stomach or intestinal upset (nausea, vomiting, diarrhea irritation (nose, throat, airways)
Lung irritation, confusion, irregular heartbeat, convulsions,
Inhalations of high concentrations of this material, as c occur in enclosed spaces or during deliberate abuse, n be associated with cardiac arrhythmias.
Sympathomimetictic drugs may initiate cardiac arrhythr in persons exposed to this material.
This material is an aspiration hazard. Potential danger aspiration must be weighed against possible oral toxici when deciding whether to induce vomiting.

Notes to Physician
No hazards which require special first aid measures

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SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Water spray Foam Carbon dioxide (CO2) Dry chemical
Unsuitable extinguishing media	:	High volume water jet
Specific hazards during firefighting	:	If product is heated above its flash point it will produce vapors sufficient to support combustion. Vapors are heavier than air and may travel along the ground and be ignited by heat, pilot lights, other flames and ignition sources at locations near the point of release. Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	:	Carbon monoxide Carbon dioxide (CO2) Nitrogen oxides (NOx) Hydrocarbons
Specific extinguishing methods	:	Product is compatible with standard fire-fighting agents.
Further information	:	Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Comply with all applicable federal, state, and local regulations.
Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

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SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	Normal measures for preventive fire protection.
Advice on safe handling	:	Do not breathe vapours/dust. Do not smoke. Container hazardous when empty. Smoking, eating and drinking should be prohibited in the application area. For personal protection see section 8. Dispose of rinse water in accordance with local and national regulations.
Conditions for safe storage	:	Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Electrical installations / working materials must comply with the technological safety standards.
Recommended storage temperature	:	5 - 25 °C
Further information on storage stability	:	No decomposition if stored and applied as directed.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
ALIPHATIC HYDROCARBON	Trade Secret	TWA (Mist)	5 mg/m3	OSHA Z-1
		TWA	200 mg/m3 (total hydrocarbon vapor)	ACGIH
		TWA (Mist)	5 mg/m3	OSHA P0
		TWA (Mist)	5 mg/m3	NIOSH REL
		ST (Mist)	10 mg/m3	NIOSH REL

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Engineering measures : Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.

Personal protective equipment

Respiratory protection : In the case of vapour formation use a respirator with an approved filter.

Filter type : Type A

Hand protection
Material : nitrile rubber

Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection : Wear chemical splash goggles when there is the potential for exposure of the eyes to liquid, vapor or mist.

Skin and body protection : Wear as appropriate:
Impervious clothing
Safety shoes
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Discard gloves that show tears, pinholes, or signs of wear.
Wear resistant gloves (consult your safety equipment supplier).

Hygiene measures : Wash hands before breaks and at the end of workday.
When using do not eat or drink.
When using do not smoke.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Emulsion	**Vapour Pressure**	Not tested
Colour	White	**Relative Vapour pressure**	No data available
Odour	Hydrocarbon like	**Relative Density**	No data available
Odour Threshold	No information available	**Density**	Ca. 1.0 g/cm3 (20 deg C)
pH	Ca. 4	**Solubility (ies)**	Forms a viscous solution
Melting point/Freezing point	No data available	**Solubility in other solvents**	No data available
Boiling point / boiling range	Ca. 100 deg C	**Partition coefficient: n-0ctano/water**	No data available
Flash Point	➢ 100 deg C Method – ASTM D92, No flash point	**Decomposition temperature**	No data available
Evaporation point	No data available	**Viscosity**	
Flammability (solid, gas)	Not classified as flammable	**Viscosity dynamic**	1,000 – 1,500 mPa.s
Self-ignition	Does not ignite	**Viscosity kinematic**	No
Upper explosion limit	No data available	**Explosive Properties**	Not Explosive
Lower explosion limit	No data available	**Oxidizing properties**	Not classified

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SECTION 10. STABILITY AND REACTIVITY

Reactivity	No composition if stored and applied as directed
Chemical Stability	Stable under recommended storage conditions
Possibility of Hazardous Reactions	Product will not undergo hazardous polymerization
Incompatible Materials	Strong oxidizing agents
Hazardous decomposition products	Carbon monoxide Carbon dioxide (CO2) Nitrogen Oxides (Nox)

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Not classified based on available information.

Product:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg
Remarks: Information given is based on data obtained from similar substances.

Components:

Alcohols, C11-14-iso-, C13-rich, ethoxylated:

Acute oral toxicity : LD50 (Rat): Expected > 300 - 2,000 mg/kg

Skin corrosion/irritation

Causes skin irritation.

Product:

Species : Rabbit
Method : OECD Test Guideline 404
Result : irritating
GLP : yes

Serious eye damage/eye irritation

Causes eye irritation.

Product:

Species : Rabbit
Remarks : Unlikely to cause eye irritation or injury.

Components:

Alcohols, C11-14-iso-, C13-rich, ethoxylated:

Result : Corrosive to eyes

Respiratory or skin sensitisation

Skin sensitisation

Not classified based on available information.

Respiratory sensitisation

Not classified based on available information.

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Product:

Result : Substance is not considered to be potential skin sensitiser.

Germ cell mutagenicity

Not classified based on available information.

Carcinogenicity

Not classified based on available information.

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Not classified based on available information.

STOT - single exposure

Not classified based on available information.

STOT - repeated exposure

Not classified based on available information.

Aspiration toxicity

Not classified based on available information.

Product:

No aspiration toxicity classification

Further information

Product:

Remarks : No data available

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SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss): 10 - 100 mg/l Exposure time: 96 h Test Type: static test Remarks: Information given is based on data on the components and the ecotoxicology of similar products.
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia (water flea)): 10 - 100 mg/l Exposure time: 48 h Test Type: static test

Ecotoxicology Assessment

Acute aquatic toxicity	:	Acute aquatic toxicity Category 2; Toxic to aquatic life.
Chronic aquatic toxicity	:	Not classified based on available information.

Components:

Alcohols, C11-14-iso-, C13-rich, ethoxylated:

Ecotoxicology Assessment

Acute aquatic toxicity	:	Acute aquatic toxicity Category 2
Chronic aquatic toxicity	:	Not classified based on available information.

Persistence and degradability

Product:

Biodegradability	:	Result: Readily biodegradable. Remarks: At natural pHs (>6), the polymer degrades due to the hydrolysis to more than 70% in 28 days.

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

Product:

Additional ecological information	:	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

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SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.

Dispose of in accordance with all applicable local, state and federal regulations.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

National Regulations

49 CFR
Not regulated as a dangerous good

Special precautions for user
The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity
This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Skin corrosion or irritation
Serious eye damage or eye irritation

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

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SECTION 15. REGULATORY INFORMATION

California Prop. 65

WARNING! This product contains a chemical known to the State of California to cause cancer.
WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

The components of this product are reported in the following inventories:

TSCA	:	All substances listed as active on the TSCA inventory
AICS	:	On the inventory, or in compliance with the inventory
DSL	:	All components of this product are on the Canadian DSL
KECI	:	On the inventory, or in compliance with the inventory
PICCS	:	On the inventory, or in compliance with the inventory
ENCS	:	On the inventory, or in compliance with the inventory
IECSC	:	On the inventory, or in compliance with the inventory
TCSI	:	Not in compliance with the inventory

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

Full text of H-Statements

H302	:	Harmful if swallowed.
H318	:	Causes serious eye damage.

Full text of other abbreviations

Acute Tox.	:	Acute toxicity
Eye Dam.	:	Serious eye damage
ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA P0	:	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / ST	:	STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
OSHA P0 / TWA	:	8-hour time weighted average
OSHA Z-1 / TWA	:	8-hour time weighted average

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SECTION 16. OTHER INFORMATION

The Information herein is believed to be accurate but ius not warranted to be whetehr originating with the company or not.
Recipients are advised to confirm in advance of need that the information is current, applicable and suitable for their circusmtances.
This SDS has been prepared by Northland Chemicals.

Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; CPR - Controlled Products Regulations; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

SAFETY DATA SHEET	NORTHLAND CHEMICAL
NORFLOC 18868	SDS # Z0018868 Date: January 22-2021 Version: 03

SECTION 1: IDENTIFICATION

Trade Name: NORFLOC 18868 Flocculant

Recommended use of the chemical and restrictions on use:
Use of substance mixture: Flocculating agent

Details of Supplier of SDS
Northland Chemical Inc
7480 Bath Road
Mississauga, Ontario
L4T 1L2
www.northlandchemicalinc.com

Emergency Telephone Number **CANUTEC: 1-613-996-6666**

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the Hazardous Products Regulations

Skin Irritation: Category 2

Eye Irritation: Category 2A

GHS label elements

Hazard Pictogram
Signal Word: Warning

Hazard Statements: H315 + H320 Causes skin and eye Irritation

Precautionary Statements:

Prevention:
P264 Wash skin thoroughly after handling
P280 Wear protective gloves/eye protection/face protection

Response:
P302 + P352 OF ON SKIN: Wash with plenty of water
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P332 + P313 If skin irritation occurs, get medical advice/attention
P362 + P364 Take off contaminated clothing and wash it before reuse

Other Hazards
None known.

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SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Components

Chemical Name	Cas No.	Concentration (% w/w)
Distillates (petroleum), hydrotreated light: Kerosene - unspecified	64742-47-8	➢ = 20 - < 30
Alcohols, C11-14-iso-, C13 rich, ethoxylated	78330-21-9	➢ = 1 - < 1.5

SECTION 4: FIRST AID MEASURES

General Advice
Move out of dangerous area
Call a POISON Centre or doctor/physician if exposed or you feel unwell
Show this safety data sheet to doctor in attendance
Do not leave victim unattended.

If Inhaled
If breathed in, move person to fresh air
If unconscious – place in recovery position and seek medical advice,
If symptoms persist, call a physician

In case of skin contact :
Remove contaminated clothing. If irritation develops, get medical attention.
If on skin, rinse well with water
Wash contaminated clothing before re-use.

In case of eye contact :
Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Protect unharmed eye.

If swallowed :
Obtain medical attention.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.

Most important symptoms and effects, both acute and delayed :
No symptoms known or expected.
Causes skin and eye irritation.

Notes to Physician
No hazards which require special first aid measures

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Water spray
Foam

Unsuitable extinguishing media :
High volume water jet

Specific hazards during firefighting
Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products :
Carbon monoxide
Carbon dioxide (CO2)
Nitrogen oxides (NOx)

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Specific Extinguishing Methods:	Product is compatible with standard fire fighting agents
Further information:	Fire residues and contaminated fire extinguishing water must be Disposed of in accordance with local regulations.
Special protective equipment for fire-fighters:	In the event of fire, wear self-contained breathing apparatus

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	Use personal protective equipment. Ensure adequate ventilation. Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Comply with all applicable federal, state, and local regulations.
Environmental precautions	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	Soak up with inert absorbent material (sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	Normal measures for preventive fire protection
Advice on safe handling	:	Do not breathe vapours/dust. Smoking, eating and drinking should be prohibited in the application area. For personal protection see section 8. Dispose of rinse water in accordance with local and national regulations. Observe label precautions. Electrical installations / working materials must comply with technological safety standards.

Further Information on storage stability: No decomposition if stored and applied as directed.

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SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Distillates (petroleum), hydrotreated light; Kerosine - unspecified	64742-47-8	TWA	200 mg/m3 (total hydrocarbon vapor)	CA BC OEL
		TWA	200 mg/m3 (total hydrocarbon vapor)	CA AB OEL
		TWA (Mist)	5 mg/m3	CA AB OEL
		STEL (Mist)	10 mg/m3	CA AB OEL
		TWAEV (Mist)	5 mg/m3	CA QC OEL
		STEV (Mist)	10 mg/m3	CA QC OEL
		TWA	525 mg/m3	CA ON OEL

Engineering measures

Provide sufficient mechanical (general and/or local exhaust), ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.

Personal Protective Equipment

Respiratory protection

In the case of vapour formation, use a respirator with an approved filter.

A NIOSH-approved air-purifying respirator with an appropriate cartridge and/or filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits (if applicable) or if overexposure has otherwise been determined. Protection provided by air-purifying respirators is limited. Use a positive pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are not known or any other circumstances where an air-purifying respirator may not provide adequate protection.

Hand Protection

The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye Protection

Safety Glasses

Skin and body protection

Wear as appropriate – impervious clothing. Safety shoes.
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Discard gloves that show tears, pinholes or signs of wear.
Wear resistant gloves (consult your safety equipment supplier)

Hygiene measures

Wash hands before breaks and at the end of workday.
When using, do not eat or drink
When using, do not smoke

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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Emulsion	**Vapour Pressure**	Not determined
Colour	Off-white	**Relative Vapour pressure**	No data available
Odour	Hydrocarbon like	**Relative Density**	No data available
Odour Threshold	No data available	**Density**	Ca. 1.0 g/cm3 (20 deg C)
pH	Ca. 4	**Solubility (ies)**	dispersible
Melting point/Freezing point	No data available	**Solubility in other solvents**	No data available
Boiling point / boiling range	100 deg C The statements are based properties of individual components	**Partition coefficient: n-0ctano/water**	No data available
Flash Point	➢ 100 deg C Method – ASTM D92: standard method for Flash and Fire points No Flash point – measurement made up to the indicated temperature, pilot light extinguishes	**Decomposition temperature**	No data available
Evaporation point	No data available	**Viscosity**	
Flammability	Not classified as a flammable hazard	**Viscosity dynamic**	1,000 – 1,500 mPa.s
Self-ignition	Not self igniting	**Viscosity kinematic**	> 20.5 mm2/s (40 degC)
Upper explosion limit	No data available	**Explosive Properties**	Not Explosive
Lower explosion limit	No data available	**Oxidizing properties**	Not fire propagating

SECTION 10. STABILITY AND REACTIVITY

Reactivity	No decomposition if stored and applied as directed
Chemical Stability	Stable under recommended storage conditions
Possibility of Hazardous Reactions	Product will not undergo hazardous polymerization
Conditions to Avoid	Heat, flames and sparks
Incompatible Materials	Strong oxidizing agents
Hazardous decomposition products	Carbon monoxide Carbon dioxide (CO2) Nitrogen oxides (NOx)

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SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Not classified based on available information.

Product:

Acute oral toxicity	:	LD50 (Rat): > 2,000 mg/kg Remarks: Information given is based on data obtained from similar substances.
Acute dermal toxicity	:	Remarks: No data available

Skin corrosion/irritation

Causes skin irritation.

Product:

Species: Rabbit
Method: OECD Test Guideline 404

Species: Rabbit
Method: OECD Test Guideline 404
Result: irritating
GLP: yes

Remarks: May cause skin irritation and/or dermatitis.

Serious eye damage/eye irritation

Causes eye irritation.

Product:

Species: Rabbit
Result: Slightly to moderately irritating to eyes

Respiratory or skin sensitisation

Skin sensitisation

Not classified based on available information.

Respiratory sensitisation

Not classified based on available information.

Germ cell mutagenicity

Not classified based on available information.

Carcinogenicity

Not classified based on available information.

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SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss): 10 - 100 mg/l Exposure time: 96 h Test Type: static test Remarks: Information given is based on data on the components and the ecotoxicology of similar products.
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia (water flea)): 10 - 100 mg/l Exposure time: 48 h

Components:

Alcohols, C11-14-iso-, C13-rich, ethoxylated:

Ecotoxicology Assessment

Acute aquatic toxicity	:	Acute aquatic toxicity Category 2
Chronic aquatic toxicity	:	Not classified based on available information.

Persistence and degradability

Product:

Biodegradability	:	Result: Readily biodegradable. Remarks: At natural pHs (>6), the polymer degrades due to the hydrolysis to more than 70% in 28 days.

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

Product:

Additional ecological information	:	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

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SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.

Dispose of in accordance with all applicable local, state and federal regulations.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14. TRANSPORTATION INFORMATION

International transport regulations

REGULATION

ID NUMBER	PROPER SHIPPING NAME	*HAZARD CLASS	SUBSIDIARY HAZARDS	PACKING GROUP	MARINE POLLUTANT / LTD. QTY.

IATA-DGR

	Not dangerous goods				

IMDG-Code

	Not dangerous goods				

TDG

	Not dangerous goods				

*ORM = ORM-D, CBL = COMBUSTIBLE LIQUID

Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

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SECTION 15. REGULATORY INFORMATION

The components of this product are reported in the following inventories:

NZIoC	:	On the inventory, or in compliance with the inventory
DSL	:	All components of this product are on the Canadian DSL
AICS	:	On the inventory, or in compliance with the inventory
ENCS	:	On the inventory, or in compliance with the inventory
KECI	:	On the inventory, or in compliance with the inventory
PICCS	:	On the inventory, or in compliance with the inventory
IECSC	:	On the inventory, or in compliance with the inventory
TCSI	:	Not in compliance with the inventory
TSCA	:	All substances listed as active on the TSCA inventory

Canadian lists

No substances are subject to a Significant New Activity Notification.

SECTION 16. OTHER INFORMATION

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable and suitable for their circumstances. Key Literature data used to compile the Safety Data Sheet provided by manufacturer internal tests and data.
This SDS has been prepared by Northland Chemical Inc. based on data provided by manufacturer's provided information.

JSA Sales Inc.

MATERIAL SAFETY DATA SHEET

This Material Safety Data Sheet complies with the Canadian Controlled Product Regulations

1. Product and Supplier Identification

Product: Sherlock Gasleak Detector

Product Use: Metalworking Product

Manufacturer: **Bison International**
Dr. A.F. Philipsstraat 9,
NL-4462 EW Goes
Netherlands

Telephone: +31 113 235700
Facsimile: +31 113 232077

Supplier: **JSA Sales,**
75A Clipper Street,
Coquitlam, B.C.
Canada, V3K 6X2

Telephone: **(604) 525-4774**

2. Composition

Component	% (w/w)	Exposure Limits (ACGIH)*	LD_{50}	LC_{50}
Nitrous Oxide CAS No. 10024-97-2 (propellant)	50 - 70	TLV-TWA: 50 ppm	Not applicable	160 mg/m^3 (inhalation/rat, 6 hour)
1,2-Propylene glycol CAS No 57-55-6	10 - 20	WEELS- TWA: 10mg/m^3 (8 hour)	21800 mg/kg (oral/rat) 20800 mg/kg (dermal/rabbit)	Not determined
Non-hazardous ingredients and ingredients below disclosure requirements	10 - 40	Not applicable	Not applicable	Not applicable

* Exposure limits may vary from time to time and from one jurisdiction to another. Check with local regulatory agency for the exposure limits in your area.

ACGIH , American Conference of Governmental Industrial Hygienists.

3. Hazards Identification

Primary Routes of Entry:

Skin Contact:	No
Skin Absorption:	No
Eye Contact:	No
Ingestion:	No
Inhalation:	Yes

Emergency Overview: Colouless gas with a slightly sweet odour. Oxidizer! Contact with combustible materials may cause fire or explosion. Explosive when mixed with fuels. Compressed gas! Confined space hazard. Gas can replace oxygen in the air. Reproductive hazard! Can cause embryotoxic, fetotoxic and teratogenic effects, based on human information.

Effects of Short-Term (Acute) Exposure:

Inhalation: Occupational exposure to nitrous oxide usually ranges between 400 and 3000 ppm. Exposure to concentrations of 100,000 ppm and higher can affect behavior and the ability to carry out mental tasks. This effect has also been demonstrated in volunteers exposed to a very low concentration (50 ppm for 3-4 hours) At levels of 330,000 ppm, volunteers have shown reduced sensitivity to painAt levels of 400,000 to 700,000 ppm reversible blood system changes occur including suppressed bone marrow activity. Exposure to higher concentrations may result in numbness or a drunkiness feeling.

Skin Contact: No ill affects expected except if spray directed at skin, frostbite may occur.

Eye Contact: See skin contact.

Ingestion: Not a route of entry for gases.

Effects of Long-Term (Chronic) Exposure: Repeated exposure to nitrous oxide can damage the peripheral nervous system. A condition called polyneuropathy has been observed. While this condition may improve over time, it is not completely reversible. Symptoms may include: numbness, a burning or prickling sensation on the skin, poor muscle cordination and clumbsiness. If exposure continues, weakness, disturbances in walking, impotence and signs of degeneration of the spinal cord can occur.

Exposure to high concentrations of nitrous oxide can suppress bone marow activity decreasing the number of circulating blood cells.

Based on human information, prolonged exposure to nitrous oxide can cause embryotoxic, fetotoxic and teratogenic effects.

Medical Conditions Aggravated By Exposure: None known.

4. First Aid Measures

Overview: The main route of entry is by inhalation.

Eye Contact: If sprayed directly into the eye causing frostbite, quickly remove victim from source of contamination. Immediately and briefly flush with lukewarm, gently flowing water until the chemical is removed. DO NOT attempt to re-warm the eye(s). Cover both eyes with a sterile dressing. DO NOT allow victim to drink alcohol or smoke. Quickly transport victim to an emergency care facility.

Skin Contact: If sprayed directly on skin causing frostbite, quickly remove victim from source of contamination and briefly flush with lukewarm, gently flowing water until the chemical is removed. DO NOT attempt to re-warm the affected area on site. DO NOT rub area or apply dry heat. Transport to a medical facility if the frostbite is severe.

Inhalation: This gas is a teratogen/embryotoxin. Take proper precautions to ensure your own safety before attempting rescue (e.g. wear appropriate protective equipment). Remove the source of contamination or move victim to fresh air and obtain medical advice

Ingestion: Not a route of entry.

First Aid Comments: Provide general supportive measures (comfort, warmth, rest).
Consult a doctor and/or the nearest Poison Control Centre for all serious exposures.
All first aid procedures should be periodically reviewed by a doctor familiar with the material and its conditions of use in the workplace.

5. Fire Fighting Measures

Flash point: Does not burn.
Autoignition temperature: 371 °C
Lower Explosive Limit: 2.6% (1,2-propylene glycol)
Upper Explosion Limit: 12.6% (1,2-propylene glycol)
Sensitivity to Impact: No
Sensitivity to Static Discharge: No

Hazardous Combustion Products: High temperatures (greater than 649 deg C) may cause decomposition to nitrogen and oxygen. Nitric oxide or nitrogen dioxide gases may also form.

Extinguishing Media: Use extinguishing media appropriate to surrounding fire conditions, such as dry chemical powder, carbon dioxide, or foam. Use water in large quantities for fires involving nitrous oxide.

Fire Fighting Instructions: Evacuate area and fight fire from a safe distance or protected location. Approach the fire from upwind to avoid contact with hazardous vapours and decomposition products. Do not enter fire area without proper protection. Containers, when heated, may explode. Use of water to cool none fire exposed containers. Isolate material not yet involved in the fire and protect personnel. Move containers away from fire, if safe to do so.

HMIS HAZARD INDEX:

HEALTH: 2
FLAMMABILITY: 0
REACTIVITY: 0
PROTECTION: None required

6. Accidental Release Measures

Overview: Restrict access to release area until completion of cleanup. Ventilate area well to dilute and eliminate nitrous oxide concentration.

Personal Protection: See Section 8

Environmental Precautions: No specific requirements.

Remedial Measures: Stop leak, if safe to do so.

7. Handling and Storage

Handling Procedures: This material is very toxic, an oxidizer, and a compressed gas. Before handling, it is extremely important that proper ventilation systems are in place and person handling this material are properly trained regarding its hazards and safe use.

This material cannot be used where it may come in contact with materials that burn. Eliminate all ignition sources. Post "No Smoking" signs in use area. Do not use near welding operations, flames, or hot surfaces.

Storage: Store the product in a cool, dry, well ventilated area away from flammable materials and corrosive atmospheres, in a fireproof area. Store away from heat and ignition sources and out of direct sunlight. The storage area should be posted with "No Smoking" signs.

8. Exposure Controls, Personal Protection

Engineering Controls: When using indoors, ensure adequate ventilation by using local exhaust.

Respiratory Protection:

No specific recommendation

Skin protection: Depending upon the conditions of use, protective gloves made from chemical resistant nitrile rubber, PVC, PE or neoprene. Neoprene aprons or suitable clothing to prevent skin contact.

Eye and Face Protection: Tightly sealed goggles and/or face shield must be worn when a possibility exists for eye contact. Contact lenses should not be worn.

Footwear: No specific recommendation.

Other: Emergency eyes wash fountains should be available in vicinity of use.

9. Physical and Chemical Properties

Appearance: Aerosol
Odour: Slightly sweet
Odour Threshold: Not available
pH: Not applicable
Vapour Pressure: Not determined
Solubility: Fully miscible
Vapour Density: >1 (air =1),
Evaporation Rate: Not determined

Freezing Point: Not determined
Critical Temperature: Not determined
Relative Density: 1.04 @ 20°C
Partition Coefficient: Not determined
Solvent Solubility: Not determined
Percent Solids: 10
Viscosity: Not determined
Boiling Point: 100°C

10. Stability and Reactivity

Chemical Stability: Stable at normal temperatures. At elevated temperatures (above 649°C) decomposes into nitrogen and oxygen. This decomposition may become explosive at high temperatures. Decomposition will occur at lower temperatures in the presence of catalytic surfaces such as silver, platinum, cobalt, copper oxides or nickel oxides.

Incompatibility: Yes. COMBUSTIBLE MATERIALS (e.g. wood, paper, oil, grease) - may ignite.
COMBUSTIBLE GASES (e.g. ammonia, carbon monoxide, hydrogen, hydrogen sulfide and phosphine) or DIETHYL ETHER - form explosive mixtures.
POWDERED ALUMINUM, HYDRAZINE or LITHIUM HYDRIDE - form flammable mixtures, some of which may ignite spontaneously.
AMORPHOUS BORON, GASEOUS SODIUM, TIN(II)OXIDE or TUNGSTEN CARBIDE - ignite when heated in nitrous oxide.
HYDROGEN - lowers the ignition temperature.
PHENYLLITHIUM - forms unstable lithium phenylazoxide.
PLASTIC TUBES (e.g polyvinyl chloride, silicone rubber or red rubber) - surgical tubes have been ignited by surgical lasers or electrocautery in atmospheres enriched by nitrous oxide.
SILANE - detonates very easily.

Hazardous Decomposition Products: At elevated temperatures (above 649°C) decomposes into nitrogen and oxygen.

Hazardous Polymerization: Will not occur.

11. Toxicological Information

Acute Exposure:	See Section 3
Chronic Exposure:	See Section 3.
Exposure Limits:	See Section 2.
Irritancy:	See Section 3.
Sensitization:	See Section 3.
Carcinogenicity:	No human or animal data is available. IARC has designated this material A4, not classifiable as a human carcinogen.
Teratogenicity:	Yes, see Section 3
Reproductive toxicity:	Yes, see Section 3
Mutagenicity:	No human information available.
Synergistic products:	None known

12. Ecological Information

Overview: None

Environmental toxicity: For 1,2 Propylene glycol:

- LC50 Carassius auratus (Goldfish) >5,000 mg/L/24 hr /Conditions of bioassay not specified
- LC50 Lebistes reticulatus (Guppy) >10,000 mg/L/48 hr /Conditions of bioassay not specified
- LC50 Artemia salina (Brine shrimp) >10,000 mg/L/24 hr /Conditions of bioassay not specified/
- LC50 Salmo gardneri (Rainbow trout) 50,000 mg/L/24 hr /Conditions of bioassay not specified
- LC50 Pimephales promelas (Fathead minnow) 54,900 mg/L/96 hr /Conditions of bioassay not specified
- LC50 Rainbow trout 44 mL/L/96 hr (95% confidence interval: 41-47 mL/L); static, 12 deg C, pH 7.4, Hardness 44

Biodegradability: Biodegrades readily in terrestrial and aquatic environments.

13. Disposal Considerations

Review federal, provincial or state, and local government requirements prior to disposal. Store material for disposal as indicated in Storage Conditions. Disposal by controlled incineration may be acceptable.

14. Transport Information

Transport of Dangerous Goods (TDG and CLR): UN 1950, AEROSOLS, Class 2.2

United States Department of Transport (49CFR): UN 1950, AEROSOLS, Class 2.2

International Air Transport Association (IATA): UN 1950, AEROSOLS, Class 2.2

International Maritime Organization (IMO): UN 1950, AEROSOLS, Class 2.2,
EmS No. F-D, S-U, For AEROSOLS with a maximum capacity of 1 litre: Stowage category "A", segregate as for Class 9 but "away from" sources of heat and "Separated from" Class 1 except division 1.4. For AEROSOLS with a capacity above 1 litre: Stowage Category "B", segregate as for the appropriate division of Class 2.

15. Regulatory Information

CANADIAN FEDERAL REGULATIONS:

CEPA, DOMESTIC SUBSTANCES LIST: Listed

WHMIS CLASSIFICATION: A, C, D2A

16. Other Information

Preparation Date: September 3, 2008

Prepared by: Kel-Ex Agencies Ltd., 319 Lynn Avenue, North Vancouver, B.C. V7J 2C4

Disclaimer: This Material Safety Data Sheet was prepared using information provided by CCINFO. The information in the Material Safety Data Sheet is offered for your consideration and guidance when exposed to this product. JSA Sales and Bison International, expressly disclaims all expressed or implied warranties and assumes no responsibilities for the accuracy or completeness of the data contained herein. The data in this MSDS does not apply to use with any other product or in any other process.

This Material Safety Data Sheet may not be changed, or altered in any way without the expressed knowledge and permission of JSA Sales or Bison International.

Revisions: Reviewed and re-issued September 7, 2011

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200

SHOUT® TRIPLE-ACTING LAUNDRY STAIN REMOVER

Version .

Print Date 02/01/2010

Revision Date 01/20/2010

MSDS Number 350000004054
SITE_FORM Number
30000000000000003385.002

1. PRODUCT AND COMPANY IDENTIFICATION

Product information

Trade name	:	SHOUT® TRIPLE-ACTING LAUNDRY STAIN REMOVER
Use of the Substance/Mixture	:	Spot & Stain Remover
Company	:	S.C. Johnson and Son, Limited 1 Webster Street Brantford ON N3T 5R1
Emergency telephone	:	24 Hour Transport & Medical Emergency Phone (866) 231-5406 24 Hour International Emergency Phone (952) 852-4647 24 Hour Canadian Transport Emergency Phone (CANUTEC) (613) 996-6666

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance / Odor	:	white / liquid / pleasant
Immediate Concerns	:	Avoid contact with eyes and lips.

Potential Health Effects

Exposure routes	:	Eye, Skin, Inhalation, Ingestion.
Eyes	:	May cause: Mild eye irritation
Skin	:	Prolonged or repeated contact may dry skin and cause irritation.
Inhalation	:	None known.
Ingestion	:	None known.
Aggravated Medical Condition	:	Allergies to enzymes

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Weight percent
Water	7732-18-5	60.00 - 100.00
Ethoxylated alcohol	9043-30-5	1.00 - 5.00
Ethoxylated alcohol	127036-24-	1.00 - 5.00

SHOUT® TRIPLE-ACTING LAUNDRY STAIN REMOVER

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	2	
Enzyme	Mixture	0.01 - 1.00

4. FIRST AID MEASURES

Eye contact	:	Rinse with plenty of water. Get medical attention if irritation develops and persists.
Skin contact	:	Wash off with soap and water. Get medical attention if irritation develops and persists.
Inhalation	:	No special requirements
Ingestion	:	Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Alcohol foam, carbon dioxide, dry chemical, water fog
Specific hazards during fire fighting	:	Container may melt and leak in heat of fire.
Further information	:	Standard procedure for chemical fires. Fight fire with normal precautions from a reasonable distance.
Flash point	:	Note: not applicable
Lower explosion limit	:	Note: no data available
Upper explosion limit	:	Note: no data available

6. ACCIDENTAL RELEASE MEASURES

Methods for cleaning up	:	Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal. Dike large spills. Flush away traces with water.

7. HANDLING AND STORAGE

Handling

Advice on safe handling	:	Use only as directed. KEEP OUT OF REACH OF CHILDREN AND PETS.

Storage

Requirements for storage areas and containers	:	Keep in a dry, cool and well-ventilated place. Do not freeze.
Other data	:	Stable under normal conditions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

ACGIH or OSHA exposure limits have not been established for this product or reportable ingredients unless noted in the table above.

Personal protective equipment

Respiratory protection

Industrial setting	:	No personal respiratory protective equipment normally required.
Household setting	:	No personal respiratory protective equipment normally required.

Hand protection

Industrial setting	:	For prolonged or repeated contact use protective gloves.
Household setting	:	not required under normal use

Eye protection

Industrial setting	:	If prolonged or repeated contact is possible: Safety glasses with side-shields
Household setting	:	No special requirements.
Hygiene measures	:	Wash thoroughly after handling. Avoid prolonged contact with eyes, skin and clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	:	liquid

SHOUT® TRIPLE-ACTING LAUNDRY STAIN REMOVER

Version .
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MSDS Number 350000004054
SITE_FORM Number
30000000000000003385.002

Color	:	white
Odor	:	pleasant
pH	:	8.3 at 25 °C
Boiling point	:	no data available
Freezing point	:	32 °F
Flash point	:	not applicable
Evaporation rate	:	no data available
Flammability (solid, gas)	:	no data available
Autoignition temperature	:	not applicable
Lower explosion limit	:	no data available
Upper explosion limit	:	no data available
Vapour pressure	:	no data available
Density	:	1.011 g/cm3 at 25 °CCalculated
Water solubility	:	completely soluble
Partition coefficient: n-octanol/water	:	no data available
Viscosity, dynamic	:	no data available
Viscosity, kinematic	:	no data available
Volatile Organic Compounds (California Air Resource Board – CARB) Total VOC (wt. %)	:	0.1 % - does not include any applicable regulatory exemptions

10. STABILITY AND REACTIVITY

Conditions to avoid	:	None known.
Materials to avoid	:	Avoid contact with: Strong acids and strong bases Strong oxidizing agents

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Hazardous decomposition products	:	When exposed to fire, produces normal products of combustion.
Hazardous reactions	:	Stable

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	:	LD50 Calculated > 5,000 mg/kg
Acute inhalation toxicity	:	no data available
Acute dermal toxicity	:	LD50 estimated > 5,000 mg/kg

Chronic effects

Carcinogenicity	:	no data available
Mutagenicity	:	no data available
Reproductive effects	:	no data available
Teratogenicity	:	no data available
Sensitisation	:	Not known to be a sensitizer.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects	:	no data available

13. DISPOSAL CONSIDERATIONS

Industrial setting	:	Observe all applicable Federal, Provincial and State regulations and Local/Municipal ordinances regarding disposal.
Household setting	:	Consumer may discard empty container in trash, or recycle

where facilities exist.

14. TRANSPORT INFORMATION

Land transport

- **U.S. DOT and Canadian TDG Surface Transportation:**

UN-Number	None.
Proper shipping name	not regulated
Class:	None.
Packaging group	None.

Sea transport

- *IMDG:*

UN-Number:	None.
Packaging group:	None.
Proper shipping name	not regulated
Class:	None.

Air transport

- *ICAO/IATA:*

Class:	None.
Packaging group:	None.
Proper shipping name	not regulated
UN/ID No.:	None.

15. REGULATORY INFORMATION

California Prop. 65	:	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.
Canada Regulations	:	This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

16. OTHER INFORMATION

HMIS Ratings

Health	1
Flammability	0
Reactivity	0

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NFPA Ratings

Health	1
Fire	0
Reactivity	0
Special	

Further information
This document has been prepared using data from sources considered to be technically reliable. It does not constitute a warranty, expressed or implied, as to the accuracy of the information contained herein. Actual conditions of use are beyond the seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

Prepared by:	SC Johnson Global Safety Assessment & Regulatory Affairs (GSARA)

SAFETY DATA SHEET

SODIUM METABISULPHITE 97% W

Section 1. Identification

Product identifier : SODIUM METABISULPHITE 97% W

Product code : Q05382

Relevant identified uses of the substance or mixture

Identified uses
Industrial applications.

Supplier's details : QUADRA CHEMICALS LTD.
3901 F.X Tessier
Vaudreuil-Dorion, QC
CANADA J7V 5V5
1-800-665-6553

Emergency telephone number (with hours of operation) : **TRANSPORTATION EMERGENCY - 24HRS/DAY - 7 DAYS/WEEK IN CANADA - CALL 1-888-922-3330**

Section 2. Hazard identification

Classification of the substance or mixture : ACUTE TOXICITY (oral) - Category 4
EYE IRRITATION - Category 2A

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Harmful if swallowed.
Causes serious eye irritation.

Precautionary statements

Prevention : Wear eye or face protection. Do not eat, drink or smoke when using this product. Wash thoroughly after handling.

Response : IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell. Rinse mouth. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention.

Storage : Not applicable.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Ingredient name	% (w/w)	CAS number
sodium metabisulphite	100	7681-57-4

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.

Skin contact : No known significant effects or critical hazards.

Ingestion : Harmful if swallowed.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact : No specific data.

Section 4. First-aid measures

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : No specific fire or explosion hazard.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
sulfur oxides
metal oxide/oxides
sodium sulfate

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Section 6. Accidental release measures

Small spill : Move containers from spill area. Avoid dust generation. Using a vacuum with HEPA filter will reduce dust dispersal. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing dust. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
sodium metabisulphite	**ACGIH TLV (United States, 3/2020).** TWA: 5 mg/m³ 8 hours.

Appropriate engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Section 8. Exposure controls/personal protection

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles. If operating conditions cause high dust concentrations to be produced, use dust goggles.

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state : Solid. [Crystals or powder.]

Color : White to yellowish.

Odor : Sulphur dioxide.

Odor threshold : Not available.

pH : 4.3 [Conc. (% w/w): 1%]

Melting point/freezing point : Not available.

Boiling point, initial boiling point, and boiling range : Not available.

Flash point : Not applicable.

Evaporation rate : Not available.

Flammability : Not available.

Lower and upper explosion limit/flammability limit : Not applicable.

Vapor pressure : Not available.

Relative vapor density : Not applicable.

Section 9. Physical and chemical properties and safety characteristics

Relative density : 1.4

Solubility : Easily soluble in the following materials: cold water and hot water.

Solubility in water : Not available.

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature : Not applicable.

Decomposition temperature : 150°C (302°F)

Viscosity : Not applicable.

Flow time (ISO 2431) : Not available.

Particle characteristics

Median particle size : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : oxidizing materials
acids
moisture

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
SODIUM METABISULPHITE 97% W	LD50 Dermal	Guinea pig	>1000 mg/kg	-
	LD50 Oral	Rat	1131 mg/kg	-
sodium metabisulphite	LD50 Oral	Rat	1131 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
sodium metabisulphite	Eyes - Mild irritant	Rabbit	-	24 hours 100 mg	-

Sensitization

Not available.

Mutagenicity

Section 11. Toxicological information

Not available.

Carcinogenicity

Not available.

Carcinogenicity Classification

Product/ingredient name	IARC	NTP	ACGIH
sodium metabisulphite	3	-	A4

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Oral, Inhalation.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.

Skin contact : No known significant effects or critical hazards.

Ingestion : Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Section 11. Toxicological information

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	1131 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
sodium metabisulphite	Acute LC50 32 mg/l Fresh water	Fish - Lepomis macrochirus	96 hours

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
sodium metabisulphite	-3.7	-	low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	TDG Classification
UN number	Not regulated.
UN proper shipping name	-
Transport hazard class(es)	-
Packing group	-
Additional information	Not available.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

Canada inventory : All components are listed or exempted.

Canadian NPRI : None of the components are listed.

CEPA Toxic substances : None of the components are listed.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Section 16. Other information

History

Date of issue/Date of revision : 22 September 2022

Prepared by : Regulatory Affairs

Section 16. Other information

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
LogPow = logarithm of the octanol/water partition coefficient
UN = United Nations
HPR = Hazardous Products Regulations
N/A = Not available

Procedure used to derive the classification

Classification	Justification
ACUTE TOXICITY (oral) - Category 4 EYE IRRITATION - Category 2A	On basis of test data Calculation method

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Commodity Detail Report

Commodity Code: 44963 Product Class: POISON

Product Trade Name: Sodium Cyanide (Chemours)

Proper Shipping Name: Sodium cyanide, solid

UN Number: UN1689 HM Permit Required: NO

Packing Group: I Ops Code: SHIPPER TRAILER ONLY

STCC Code: ERG Code: 157

Hazard Class: 6.1 - Toxic substance

Product Form: Solid Product Color: White

DOT/MC Code: 307, 407

PPE: L - Airline Hood (Fully encapsulating suit with SCBA, "Level A")

Shell Material: UNKNOWN

Type of Lining:

Type of Coating:

Unload Method: Consignee Unload only

Unload Type: MSDS Date: 9/30/2015 12:00:00 AM

Notes: Driver training by shipper required. Breathing vapors may cause immediate cyanide poisoning. Signs of cyanide poisoning may be delayed (symptoms may not appear until 8-24 hours after exposure.) Do not hesitate to call 911 if symptoms appear much later than initial exposure. Supplied air recommeded. Contact Safety for Vapor Respirator approval. Contaminated PPE and clothing items are Acute Hazardous Waste.

Loading Temp: Amb °F Melting/Freezing Point: 1043 °F

Min. Pumping temp: °F Poison Inhalation Haz: N

Product Weight: 52.4 pcf Marine Pollutant Y

Created Date:	4/15/2014 1:47:20 PM	Last Modified:	4/5/2022 2:37:08 PM
Created By:	CFetterm	Modified By:	datamod
Last Hauled On:	6/23/2023 6:01:00 AM		

Recent Orders: 816060370 (Available),789003079 (Available),789003078 (Available),789003074 (Available),789003073 (Available),789003072 (Available),789003071 (Available),789003070 (Available),789003069 (Available),816061278 (Started)

Active Orders: 816060370 (Available),789003078 (Available),789003079 (Available),789003069 (Available),789003070 (Available),789003071 (Available),789003072 (Available),789003073 (Available),789003074 (Available),816061278 (Started),789003075 (Dispatched),789003077 (Planned),789003080 (Available),789003076 (Dispatched),789003068 (Dispatched),789003081 (Available),789003082 (Available),789003083 (Available),789003084 (Available),789UNIVAL (Master),789003067 (Available),189CARMAL (Master)

Repeated exposure : Adverse effects from repeated exposure may include:, Central nervous system effects, Thyroid effects

Target Organ
Sodium cyanide : Central nervous system Respiratory system Thyroid

Carcinogenicity
None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration
Sodium cyanide	143-33-9	>98%

SECTION 4. FIRST AID MEASURES

Skin contact : Wash off immediately with plenty of water. Take off all contaminated clothing immediately. If signs of poisoning appear, treat as for inhalation. Call a physician or poison control centre immediately.

Eye contact : Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids. Seek medical advice.

Inhalation : Remove from exposure, lie down. If victim is conscious: Give oxygen. If victim is unconscious but breathing: Administer amyl nitrite. If victim has stopped breathing: Use oxygen resuscitator and administer amyl nitrite simultaneously.

Safeguards (Personnel)	:	Wear personal protective equipment. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.
Spill Cleanup	:	Shovel or sweep up. Do not flush with water. Neutralise with the following product(s): sodium hypochlorite Transfer to steel drums with a lid. After cleaning, flush away traces with water.
Accidental Release Measures	:	Local authorities should be advised if significant spillages cannot be contained. Do not let product enter drains. Use appropriate container to avoid environmental contamination. Do not use neutralization agent to try and neutralize cyanide contaminated rivers, streams or other waterways. Dispose of in accordance with local regulations.

SECTION 7. HANDLING AND STORAGE

Handling (Personnel)	:	Always have on hand a cyanide first-aid kit, together with proper instructions. Plan first aid action before beginning work with this product. Wear personal protective equipment. Avoid dust formation. Avoid contact with skin and eyes. Use with local exhaust ventilation. Wash hands before breaks and immediately after handling the product. Wash contaminated clothing before re-use. Discard contaminated shoes. When using do not eat, drink or smoke.
Storage	:	Store in a place accessible by authorized persons only. Keep locked up. Keep container tightly closed in a dry and well-ventilated place. Store in original container. Keep away from: Combustible material acid salts Acids Oxidizing agents Keep away from food and drink. No decomposition if stored and applied as directed.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls	:	Use only in area provided with appropriate exhaust ventilation.
Personal protective equipment Respiratory protection	:	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. In the case of respirable dust, use self-contained breathing apparatus.

DUPONT

Sodium Cyanide

Version 3.0

Revision Date 03/18/2014 Ref. 150000002175

Oxidising Substance	:	The product is not oxidizing.
Vapour Pressure	:	ca. 0.1 kPa at 800 °C (1,472 °F)
Specific gravity	:	1.595 at 20 °C (68 °F)
Bulk density	:	840 kg/m3
Water solubility	:	370 g/l at 20 °C (68 °F)
Partition coefficient: n-octanol/water	:	log Pow: 0.25 at 20 °C (68 °F)
Viscosity	:	not applicable
Viscosity, kinematic	:	not applicable

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid	:	Exposure to moisture.
Incompatibility	:	Acids Strong oxidizing agents, Water
Hazardous decomposition products	:	Hydrogen cyanide (hydrocyanic acid)
Hazardous reactions	:	Decomposes slowly on exposure to water. Contact with acids liberates very toxic gas.

SECTION 11. TOXICOLOGICAL INFORMATION

Sodium Cyanide

Reproductive toxicity	:	No toxicity to reproduction

Sodium cyanide

Dermal LD50	:	7 - 11 mg/kg , rabbit
Oral LD50	:	4.8 mg/kg , rat
Inhalation 4 h LC50	:	0.015 mg/l , rat Information given is based on data obtained from similar substances.
Inhalation 4 h LC50	:	32 ppm , rat Information given is based on data obtained from similar substances.
Skin irritation	:	Skin irritation, rabbit
Eye irritation	:	Eye irritation, rabbit

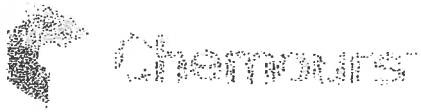
	Packing group	: I
	Labelling No.	: 6.1
	Reportable Quantity	: 10 lbs Sodium Cyanide
IATA_C	UN number	: 1689
	Proper shipping name	: Sodium cyanide, solid
	Class	: 6.1
	Packing group	: I
	Labelling No.	: 6.1
IMDG	UN number	: 1689
	Proper shipping name	: SODIUM CYANIDE, SOLID
	Class	: 6.1
	Packing group	: I
	Labelling No.	: 6.1
	Marine pollutant	: yes (Sodium Cyanide)

Marine pollutant

SECTION 15. REGULATORY INFORMATION

TSCA	: On the inventory, or in compliance with the inventory
SARA 313 Regulated Chemical(s)	: Sodium cyanide
CERCLA Reportable Quantity	: 10 lbs Based on the percentage composition of this chemical in the product.: Sodium cyanide
SARA Reportable Quantity	: 10 lbs Based on the percentage composition of this chemical in the product.: Sodium cyanide
California Prop. 65	: WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.Sodium cyanide
PA Right to Know	: Substances on the Pennsylvania Hazardous Substances List present at

Safety Data Sheet



Sodium Cyanide

Version 4.0

Revision Date 09/30/2015 Ref. 150000002175

This SDS adheres to the standards and regulatory requirements of the United States and may not meet the regulatory requirements in other countries.

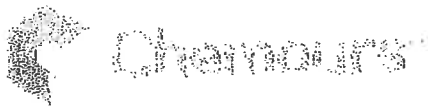
SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Sodium Cyanide
Tradename/Synonym	:	Cyanobrik® Cyanogran®
Product Use	:	Transported isolated intermediate used under strictly controlled conditions., Chemical intermediate, Formulation, Metal surface treatment products, including galvanic and electroplating products, Degreasing, Cleaning, Hardener, Electroplating, Non-metal-surface treatment products, Depressing Agent, Extraction agents, Recycling, Precious metals
Restrictions on use	:	For professional users only., Use in production of weapons or narcotics, Fishing aid, Pest control, Fertilizers, Disinfectant, Consumer uses: Private households (= general public = consumers)
Manufacturer/Supplier	:	The Chemours Company FC, LLC 1007 Market Street Wilmington, DE 19899 United States of America
Product Information	:	1-844-773-CHEM (outside the U.S. 1-302-773-1000)
Medical Emergency	:	1-866-595-1473 (outside the U.S. 1-302-773-2000)
Transport Emergency	:	CHEMTREC: +1-800-424-9300 (outside the U.S. +1-703-527-3887) : Cyanide Hotline (For Emergencies ONLY) 1-901-357-1546

SECTION 2. HAZARDS IDENTIFICATION

Product hazard category

Corrosive to metals	Category 1
Acute toxicity (Oral)	Category 1



Sodium Cyanide

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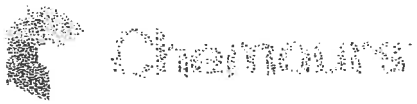
Hazardous prevention measures	: Keep only in original container. Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. Do not get in eyes, on skin, or on clothing. Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/ protective clothing/ eye protection/ face protection. Wear respiratory protection. IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor. Wash contaminated clothing before reuse. Absorb spillage to prevent material damage. Store in a well-ventilated place. Keep container tightly closed. Store locked up. Store in corrosive resistant stainless steel container with a resistant inner liner. Dispose of contents/ container to an approved waste disposal plant.

Other hazards
No applicable data available.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration



Sodium Cyanide

Version 4.0

Revision Date 09/30/2015 Ref. 150000002175

Most important symptoms/effects, acute and delayed	:	Reddening of the eyes or skin Nausea Headache Breathing difficulties Palpitation Weakness of arms and/or legs
Protection of first-aiders	:	If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Notes to physician	:	First aider needs to protect himself. Note: To prepare activated charcoal slurry, mix thoroughly 50 g of activated charcoal in 400 ml (about 2 cups) water.

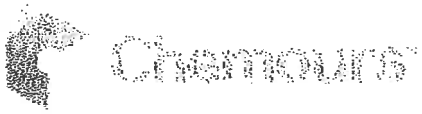
SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	The product itself does not burn., Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	Carbon dioxide (CO2), Water, acidic foam
Specific hazards	:	No applicable data available.
Special protective equipment for firefighters	:	Wear self-contained breathing apparatus and protective suit.
Further information	:	If area is heavily exposed to fire and if conditions permit, let fire burn itself out since water may increase the area contaminated. Do not allow run-off from fire fighting to enter drains or water courses.

SECTION 6. ACCIDENTAL RELEASE MEASURES

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Safeguards (Personnel)	:	Wear personal protective equipment. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.



Sodium Cyanide

Version 4.0

Revision Date 09/30/2015 Ref. 150000002175

Engineering controls	:	Use only in area provided with appropriate exhaust ventilation.
Personal protective equipment Respiratory protection	:	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. In the case of respirable dust, use self-contained breathing apparatus.
Hand protection	:	Additional protection: Impervious butyl rubber gloves
Eye protection	:	Goggles Face-shield
Skin and body protection	:	Protective suit Rubber apron Boots Remove and wash contaminated clothing before re-use.
Protective measures	:	Plan first aid action before beginning work with this product. Always have on hand a cyanide first-aid kit, together with proper instructions.

Exposure Guidelines
Exposure Limit Values

Sodium cyanide			
Permissible exposure limit:	(OSHA)	5 mg/m3	8 hr. TWA as CN
TLV	(ACGIH)	5 mg/m3	TLV-C as CN

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance		
Physical state	:	solid
Form	:	solid, granular, pellets
Color	:	white
Odor	:	none

Ignition temperature	:	no data available
Decomposition temperature	:	No applicable data available.
Viscosity, kinematic	:	Not applicable
Viscosity, dynamic	:	Not applicable
Oxidizing Substance	:	The product is not oxidizing.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Stable under recommended storage conditions.
Chemical stability	:	Decomposes slowly on exposure to water.
Possibility of hazardous reactions	:	Decomposes slowly on exposure to water. Contact with acids liberates very toxic gas.
Conditions to avoid	:	Exposure to moisture
Incompatible materials	:	Acids Strong oxidizing agents, Water
Hazardous decomposition products	:	Hydrogen cyanide (hydrocyanic acid)

SECTION 11. TOXICOLOGICAL INFORMATION

Sodium cyanide

Inhalation 4 h LC50	:	16 ppm , Rat Information given is based on data obtained from similar substances.
Dermal LD50	:	6.89 mg/kg , Rabbit Information given is based on data obtained from similar substances.
Oral LD50	:	5 mg/kg , Rat
Repeated dose toxicity	:	Ingestion Rat - 12 Months

effects.
Evidence suggests this substance does not cause genetic damage in animals.

Reproductive toxicity : Animal testing showed no reproductive toxicity.

Teratogenicity : Animal testing showed no developmental toxicity.

Carcinogenicity
The carcinogenicity classifications for this product and/or its ingredients have been determined according to HazCom 2012, Appendix A.6. The classifications may differ from those listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or those found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition).

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

SECTION 12. ECOLOGICAL INFORMATION

Aquatic Toxicity
Sodium cyanide

96 h LC50 : Fish (unspecified species) 0.1038 mg/l

72 h ErC50 : Pseudokirchneriella subcapitata (green algae) 0.116 mg/l
Information given is based on data obtained from similar substances.

48 h EC50 : Aquatic invertebrates 0.0124 mg/l OECD Test Guideline 202

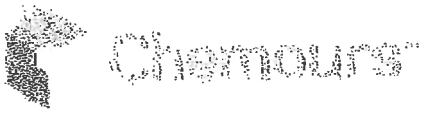
Sodium carbonate

96 h LC50 : Lepomis macrochirus (Bluegill sunfish) 300 mg/l

48 h LC50 : Ceriodaphnia dubia (water flea) 200 - 227 mg/l

4 d : EC50 Daphnia magna (Water flea) 228 - 297 mg/l

Physico-chemical removability : Neutralization is normally necessary before waste water is discharged into water treatment plants.



Sodium Cyanide

Version 4.0

Revision Date 09/30/2015 Ref. 150000002175

IMDG	UN number	: 1689
	Proper shipping name	: SODIUM CYANIDE, SOLID
	Class	: 6.1
	Packing group	: I
	Labelling No.	: 6.1
	Marine pollutant	: yes (Sodium Cyanide)

Marine pollutant

SECTION 15. REGULATORY INFORMATION

TSCA	: On the inventory, or in compliance with the inventory
SARA 313 Regulated Chemical(s)	: Sodium cyanide
PA Right to Know Regulated Chemical(s)	: Substances on the Pennsylvania Hazardous Substances List present at a concentration of 1% or more (0.01% for Special Hazardous Substances): Sodium cyanide
NJ Right to Know Regulated Chemical(s)	: Substances on the New Jersey Workplace Hazardous Substance List present at a concentration of 1% or more (0.1% for substances identified as carcinogens, mutagens or teratogens): Sodium cyanide
SARA Reportable Quantity	: 10 lbs Based on the percentage composition of this chemical in the product.: Sodium cyanide
California Prop. 65	: WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.Sodium cyanide

CNV

Safety Data Sheet

Sodium Cyanide

Version 4.0

Revision Date 09/30/2015 Ref. 150000002176

This SDS adheres to the standards and regulatory requirements of the United States and may not meet the regulatory requirements in other countries.

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Sodium Cyanide
Tradename/Synonym	:	Cyanobrik® Cyanogran®
Product Use	:	Transported isolated intermediate used under strictly controlled conditions., Chemical intermediate, Formulation, Metal surface treatment products, including galvanic and electroplating products, Degreasing, Cleaning, Hardener, Electroplating, Non-metal-surface treatment products, Depressing Agent, Extraction agents, Recycling, Precious metals
Restrictions on use	:	For professional users only., Use in production of weapons or narcotics, Fishing aid, Pest control, Fertilizers, Disinfectant, Consumer uses: Private households (= general public = consumers)
Manufacturer/Supplier	:	The Chemours Company FC, LLC 1007 Market Street Wilmington, DE 19899 United States of America
Product Information	:	1-844-773-CHEM (outside the U.S. 1-302-773-1000)
Medical Emergency	:	1-866-595-1473 (outside the U.S. 1-302-773-2000)
Transport Emergency	:	CHEMTREC: +1-800-424-9300 (outside the U.S. +1-703-527-3887) : Cyanide Hotline (For Emergencies ONLY) 1-901-357-1546

SECTION 2. HAZARDS IDENTIFICATION

Product hazard category

Corrosive to metals	Category 1
Acute toxicity (Oral)	Category 1

Sodium Cyanide

Version 4.0

Revision Date 09/30/2015 Ref. 150000002175

Hazardous prevention measures : Keep only in original container.
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Do not get in eyes, on skin, or on clothing.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ protective clothing/ eye protection/ face protection.
Wear respiratory protection.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER/doctor.
Wash contaminated clothing before reuse.
Absorb spillage to prevent material damage.
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Store in corrosive resistant stainless steel container with a resistant inner liner.
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
No applicable data available.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration

Sodium Cyanide

Version 4.0

Revision Date 09/30/2015 Ref. 160000002175

Most important symptoms/effects, acute and delayed	:	Reddening of the eyes or skin Nausea Headache Breathing difficulties Palpitation Weakness of arms and/or legs
Protection of first-aiders	:	If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Notes to physician	:	First aider needs to protect himself. Note: To prepare activated charcoal slurry, mix thoroughly 50 g of activated charcoal in 400 ml (about 2 cups) water.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	The product itself does not burn., Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	Carbon dioxide (CO2), Water, acidic foam
Specific hazards	:	No applicable data available.
Special protective equipment for firefighters	:	Wear self-contained breathing apparatus and protective suit.
Further information	:	If area is heavily exposed to fire and if conditions permit, let fire burn itself out since water may increase the area contaminated. Do not allow run-off from fire fighting to enter drains or water courses.

SECTION 6. ACCIDENTAL RELEASE MEASURES

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Safeguards (Personnel)	:	Wear personal protective equipment. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

Sodium Cyanide

Version 4.0

Revision Date 09/30/2015 Ref. 150000002175

Engineering controls	:	Use only in area provided with appropriate exhaust ventilation.
Personal protective equipment Respiratory protection	:	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. In the case of respirable dust, use self-contained breathing apparatus.
Hand protection	:	Additional protection: impervious butyl rubber gloves
Eye protection	:	Goggles Face-shield
Skin and body protection	:	Protective suit Rubber apron Boots Remove and wash contaminated clothing before re-use.
Protective measures	:	Plan first aid action before beginning work with this product. Always have on hand a cyanide first-aid kit, together with proper instructions.

Exposure Guidelines
Exposure Limit Values

Sodium cyanide Permissible exposure limit:	(OSHA)	5 mg/m3	8 hr. TWA as CN
TLV	(ACGIH)	5 mg/m3	TLV-C as CN

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance		
Physical state	:	solid
Form	:	solid, granular, pellets
Color	:	white
Odor	:	none

Ignition temperature	:	no data available
Decomposition temperature	:	No applicable data available.
Viscosity, kinematic	:	Not applicable
Viscosity, dynamic	:	Not applicable
Oxidizing Substance	:	The product is not oxidizing.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Stable under recommended storage conditions.
Chemical stability	:	Decomposes slowly on exposure to water.
Possibility of hazardous reactions	:	Decomposes slowly on exposure to water. Contact with acids liberates very toxic gas.
Conditions to avoid	:	Exposure to moisture
Incompatible materials	:	Acids Strong oxidizing agents, Water
Hazardous decomposition products	:	Hydrogen cyanide (hydrocyanic acid)

SECTION 11. TOXICOLOGICAL INFORMATION

Sodium cyanide

Inhalation 4 h LC50	:	16 ppm , Rat Information given is based on data obtained from similar substances.
Dermal LD50	:	6.89 mg/kg , Rabbit Information given is based on data obtained from similar substances.
Oral LD50	:	5 mg/kg , Rat
Repeated dose toxicity	:	Ingestion Rat - 12 Months

effects.
Evidence suggests this substance does not cause genetic damage in animals.

Reproductive toxicity	:	Animal testing showed no reproductive toxicity.
Teratogenicity	:	Animal testing showed no developmental toxicity.

Carcinogenicity
The carcinogenicity classifications for this product and/or its ingredients have been determined according to HazCom 2012, Appendix A.6. The classifications may differ from those listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or those found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition).

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

SECTION 12. ECOLOGICAL INFORMATION

Aquatic Toxicity

Sodium cyanide

96 h LC50	:	Fish (unspecified species) 0.1038 mg/l
72 h ErC50	:	Pseudokirchneriella subcapitata (green algae) 0.116 mg/l Information given is based on data obtained from similar substances.
48 h EC50	:	Aquatic invertebrates 0.0124 mg/l OECD Test Guideline 202

Sodium carbonate

96 h LC50	:	Lepomis macrochirus (Bluegill sunfish) 300 mg/l
48 h LC50	:	Ceriodaphnia dubia (water flea) 200 - 227 mg/l
4 d	:	EC50 Daphnia magna (Water flea) 228 - 297 mg/l
Physico-chemical removability	:	Neutralization is normally necessary before waste water is discharged into water treatment plants.

Safety Data Sheet

Product name:
Sofnolime®

Safety Data Ref: 23
Initial issue date: 09 March 2012
Revision date: 01 June 2015
Version number: 18

molecular

1	IDENTIFICATION OF SUBSTANCE / PREPARATION AND OF THE COMPANY	
1.1	Product identifier	Soda Lime (Sofnolime, Medisorb, Soda Lime, Soda Lime HC, Easysorb, CHIRAlime, Limepak, Medisize, Limedic, Aneslime, Vetsorb, SodaSthesia, Leonsorb plus)
1.2	Relevant use(s)/misuse(s)	As an absorbent for carbon dioxide and other acidic gases
1.3	SDS supplier	Molecular Products Ltd, Parkway, Harlow Business Park, Harlow, Essex, CM19 5FR, UK
1.4	Emergency contact (global)	+44 (0)1279 445111 (office hours) / +44 (0)1865 407333 (24 hour emergency number, English speaking) trevor@rising-hsande.co.uk (competent person email)
	Emergency contact (other)	China +86 512 8090 3042, China (NRCC): +86 532 8388 9090, Mexico: +52 555 004 8763, Chile: +56 225 829 336, Brazil: +55 11 3197 5891

2	HAZARDS IDENTIFICATION			
2.1	Classification of the substance or mixture (i.e. Sofnolime)			
2.1.1	Classification according to Regulation (EC) No 1272/2008 (CLP/GHS) – see section 11			
	Skin irrit 2	H315	Eye irrit. 2	H319
2.1.2	See section 16 for full text of H statements			
2.2	Labelling elements			
2.2.1	Labelling in accordance with EC Regulation No 1272/2008 (CLP/GHS)			
	Pictogram		Signal word	WARNING
	Hazard statements			
	H315	Causes skin irritation		
	H319	Causes serious eye irritation		
	Precautionary statements			
	P280	Wear protective gloves/protective clothing/eye protection/face protection		
	P314	Get medical advice/attention if you feel unwell		
	P302/352	If on skin: wash with plenty of soap and water		
	P305/351/338	If in eyes: rinse cautiously with water for several minutes. Remove contact lenses, if present, and easy to do. Continue rinsing		
	P332/313	If skin irritation occurs: get medical advice/attention		
2.3	Other hazards			
	None known			

3	COMPOSITION / INFORMATION ON INGREDIENTS				
	Chemical characterisation	Solid bases plus additives – see section 16 The CHIP/CLP classifications required in this section are related to that of the product supplied. To comply with the legislation the classification of the relevant ingredients of the product, as if they were present at 100%, must be outlined. Where ingredients are present in the product at very low concentrations the level of risk to the user is reduced, hence the reason that the classifications for the individual components and the product are different			
	Chemical name	CAS-No	EINECS/ELINCS	Classification	Concentration
	Sodium Hydroxide	1310-73-2	215-185-5	CHIP: C; R35 CLP: Skin Corr. 1A H314	<4%
	Calcium Hydroxide	1305-62-0	215-137-3	CHIP: Xi; R38, 41 CLP: Skin Irrit. 2 H315 Eye Damage 1 H318 WEL assigned	>75%

4	FIRST AID MEASURES	
4.1	Description of measures	
	Inhalation	Remove casualty to fresh air and provide warmth and rest
	Skin contact	Clean areas of skin affected immediately with soap and plenty of water. If necessary, seek medical advice
	Eye contact	Immediately wash out eye thoroughly with plenty of water until irritation subsides; consult an eye specialist/ophthalmologist

	Ingestion	Unlikely route of exposure. But if product is swallowed, do not induce vomiting. Drink plenty of water and, if necessary, seek medical advice
4.2	Most important effects/symptoms	None known
4.3	Immediate/special treatment	Treatment as described above

5	FIRE FIGHTING MEASURES	
5.1	Extinguishing media	To suit local surroundings (e.g. chemical powder, carbon dioxide, dry sand, water)
5.2	Special hazards	None known
5.3	Advice for fire fighters	Self-contained breathing apparatus may be required

6	ACCIDENTAL RELEASE MEASURES	
6.1	Personal precautions	Adhere to personal protective measures
6.2	Environmental precautions	Do not allow to get into waste water or waterways; if this occurs, inform the relevant water authority at once
6.3	Methods and materials for cleaning up	In the event of spillage, take up mechanically (e.g. sweep or vacuum up) into tightly closed containers. Adhere to personal protective measures. Flush any remainder with plenty of water. Label container and dispose of as prescribed
6.4	Reference to other sections	See section 8 for personal protective equipment

7	HANDLING AND STORAGE	
7.1	Precautions for safe handling	Handle in accordance with good hygiene and safety practice. Avoid the raising and deposition of dust
7.2	Conditions for safe storage	Ensure adequate ventilation of the storage area. Keep containers tightly closed, cool (0-35°C) and dry, avoiding direct sunlight
7.3	Specific end use(s)	As an absorbing agent

8	EXPOSURE CONTROLS / PERSONAL PROTECTION				
8.1	Workplace Exposure Limits (WELs) have been assigned by the HSE (EH40/2005)				
	STEL (15 mins)	ppm	2	mg/m^3	Data for sodium hydroxide
	LTEL (8 hour TWA)	ppm	5	mg/m^3	Data for calcium hydroxide
8.2	Exposure controls				
	Engineering controls	Provide adequate ventilation (e.g. local exhaust ventilation)			
	Personal protection	Observe normal standards for handling chemicals Wash hands before breaks and after work Avoid inhalation of dust if raised Wear personal protective equipment appropriate to the task (see below)			
	Eye protection	Safety goggles if risk of eye contamination			
	Skin protection	Suitable gloves (consider your own risk assessment; e.g. breakthrough times, rates of diffusion and degradation, tasks undertaken)			
	Respiratory protection	Approved dust mask or respirator (e.g. EN 149:2001 FFP3) for dust if ventilation is insufficient			
	Other protection	Protective overalls			

9	PHYSICAL AND CHEMICAL PROPERTIES			
9.1	Physical form	Solid	Colour	White or coloured
	Odour	Odourless	pH	12-14
	Boiling pt / range	Not determined	Melting pt / range	Not determined
	Flash point	Not applicable	Relative density	~ $0.9g/cm^3$
	Water solubility	Slight	Odour threshold	Not applicable
	Evaporation rate	Not applicable	Flammability	Not applicable
	Explosion limits	Not applicable	Vapour pressure	Not applicable
	Vapour density	Not applicable	Partition coeff. LogPoct / water	Not applicable
	Auto-ignition temperature	Not applicable	Viscosity	Not applicable
	Explosive properties	Not determined	Oxidising properties	Not determined
	Decomposition temperature	Not determined		
9.2	Other information	None known		

10	STABILITY AND REACTIVITY	
10.1	Reactivity	Heat is generated if exposed to acids
10.2	Chemical stability	Stable under normal conditions of handling
10.3	Hazardous reactions	Hazardous polymerisation will not occur
10.4	Conditions to avoid	Contact with air – formation of calcium and sodium carbonate
10.5	Incompatible material	Chloroform, trichloroethylene
10.6	Hazardous decomposition products	None

11	TOXICOLOGICAL INFORMATION			
11.1	Information on toxicological effects			
	Acute toxicity	LD (lo) rabbit (oral)	500 mg/kg	Data for sodium hydroxide
		LD_{50} rat (oral)	>7000 mg/kg	Data for calcium hydroxide
	Dermal compatibility	No data available		
	Mucous membrane	No data available		
	Further information	Although using the 'specific concentration' limits under CLP, the product classification would be 'corrosive', using EU official in vitro tests on the whole product, it was found to be irritating to eyes and skin, not corrosive (Huntingdon Life Sciences Ref. MPW001)		

12	ECOLOGICAL INFORMATION					
12.1	Toxicity	LC_{50}	Aquatic organisms		mg/l	No data available
12.2	Degradability	Not determined	12.3	Bioaccumulative potential	Not determined	
12.4	Mobility in soil	Not determined	12.5	PBT/vPvB assessment	Not applicable	
12.6	Other adverse effects	WGK (Water-endangerment class): 1				

13	DISPOSAL CONSIDERATIONS	
	Advice on disposal	If possible, recycle to supplier or approved recycling company. If not (e.g. designated as waste), dispose of in accordance with national and local authority regulations, e.g. The Hazardous Waste (England & Wales) Regulations 2005
	Contaminated packaging	Treat empty containers in the same way as the product. If possible wash out thoroughly and recycle

14	TRANSPORT INFORMATION				
14.1	United Nations number (ADR, IMDG, IATA)	Not classified	14.2	Proper shipping name (ADR, IMDG, IATA)	Not classified
14.3	Transport class(s) (ADR, IMDG, IATA)	Not classified	14.4	Packing group (ADR, IMDG, IATA)	Not classified
14.5	Environmental hazards (ADR, IMDG, IATA)	The product should not be marked as a marine pollutant	14.6	Special procedures (ADR, IMDG, IATA)	Not applicable
14.7	Transport in bulk	Not applicable			

15	REGULATORY INFORMATION	
15.1	Safety, health and environmental regulations	The product is classified in accordance with the Chemicals (Hazard Information and Packaging for Supply) Regulations (CHIP 4) and EC Regulation 1272/2008 (CLP). Other regulatory information and provisions are not applicable for this product
15.2	Chemical safety assessment	Not applicable

16	OTHER INFORMATION			
	Further information	The SDS has been revised in accordance with EC Regulation 1272/2008 (CLP)		
		Comply with COSHH Regulations		
	Hazard statements referred to in sections 2/3			
	H314	Causes severe skin burns and eye damage	H318	Causes serious eye damage
	H315	Causes skin irritation	H319	Causes serious eye irritation
	Sources of data	Other suppliers' safety data sheets, Annex VI of the CPL Regulation (EC) No 1272/2008, EH40 (2011) OECD 431, 2004 Testing of chemicals, in vitro skin corrosion, human skin test model		
	Date of issue	01/06/2015		
	This information is based on our present state of knowledge and is intended to describe our products from the point of view of the safety requirements. It should not be construed as guaranteeing specific problems			

Schering-Plough HealthCare Products, Inc.
3030 Jackson Avenue
Memphis, TN 38151

SAFETY DATA SHEET

Schering-Plough urges each user or recipient of this SDS to read the entire data sheet to become aware of the hazards associated with this material.

SECTION 1. IDENTIFICATION OF SUBSTANCE AND CONTACT INFORMATION

SDS NAME: **Solarcaine Aerosol**

SYNONYM(S): Solarcaine Medicated First Aid Spray
Solarcaine Aerosol (First Aid)
Solarcaine Spray
Lysmucol Granulat

MSDS NUMBER: SP001274

EMERGENCY NUMBER(S): Schering-Plough Security Control Center (908) 820-6921 (24 hours)

EU Transportation Emergencies - Carechem24:
+44 (0)208 762 8322 (24 hours/7 days/week)

SCHERING-PLOUGH MSDS HELPLINE: +1 (908) 473-3371 (Worldwide)
Monday to Friday, 9am to 5pm (US Eastern Time) .

SECTION 2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Clear, Colorless
Aerosol
Characteristic odor

Highly Flammable.

May be harmful by inhalation.

May cause effects to:
central nervous system
respiratory system
blood

Consumers: Refer to the package insert or product label for appropriate consumer-specific information about this product when used according to manufacturer's directions.

EU CLASSIFICATION(S): R11

POTENTIAL HEALTH EFFECTS:

Benzocaine is a topical local anesthetic. Dermal or oral exposure may produce methemoglobinemia (the formation of methemoglobin in the blood). Secondary effects that may result from significant methemoglobinemia include nausea, vomiting, rapid beating of the heart, decreased blood pressure, deep or rapid breathing, cyanosis (blue or purple discoloration of the skin due to lack of oxygen), reduced awareness or alertness, confusion, increase of acidic products in the blood, respiratory distress, or coma.

Isobutane, the propellant component of this product, is a non-toxic gas. However, it is an asphyxiant and exposure to high concentrations may cause dizziness, fatigue, decreased vision, mood disturbances, numbness of extremities, headache, confusion, incoordination, cyanosis (blue or purple discoloration of the skin due to lack of oxygen), nausea, vomiting, coughing, pulmonary irritation, or anesthesia. Intentional misuse by deliberately concentrating and inhaling asphyxiant gases can be harmful or fatal. Direct contact with liquefied isobutane causes frostbite and/or burns.

Ethanol (ethyl alcohol) is an eye, nose, and mucous membrane irritant. It may cause skin irritation or sensitization after prolonged exposure. Acute effects of ethanol may include headache, dizziness, nausea, sensations of warmth and cold, numbness, fatigue, breathing difficulty, cough, tearing, vision impairment, incoordination, decreased reaction time, alteration of mood and personality, slurred speech, coma and respiratory depression. Chronic effects may include concentration difficulty, sleepiness, kidney and liver damage, and cardiac effects. Chronic ingestion of ethanol may cause cancer of the oral cavity, pharynx, larynx, esophagus, and liver. Oral ingestion of alcohol during pregnancy may cause Fetal Alcohol Syndrome (FAS) including joint, limb, and cardiac abnormalities and behavioral and learning impairment. There have been no reports of FAS as a result of occupational handling of ethanol.

LISTED CARCINOGENS

IARC (International Agency for Research on Cancer) has classified Alcoholic Beverages as Group 1 (indicating in their evaluation that the agent is carcinogenic to humans). However, occupational handling or manufacturer's specified use of this product is not expected to result in relevant exposures.

SECTION 3. COMPOSITION AND INFORMATION ON INGREDIENTS

PRODUCT USE: Consumer product

CHEMICAL FORMULA: Mixture.

The formulation for this product is proprietary information. Only hazardous ingredients in concentrations of 1% or greater and/or carcinogenic ingredients in concentrations of 0.1% or greater are listed in the Chemical Composition table. Active ingredients in any concentration are listed.

CHEMICAL COMPOSITION

CHEMICAL NAME	CAS NUMBER	EU NUMBER	EU CLASSIFICATION	PERCENT
Benzocaine.	94-09-7	2023035 Listed.		3
Isobutane.	75-28-5	2008572 Listed.		50-60
Ethyl Alcohol.	64-17-5	2005786 Listed.	R11 F	30-40
Propylene Glycol.	57-55-6	2003380 Listed.		< 10

ADDITIONAL INFORMATION: This MSDS is written to provide health and safety information for individuals who will be handling the final product formulation during research, manufacturing, and distribution. For health and safety information for individual ingredients used during manufacturing, refer to the appropriate MSDS for each ingredient. Refer to the package insert or product label for handling guidance for the consumer.

See section 15 for EU hazard classification symbols and risk and safety phrases.

SECTION 4. FIRST AID MEASURES

INHALATION: Remove to fresh air. If any trouble breathing, get immediate medical attention. Administer artificial respiration if breathing has ceased. If irritation or symptoms occur or persist, consult a physician.

SKIN CONTACT: In case of skin contact, while wearing protective gloves, carefully remove any contaminated clothing, including shoes, and wash skin thoroughly with soap and water. If irritation or symptoms occur or persist, consult a physician.

EYE CONTACT: In case of eye contact, immediately rinse eyes thoroughly with plenty of water. If wearing contact lenses, remove only after initial rinse, and continue rinsing eyes for at least 15 minutes. If irritation occurs or persists, consult a physician.

INGESTION: Rinse mouth and drink a glass of water. Do not induce vomiting unless under the direction of a qualified medical professional or Poison Control Center. If symptoms persist, consult a physician.

SECTION 5. FIRE FIGHTING MEASURES

FLAMMABILITY DATA:

Flash Point:	-84.4 deg C (-120 deg F) (Isobutane)
Classification:	Flammable (US OSHA Criteria) Flammable (Canada WHMIS Criteria) Highly Flammable (EU Criteria)
UEL:	8.4 vol % (Isobutane)
LEL:	1.8 vol % (Isobutane)

SPECIAL FIRE FIGHTING PROCEDURES:
Wear full protective clothing and self-contained breathing apparatus (SCBA).

SUITABLE EXTINGUISHING MEDIA:
Carbon dioxide (CO2), extinguishing powder or water spray.

See Section 9 for Physical and Chemical Properties.

SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:
Wear appropriate personal protective equipment as specified in Section 8. Keep personnel away from the clean-up area.

SPILL RESPONSE / CLEANUP:
All spills should be handled according to site requirements and based on precautions cited in the MSDS. In the case of liquids, use proper absorbent materials. For laboratories and small-scale operations, incidental spills within a hood or enclosure should be cleaned by using a HEPA filtered vacuum or wet cleaning methods as appropriate. For large dry or liquid spills or those spills outside enclosure or hood, appropriate emergency response personnel should be notified. In manufacturing and large-scale operations, HEPA vacuuming prior to wet mopping or cleaning is required.

See Sections 9 and 10 for additional physical, chemical, and hazard information.

SECTION 7. HANDLING AND STORAGE

HANDLING:
Contents under pressure. Keep containers adequately sealed during material transfer, transport, or when not in use.

Appropriate handling of this material is dependent on many factors, including physical form, duration and frequency of process or task, and effectiveness of engineering controls. Site-specific risk assessments should be conducted to determine the feasibility and the appropriateness of all exposure control measures. See Section 8 (Exposure Controls) for additional guidance.

STORAGE:
Keep away from heat, sparks, open flames, and direct sunlight. Store in a cool, dry, well ventilated area.

See Section 8 for exposure controls and additional safe handling information.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

EXPOSURE CONTROLS:
The health hazard risks of handling this material are dependent on many factors, including physical form, duration and frequency of process or task, and effectiveness of engineering controls. Site-specific risk assessments should be conducted to determine the feasibility and the appropriateness of all exposure control measures. Exposure controls for normal operating or routine procedures follow a tiered strategy. Engineering controls are the preferred means of long-term or permanent exposure control. If engineering controls are not feasible, appropriate use of personal protective equipment (PPE) may be considered as alternative control measures. Exposure controls for non-routine operations must be evaluated and addressed as part of the site-specific risk assessment.

RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (PPE):

Respiratory Protection: None required for consumer use of this product.

Respiratory protective equipment (RPE) may be required for certain laboratory and large-scale manufacturing tasks if potential airborne breathing zone concentrations of substances exceed the relevant exposure limit(s). Workplace risk assessment should be completed before specifying and implementing RPE usage. Potential exposure points and pathways, task duration and frequency, potential employee contact with the substance, and the ability of the substance to be rendered airborne during specific tasks should be evaluated. Initial and ongoing strategies of quantitative exposure measurement should be obtained as required by the workplace risk assessment. All RPE must conform to local and regional specifications for efficacy and performance. Consult your site or corporate health and safety professional for additional guidance.

Skin Protection: None required for consumer use of this product.

Gloves that provide an appropriate barrier to the skin are recommended if there is potential for contact with this material. Consult your site safety staff for guidance.

Eye Protection: None required for consumer use of this product.

Safety glasses with side shields. Use of goggles or full face protection may be required based on hazard, potential for contact, or level of exposure. Consult your site safety staff for guidance.

Body Protection: None required for consumer use of this product.

In small-scale or laboratory operations, lab coats or equivalent protection is required. Disposable Tyvek or other dust impermeable suit should be considered based on procedure or level of exposure. Use of additional PPE such as shoe coverings, gauntlets, hood, or head covering may be necessary. Consult your site safety staff for guidance.

In large-scale or manufacturing operations, disposable Tyvek or other dust impermeable suit is recommended and based on level of exposure. Use of additional PPE such as shoe coverings, gauntlets, hood, or head covering may be necessary. Consult your site safety staff for guidance.

EXPOSURE LIMIT VALUES

CHEMICAL NAME	CAS NUMBER	ACGIH TLV (TWA)	ACGIH TLV (STEL / SKIN)	ACGIH TLV (CEIL)
Ethyl Alcohol.	64-17-5	1000 ppm		

Refer to regional exposure limit lists for chemical specific guidance.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

FORM: Aerosol
COLOR: Clear, Colorless
ODOR: Characteristic odor
BOILING POINT / RANGE: -11.7 deg C (isobutane)
VAPOR PRESSURE: 45.1 psi @ 21.11 deg C
VAPOR DENSITY: > 1.29
SPECIFIC GRAVITY: < 1
SOLUBILITY:
Water: Not determined

See Section 5 for flammability/explosivity information.

SECTION 10. STABILITY AND REACTIVITY

STABILITY/ REACTIVITY:
Stable under normal conditions.

CONDITIONS AND MATERIALS TO AVOID:
Keep away from heat, sparks, open flame, and direct sunlight. Oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS / REACTIONS:
Carbon oxides (COx).

SECTION 11. TOXICOLOGICAL INFORMATION

The information presented below pertains to the following individual ingredients, and not to the mixture(s).

ACUTE TOXICITY DATA

INHALATION:
Isobutane caused CNS depression, rapid and shallow respiration, and apnea in mice exposed to high concentrations. In dogs, 45% isobutane caused anesthetic effects.

Ethanol, at high concentrations, caused dose dependent effects following inhalation exposure in rats on the central nervous system including drowsiness, incoordination, narcosis and excitation.

SKIN:
Benzocaine was slightly irritating to the skin of guinea pigs.

Ethanol was mildly to moderately irritating to the skin of rabbits.

EYE:
Benzocaine (4-20%) was not irritating to the eyes of rabbits.

Ethanol (95%) was irritating to the eyes of rabbits.

ORAL:
Benzocaine: Oral LD50: 3042 mg/kg (rat)

Ethanol: Oral LD50: 6.2 to 17.8 g/kg (rat); 5.5 to 6.6 g/kg (dog)

SENSITIZATION:
Ethanol has been shown to be a weak sensitizer in a human patch test. Ethanol was negative in the mouse ear sensitization assay.

REPEAT DOSE TOXICITY DATA

SUBCHRONIC / CHRONIC TOXICITY:
Repeated oral and inhalation exposure to high concentrations of ethanol has caused kidney and liver damage in animals.

REPRODUCTIVE / DEVELOPMENTAL TOXICITY:
Ethanol: Exposure to large doses during gestation is reported to cause effects on reproduction, including fetotoxicity and growth retardation in mice, rats, and rabbits. However, no teratogenic effects were reported.

MUTAGENICITY / GENOTOXICITY:
Isobutane was negative in a bacterial mutagenicity study (Ames).

Ethanol was positive in a bacterial mutagenicity study (Ames) and negative in a mammalian mutagenicity study (mouse lymphoma).

CARCINOGENICITY:
Rats given 25 to 50% ethanol by oral gavage or in the drinking water for one to two years did not show a significant increase in tumors compared to the control groups. Mice given 43% ethanol in drinking water for three years showed an increase in papillomas of the forestomach, malignant lymphomas and lung adenomas. Ethanol was an effective promoter of liver tumors in rats given a single intraperitoneal dose of diethylnitrosamine followed by treatment of ethanol in the drinking water for 12 to 18 months.

SECTION 12. ECOLOGICAL INFORMATION

There are no data for the final product or its formulation(s). The information presented below pertains to the following ingredient(s).

ECOTOXICITY DATA

INGREDIENT ECOTOXICITY

Benzocaine: 96-hr LC50 (rainbow trout): 7.2-23 mg/L
Benzocaine: 96-hr LC50 (fathead minnow): 25.9-39.3 mg/L

Ethanol: 96-hr (static) LC50 (rainbow trout): 13 g/L
Ethanol: 96-hr (flow-through) LC50 (fathead minnow): 12.9-15.3 g/L

ENVIRONMENTAL DATA

There are no environmental data available for this product.

SECTION 13. DISPOSAL CONSIDERATIONS

SECTION 13. DISPOSAL CONSIDERATIONS

MATERIAL WASTE:
Disposal must be in accordance with applicable federal, state/provincial, and/or local regulations. Incineration is not the preferred method of disposal. Operations that involve the crushing or shredding of waste materials or returned goods must be handled to meet the recommended exposure limit(s).

PACKAGING AND CONTAINERS:
Disposal must be in accordance with applicable federal, state/provincial, and/or local regulations.

SECTION 14. TRANSPORT INFORMATION

Refer to site-specific procedures and requirements for additional guidance.

IATA CLASSIFICATION:

Proper Shipping Name:	Aerosols, flammable
Hazard Class:	2.1
UN Number:	UN 1950
Packing Group:	None

ADR CLASSIFICATION:

Proper Shipping Name:	Aerosols
Hazard Class:	2
UN Number:	UN 1950
Packing Group:	None
Classification Code:	5F

IMDG CLASSIFICATION:

Proper Shipping Name:	Aerosols
Hazard Class:	2
UN Number:	UN 1950
Packing Group:	None

SECTION 15. REGULATORY INFORMATION

The following classification is based on available data and is in accordance with European Union criteria.

EUROPEAN UNION REGULATIONS:

Indication of Danger: F - Highly flammable.

Risk Phrases:
R11 - Highly flammable.

Safety Phrases:
S 2 - Keep out of reach of children.
S46 - If swallowed, seek medical advice immediately and show this container or label.

SECTION 16. OTHER INFORMATION

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequence of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

DEPARTMENT ISSUING MSDS:

Global Safety and Environmental Affairs
Occupational and Environmental Toxicology
Schering-Plough Corporation
556 Morris Avenue
Summit, NJ 07901 USA.

SCHERING-PLOUGH MSDS HELPLINE:	+1 (908) 473-3371 (Worldwide) Monday to Friday, 9am to 5pm (US Eastern Time) .
MSDS CREATION DATE:	18-Nov-1993

THE CLOROX COMPANY

The Clorox Company of Canada, Ltd.
150 Biscayne Crescent
Brampton, Ontario
L6W 4V3

Material Safety Data Sheet

SECTION 1 - PRODUCT IDENTIFICATION AND USE

PRODUCT NAME: CLOROX® COMMERCIAL SOLUTIONS™ S.O.S® HEAVY DUTY STEEL WOOL SOAP PADS	**PRODUCT IDENTIFICATION NUMBER**: Not applicable.
PRODUCT USE: Scrubbing tool	

MANUFACTURER	SUPPLIER
Clorox Products Manufacturing Company 1221 Broadway Oakland, California 94612 EMERGENCY PHONE NO.: 1-800-446-1014	The Clorox Company of Canada, Ltd. 150 Biscayne Crescent Brampton, Ontario L6W 4V3 EMERGENCY PHONE NO.: 1-800-446-1014

SECTION 2 - HAZARDOUS INGREDIENTS

Hazardous Ingredient	% (w/w)	CAS Number	LD50 of Material (Specify Species & Route)	LC50 of Material (Specify Species)
Sodium carbonate	1 - 5	497-19-8	4.1 g/kg (rat, oral)	1100 mg/m³ (rat)
Sodium nitrite	1 - 5	7632-00-0	180 mg/kg (rat, oral)	5.5 mg/m³ (rat)

SECTION 3 - PHYSICAL DATA

Physical State: Solid	**Odour & Appearance:** Blue solid soap with soapy odour impregnated into steel wool pad.		**Odour Threshold:** Not available.	**Specific Gravity:** Not Available
Vapour Pressure: Not available.	**Vapour Density:** N. Av.	**Evaporation Rate:** N. Av.	**Boiling Point:** N. Av.	**Freezing Point:** N. Av.
% Volatile (by volume): < 10%	**Solubility in Water:** Appreciable (for soap).	**pH:** Not available.	**Coeff. of Water/Oil Dist.**: Not available.	

SECTION 4 - FIRE AND EXPLOSION DATA

Flammability: **Yes:** ___ **No:** X **If yes, under which conditions?**		
Means of Extinction: Dry chemical, carbon dioxide (CO_2), foam, or water spray.		
Special Procedures: None.		
Flashpoint & Method: Not applicable.	**Upper Flammable Limit (% by volume):** Not applicable.	**Lower Flammable Limit (% by volume):** Not applicable.
Autoignition Temperature: N. Ap.	**Hazardous Combustion Products:** Products of combustion are toxic.	
Explosion Data - Sensitivity to Impact: Not applicable.	**Explosion Data - Sensitivity to Static Discharge:** Not applicable.	

SECTION 5 - REACTIVITY DATA

Chemical Stability: **Yes:** X **No:** ___ **If no, under which conditions?**	
Incompatibility with other substances: **Yes:** X **No:** ___ **If so, which ones?**	Strong mineral acids and strong oxidizers.
Reactivity, if any, and under what conditions?	None known.
Hazardous decomposition products?	None known.

SECTION 6 - TOXICOLOGICAL PROPERTIES

Route of Entry? **Skin Contact:** X **Skin Absorption:** ___ **Eye Contact:** X **Inhalation Acute:** ___ **Inhalation Chronic:** ___ **Ingestion:** X			
Effects of Acute Exposure to Material: Contact with eyes may produce irritation and redness. If ingested, gastric irritation and nausea/vomiting are possible.			
Effects of Chronic Exposure to Material: None known.			
Exposure Limits (TLV): Not applicable.	**Irritancy of Material:** Not an irritant.	**Sensitization Property of Material:** Not a sensitizer.	**Carcinogenicity of Material:** Not a carcinogen.
Teratogenicity/Embryotoxicity: Not teratogenic or embryotoxic.	**Reproductive Toxicity:** Not a reproductive toxicant.	**Mutagenicity:** Not mutagenic.	**Synergistic Materials:** None known.

SECTION 7 - PREVENTATIVE MEASURES

Personal Protective Equipment:		
Gloves (specify): Wear rubber or neoprene gloves if there is the potential for repeated or prolonged skin contact.	**Respirator (specify):** Not applicable.	**Eye (specify):** Safety glasses.
Footwear (specify): Not applicable.	**Clothing (specify):** Not applicable.	**Other (specify):** Not applicable.
Engineering Controls (specify, e.g. ventilation, enclosed process):	Not applicable.	
Leak and Spill Procedure:	Containerize. Wash residual soap down to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed-down material.	
Waste Disposal:	Dispose of in accordance with existing federal, provincial, and municipal environmental regulations.	
Handling Procedures & Equipment:	None specified.	
Storage Requirements:	None.	
Special Shipping Information:	Not restricted under TDG.	

SECTION 8 - FIRST AID MEASURES

Eye Contact:	If soap gets in eyes, rinse with water for 15 minutes. If irritation persists, call a doctor.
Skin Contact:	If soap gets on skin, rinse well with water. If irritation persists, call a doctor.
Ingestion:	If soap is swallowed, drink a glassful of water, and call a poison control centre or doctor. If pad is swallowed, call a poison control centre or doctor immediately.
Inhalation:	Remove to fresh air. If breathing problems develop, call a doctor.

SECTION 9 - PREPARATION DATE OF MSDS

Prepared by (group, department, etc.)	**Phone Number:**	**Date:**
Clorox Services Company	1-925-425-6100	January 28, 2012 V1

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N. Av. = Not available.

N. Ap. = Not applicable.

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The Clorox Company of Canada, Ltd.
150 Biscayne Crescent
Brampton (Ontario)
L6W 4V3

Fiche signalétique sur la sécurité des produits

SECTION 1 – IDENTIFICATION ET UTILISATION DU PRODUIT

NOM DU PRODUIT : CLOROX® COMMERCIAL SOLUTIONS^{MC} S.O.S.® TAMPONS DE LAINE D'ACIER SAVONNEUX TRÈS RÉSISTANT	**NUMÉRO D'IDENTIFICATION DU PRODUIT** : S. o.
UTILISATION DU PRODUIT: Produit servant à récurer.	

FABRICANT	**FOURNISSEUR**
Clorox Products Manufacturing Company 1221 Broadway Oakland (Californie) 94612 N° DE TÉLÉPHONE D'URGENCE : 1-800-446-1014	The Clorox Company of Canada, Ltd. 150 Biscayne Crescent Brampton (Ontario) L6W 4V3 N° DE TÉLÉPHONE D'URGENCE : 1-800-446-1014

SECTION 2 – INGRÉDIENTS DANGEREUX

Ingrédients dangereux	**% (m/m)**	**Numéro C.A.S**	**DL50 du produit (préciser l'espèce et la voie d'administration)**	**CL50 du produit (préciser l'espèce)**
Carbonate de sodium	1 – 5	497-19-8	4,1 g/kg (rat, oral)	1 100 mg/m^3 (rat)
Nitrite de sodium	1 – 5	7632-00-0	180 mg/kg (rat, oral)	5,5 mg/m^3 (rat)

SECTION 3 - DONNÉES PHYSIQUES

État physique : Solide	**Odeur et apparence :** Savon bleu solide dégageant une odeur de savon, imprégné dans un tampon de laine d'acier.		**Seuil de perception olfactive :** Non disponible.	**Densité :** Non disponible.
Pression de vapeur : Non disponible.	**Densité de vapeur :** Non disponible.	**Taux d'évaporation :** Non disponible.	**Point d'ébullition :** Non disponible.	**Point de congélation :** Non disponible.
% de volatilité (par volume) : < 10	**Solubilité dans l'eau :** Appréciable (pour le savon).	**pH :** Non disponible.	**Coefficient de répartition eau/huile :** Non disponible.	

SECTION 4 – DONNÉES D'INCENDIE ET D'EXPLOSION

Inflammabilité : **Oui ___ Non: _X_ Si oui, dans quelles conditions?**		
Moyens d'extinction :	Poudre chimique, dioxyde de carbone (CO_2), mousse ou eau pulvérisée	
Procédures spéciales :	Aucune mesure connue.	
Point d'éclair et méthode : Sans objet.	**Limite supérieure d'inflammabilité (% par volume) :** Sans objet.	**Limite inférieure d'inflammabilité (% par volume) :** Sans objet.
Température d'auto-inflammation : Sans objet.	**Produits de combustion dangereux:** Les produits de combustion sont toxiques.	
Données d'explosion – Sensibilité aux chocs : S. o.	**Données d'explosion – Sensibilité aux décharges d'électricité statique :** S. o.	

SECTION 5 – DONNÉES DE RÉACTIVITÉ

Stabilité chimique : **Oui _X_ Non: ___ Si non, dans quelles conditions?**	
Incompatibilité avec d'autres substances : **Oui _X_ Non: __ Si oui, lesquels?**	Acides minéraux forts et oxydants forts.
Réactivité, le cas échéant, et dans quelles conditions?	Aucune réactivité connue.
Produits de décomposition dangereux?	Aucune réactivité connue.

SECTION 6 – PROPRIÉTÉS TOXICOLOGIQUES

Voies d'absorption? **Contact avec la peau :** X **Absorption par la peau :** ___ **Contact avec les yeux** X **Inhalation de courte durée :** ___ **Inhalation prolongée :** ___ **Ingestion :** X			
Effets d'une exposition de courte durée :	Un contact avec les yeux peut causer une irritation et des rougeurs. En cas d'ingestion, une irritation gastrique et des nausées/vomissements peuvent s'ensuivre.		
Effets d'une exposition prolongée :	Aucun effet connu.		
Limites d'exposition (VLE, ACGIH) : Sans objet.	**Propriétés irritantes du produit :** Non irritant.	**Propriétés sensibilisantes du produit :** Non sensibilisateur.	**Cancérogénicité du produit :** Pas un carcinogène.
Tératogénicité/Embryotoxicité : Non tératogènique ni embryotoxique.	**Toxicité pour la reproduction :** Non toxique pour la reproduction.	**Mutagénicité :** Non mutagène.	**Synergies :** Aucune connue.

SECTION 7 – MESURES DE PRÉVENTION

Équipement de protection personnelle :		
Gants (préciser) : Porter des gants en caoutchouc ou en néoprène s'il y a risque de contacts répétés ou prolongés avec la peau.	**Respirateur (préciser) :** Sans objet.	**Yeux (préciser) :** Lunettes de sécurité.
Chaussures (préciser) : Sans objet.	**Vêtements (préciser) :** Sans objet.	**Autres (préciser) :** Sans objet.
Contrôles techniques (préciser, p. ex. ventilation, enceinte d'isolement) :	Sans objet.	
Procédures en cas de fuite et de déversement :	Verser dans des contenants. Laver les résidus dans les égouts sanitaires. Contacter l'établissement de traitement sanitaire à l'avance pour s'assurer qu'il possède la capacité de traiter le matériau résultant du lavage.	
Élimination des déchets :	Éliminer conformément aux règlements sur l'environnement fédéraux, provinciaux et municipaux existants.	
Méthodes et équipements de manutention :	Aucun n'est précisé.	
Exigences en matière d'entreposage :	Aucune.	
Renseignements spéciaux sur l'expédition :	Aucune restriction d'après le Règlement sur le transport des marchandises dangereuses (TMD).	

SECTION 8 – PREMIERS SOINS

Contact avec les yeux :	En cas d'éclaboussures de savon dans les yeux, rincer à grande eau pendant 15 minutes. Appeler un médecin si l'irritation persiste.
Contact avec la peau :	En cas d'éclaboussures de savon sur la peau, bien rincer à grande eau. Appeler un médecin si l'irritation persiste.
Ingestion :	En cas d'ingestion de savon, boire un grand verre d'eau et appeler un médecin ou un centre antipoison. En cas d'ingestion du tampon, appeler un médecin ou un centre antipoison immédiatement.
Inhalation :	Amener à l'air frais. En cas de problèmes respiratoires, appeler un médecin.

SECTION 9 – DATE DE PRÉPARATION DE LA FICHE SIGNALÉTIQUE

Préparée par (groupe, service, etc.) Clorox Services Company	**Numéro de téléphone :** 1-925-425-6100	**Date :** le 28 janvier 2012 V1

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N. d. = Non disponible.
S. o. = Sans objet.

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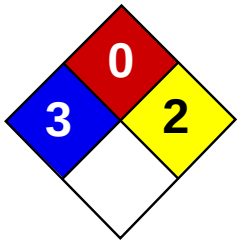

Material Safety Data Sheet
Sulfuric Acid 50% (w/w) Solution MSDS

Section 1: Chemical Product and Company Identification

Product Name: Sulfuric Acid 50% (w/w) Solution

Catalog Codes: SLS1573

CAS#: Mixture.

RTECS: Not applicable.

TSCA: TSCA 8(b) inventory: Sulfuric acid; Water

CI#: Not applicable.

Synonym: Sulfuric Acid, 50% (w/w) Solution

Chemical Name: Not applicable.

Chemical Formula: Not applicable.

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Sulfuric acid	7664-93-9	50
Water	7732-18-5	50

Toxicological Data on Ingredients: Sulfuric acid: ORAL (LD50): Acute: 2140 mg/kg [Rat.]. VAPOR (LC50): Acute: 510 mg/m 2 hours [Rat]. 320 mg/m 2 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, . Hazardous in case of skin contact (corrosive, permeator), of eye contact (corrosive). Slightly hazardous in case of inhalation (lung sensitizer). Non-corrosive for lungs. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:
Non-corrosive for skin. Non-irritant for skin. Non-sensitizer for skin. Non-permeator by skin. Non-irritating to the eyes. Non-hazardous in case of ingestion. Non-hazardous in case of inhalation. Non-irritant for lungs. Non-sensitizer for lungs.

CARCINOGENIC EFFECTS: Classified 1 (Proven for human.) by IARC, + (Proven.) by OSHA [Sulfuric acid]. Classified A2 (Suspected for human.) by ACGIH [Sulfuric acid]. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Reproductive system/toxin/male [SUSPECTED] [Sulfuric Acid 50% (w/w) Solution]. The substance may be toxic to the reproductive system, teeth. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Not applicable.

Explosion Hazards in Presence of Various Substances:
Slightly explosive in presence of oxidizing materials. Non-explosive in presence of open flames and sparks, of shocks.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards:

Mixtures of sulfuric acid and any of the following can explode: p-nitrotoluene, pentasilver trihydroxydiaminophosphate, perchlorates, alcohols with strong hydrogen peroxide, ammonium tetraperoxychromate, mercuric nitrite, potassium chlorate, potassium permanganate with potassium chloride. Nitramide decomposes explosively on contact with concentrated sulfuric acid. 1,3,5-Trinitrosohexahydro-1,3,5-triazine + sulfuric acid causes explosive decompositon. (Sulfuric acid)

Section 6: Accidental Release Measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.

Large Spill:
Corrosive liquid. Poisonous liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep container dry. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, combustible materials, organic materials, metals, acids, alkalis, moisture. May corrode metallic surfaces. Store in a metallic or coated fiberboard drum using a strong polyethylene inner package.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 23°C (73.4°F).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
Sulfuric acid TWA: 1 STEL: 3 (mg/m3) [Australia] Inhalation TWA: 1 (mg/m3) from OSHA (PEL) [United States] Inhalation TWA: 1 STEL: 3 (mg/m3) from ACGIH (TLV) [United States] [1999] Inhalation TWA: 1 (mg/m3) from NIOSH [United States] Inhalation TWA: 1 (mg/m3) [United Kingdom (UK)]3 Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Odorless.

Taste: Not available.

Molecular Weight: Not applicable.

Color: Colorless. Clear

pH (1% soln/water): Acidic.

Boiling Point: The lowest known value is 100°C (212°F) (Water). Weighted average: 195°C (383°F)

Melting Point: May start to solidify at 10.36°C (50.6°F) based on data for: Sulfuric acid.

Critical Temperature: Not available.

Specific Gravity: Weighted average: 1.3 (Water = 1)

Vapor Pressure: The highest known value is 2.3 kPa (@ 20°C) (Water).

Vapor Density: The highest known value is 3.4 (Air = 1) (Sulfuric acid). Weighted average: 2.01 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water.

Solubility: Easily soluble in cold water, hot water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents, combustible materials, organic materials, metals, acids, alkalis.

Corrosivity:
Extremely corrosive in presence of aluminum, of stainless steel(304), of stainless steel(316). Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Incompatible with the following materials: potassium chlorate, potassium perchlorate, potassium permanganate, sodium, lithium, bases, organic material, halogens, metal acetylides, oxides and hydrides, metals as non powders(yields hydrogen gas), metal compounds, metals as powders, strong oxidizing and reducing agents. Concentrated solutions react violently with water, spattering and liberating heat.

Special Remarks on Corrosivity:
Concentrated acid is non-corrosive to lead and mild steel, but diluted acid attacks most metals. Attacks and corrodes many metals releasing hydrogen. Minor corrosive on bronze. No data for copper, zinc or brass.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact.

Toxicity to Animals: Acute oral toxicity (LD50): 4280 mg/kg (Rat.) (Calculated value for the mixture).

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified 1 (Proven for human.) by IARC, + (Proven.) by OSHA [Sulfuric acid]. Classified A2 (Suspected for human.) by ACGIH [Sulfuric acid]. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/

female, Reproductive system/toxin/male [SUSPECTED] [Sulfuric Acid 50% (w/w) Solution]. May cause damage to the following organs: the reproductive system, teeth.

Other Toxic Effects on Humans:
Extremely hazardous in case of inhalation (lung corrosive). Very hazardous in case of skin contact (irritant), of ingestion, . Hazardous in case of skin contact (corrosive, permeator), of eye contact (corrosive).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: May cause adverse reproductive effects and Cancer.

Special Remarks on other Toxic Effects on Humans:

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Class 8: Corrosive material

Identification: : Sulfuric Acid, Solution (Sulfuric acid) UNNA: 2796 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Illinois toxic substances disclosure to employee act: Sulfuric acid New York release reporting list: Sulfuric acid Rhode Island RTK hazardous substances: Sulfuric acid Pennsylvania RTK: Sulfuric acid Minnesota: Sulfuric acid Massachusetts RTK: Sulfuric acid New Jersey: Sulfuric acid TSCA 8(b) inventory: Sulfuric acid; Water SARA 302/304/311/312 extremely hazardous substances: Sulfuric acid SARA 313 toxic chemical notification and release reporting: Sulfuric acid 50% CERCLA: Hazardous substances.: Sulfuric acid: 1000 lbs. (453.6 kg);

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS E: Corrosive liquid.

DSCL (EEC):
R35- Causes severe burns. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S30- Never add water to this product. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 0

Personal Protection:

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 0

Reactivity: 2

Specific hazard:

Protective Equipment:
Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/09/2005 11:59 PM

Last Updated: 11/01/2010 12:00 PM

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Fisher Scientific

Part of Thermo Fisher Scientific

Material Safety Data Sheet

Creation Date 12-Nov-2010 **Revision Date** 12-Nov-2010 **Revision Number** 1

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name **Sulfuric acid, Trace Metal Grade**

Cat No. **A510-212; A510-500; A510P212; A510P500; A510SK212**

Synonyms Hydrogen sulfate; Vitriol brown oil; Oil of vitriol

Recommended Use Laboratory chemicals

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 703-527-3887

2. HAZARDS IDENTIFICATION

DANGER!

Emergency Overview

Causes severe burns by all exposure routes. May be fatal if inhaled. Reacts violently with water. Contact with combustible material may cause fire. Exposure to strong inorganic mists containing sulfuric acid may cause cancer by inhalation. Hygroscopic.

Appearance Clear, Colorless to brown **Physical State** Liquid **odor** odorless

Target Organs Eyes, Skin, Respiratory system, Gastrointestinal tract (GI), Kidney, Teeth

Potential Health Effects

Acute Effects
Principle Routes of Exposure

Eyes	Causes severe burns. May cause blindness or permanent eye damage.
Skin	Causes severe burns. May be harmful in contact with skin.
Inhalation	Causes severe burns. May be fatal if inhaled.
Ingestion	Causes severe burns. May be harmful if swallowed.

Chronic Effects May cause cancer by inhalation.. Experiments have shown reproductive toxicity effects on laboratory animals. May cause adverse kidney effects. Chronic exposure to corrosive fumes/gases may cause erosion of the teeth followed by jaw necrosis. Bronchial irritation with chronic cough and frequent attacks of pneumonia are common. Gastrointestinal disturbances may also be seen.

See Section 11 for additional Toxicological information.

Aggravated Medical Conditions No information available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Haz/Non-haz

Component	CAS-No	Weight %
Sulfuric acid	7664-93-9	73 - 98
Water	7732-18-5	2 - 27

4. FIRST AID MEASURES

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with a respiratory medical device. Immediate medical attention is required.

Ingestion Do not induce vomiting. Call a physician or Poison Control Center immediately.

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flash Point Not applicable
Method No information available.

Autoignition Temperature No information available.

Explosion Limits
Upper No data available
Lower No data available

Suitable Extinguishing Media Substance is nonflammable; use agent most appropriate to extinguish surrounding fire..

Unsuitable Extinguishing Media DO NOT USE WATER!

Hazardous Combustion Products No information available.

Sensitivity to mechanical impact No information available.
Sensitivity to static discharge No information available.

Specific Hazards Arising from the Chemical
Reacts violently with water. May ignite combustibles (wood paper, oil, clothing, etc.). Contact with metals may evolve flammable gas.

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA **Health** 3 **Flammability** 0 **Instability** 2 **Physical hazards** W

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Do not get in eyes, on skin, or on clothing.

Environmental Precautions Should not be released into the environment.

Methods for Containment and Clean Up Soak up with inert absorbent material. Keep in suitable and closed containers for disposal.

7. HANDLING AND STORAGE

Handling Use only under a chemical fume hood. Wear personal protective equipment. Do not breathe vapors or spray mist. Do not get in eyes, on skin, or on clothing. Do not ingest. Do not allow contact with water. Keep away from clothing and other combustible materials.

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from water. Corrosives area.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Measures Use only under a chemical fume hood. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
Sulfuric acid	TWA: 0.2 mg/m^3	(Vacated) TWA: 1 mg/m^3	IDLH: 15 mg/m^3 TWA: 1 mg/m^3

Component	Quebec	Mexico OEL (TWA)	Ontario TWAEV
Sulfuric acid	TWA: 1 mg/m^3	TWA: 1 mg/m^3	TWA: 0.2 mg/m^3

NIOSH IDLH: *Immediately Dangerous to Life or Health*

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Clear, Colorless to brown
odor	odorless
Odor Threshold	No information available.
pH	0.3 (1N)
Vapor Pressure	< 0.001 mmHg @ 20 °C
Vapor Density	3.38 (Air = 1.0)
Viscosity	No information available.
Boiling Point/Range	290 - 338°C / 554 - 640.4°F
Melting Point/Range	10°C / 50°F
Decomposition temperature	340°C
Flash Point	Not applicable
Evaporation Rate	Slower than ether
Specific Gravity	1.84
Solubility	Soluble in water
log Pow	No data available
Molecular Weight	98.08
Molecular Formula	H_2SO_4

10. STABILITY AND REACTIVITY

Stability	Reacts violently with water. Hygroscopic.
Conditions to Avoid	Incompatible products. Excess heat. Exposure to moist air or water. Combustible material.
Incompatible Materials	Water, Organic materials, Strong acids, Strong bases, Metals, Alcohols, Cyanides, Sulfides
Hazardous Decomposition Products	Sulfur oxides, Hydrogen
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions .	Contact with metals may evolve flammable hydrogen gas.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sulfuric acid	2140 mg/kg (Rat)	Not listed	347 ppm (Rat) 1 h 510 mg/m^3 (Rat) 2 h
Water	90 mL/kg (Rat)	Not listed	Not listed

Irritation Causes severe burns by all exposure routes

Toxicologically Synergistic Products No information available.

Chronic Toxicity

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen. Exposure to strong inorganic mists containing sulfuric acid may cause cancer by inhalation.

Component	ACGIH	IARC	NTP	OSHA	Mexico
Sulfuric acid	A2	Group 1	Not listed	X	Not listed

ACGIH: (American Conference of Governmental Industrial Hygienists)
A1 - Known Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen
ACGIH: (American Conference of Governmental Industrial Hygienists)
IARC: (International Agency for Research on Cancer)
IARC: (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans

Sensitization No information available.

Mutagenic Effects No information available.

Reproductive Effects Experiments have shown reproductive toxicity effects on laboratory animals.

Developmental Effects Developmental effects have occurred in experimental animals.

Teratogenicity No information available.

Other Adverse Effects See actual entry in RTECS for complete information.

Endocrine Disruptor Information No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Do not empty into drains.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Sulfuric acid	Not listed	500 mg/L LC50 96 h	Not listed	EC50: 29 mg/L/24h

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available

Mobility .

Component	log Pow
Water	-1.87

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification

14. TRANSPORT INFORMATION

DOT

UN-No	UN1830
Proper Shipping Name	SULFURIC ACID
Hazard Class	8
Packing Group	II

TDG

UN-No	UN1830
Proper Shipping Name	SULFURIC ACID
Hazard Class	8
Packing Group	II

IATA

UN-No	UN1830
Proper Shipping Name	SULFURIC ACID
Hazard Class	8
Packing Group	II

IMDG/IMO

UN-No	UN1830
Proper Shipping Name	SULFURIC ACID
Hazard Class	8
Packing Group	II

15. REGULATORY INFORMATION

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	CHINA	KECL
Sulfuric acid	X	X	-	231-639-5	-		X	X	X	X	KE-32570 X
Water	X	X	-	231-791-2	-		X	-	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Sulfuric acid	7664-93-9	73 - 98	1.0

SARA 311/312 Hazardous Categorization

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	Yes

Clean Water Act

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Sulfuric acid	X	1000 lb	-	-

Clean Air Act
Not applicable

OSHA
Not applicable

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Sulfuric acid	1000 lb	1000 lb

California Proposition 65
This product does not contain any Proposition 65 chemicals.

State Right-to-Know

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Sulfuric acid	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security

This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class
D1A Very toxic materials
E Corrosive material

16. OTHER INFORMATION

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Tel: (412) 490-8929

Creation Date 12-Nov-2010

Print Date 12-Nov-2010

Revision Summary "***", and red text indicates revision

Disclaimer

The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS

SAFETY DATA SHEET
Super-Ox ® 50%

SDS # : 7722-84-1-50-10
Revision date: 2021-05-25
Version 1.04

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Name Super-Ox ® 50%

Other means of identification

CAS-No 7722-84-1

Recommended use of the chemical and restrictions on use

Recommended Use: Industrial applications such as bleaching, processing, pollution abatement and general oxidation reactions. Formulated to have high stability under standard storage conditions.

Restrictions on Use: Use as recommended by the label.

Manufacturer/Supplier

United Initiators Canada Ltd.

2147 PG Pulp Mill Road
Prince George, BC V2N2S6
1+ 250/ 561-4200 (General Information)

Emergency telephone number

For leak, fire, spill or accident emergencies, call:
1 800 / 424 9300 (CHEMTREC - U.S.A.)
1 703 / 527 3887 (CHEMTREC - Collect - All Other Countries)
1 613/ 996-6666 (CANUTEC - Canada)
1 303/ 389-1409 (Medical - U.S. - Call Collect)

1 250 / 561-4221 (Prince George, BC, Canada Plant)

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Acute toxicity - Oral	Category 4
Acute toxicity - Inhalation (Vapors)	Category 4
Skin corrosion/irritation	Category 1 Sub-category B
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3
Oxidizing Liquids	Category 2

GHS Label elements, including precautionary statements

EMERGENCY OVERVIEW

Danger

Hazard Statements
H314 - Causes severe skin burns and eye damage
H302 - Harmful if swallowed
H332 - Harmful if inhaled
H335 - May cause respiratory irritation
H272 - May intensify fire; oxidizer

Precautionary Statements - Prevention
P271 - Use only outdoors or in a well-ventilated area
P260 - Do not breathe mist, vapors or spray.
P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection
P283 - Wear fire/ flame resistant/ retardant clothing
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P220 - Keep/Store away from clothing/flammable materials/combustibles
P221 - Take any precaution to avoid mixing with combustibles/flammables

Precautionary Statements - Response
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower
P363 - Wash contaminated clothing before reuse
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P312 - Call a POISON CENTER or doctor if you feel unwell
P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P310 - Immediately call a POISON CENTER or doctor
P370 + P378 - In case of fire: Use water for extinction

Hazards not otherwise classified (HNOC)
No hazards not otherwise classified were identified.

Other Information

Keep container in a cool place out of direct sunlight. Store only in vented containers. Do not store on wooden pallets. Do not return unused material to its original container. Avoid contamination - Contamination could cause decomposition and generation of oxygen which may result in high pressure and possible container rupture. Empty drums should be triple rinsed with water before discarding.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula HO - OH

Chemical name	CAS-No	Weight %
Hydrogen peroxide	7722-84-1	50
Water	7732-18-5	50

Occupational exposure limits, if available, are listed in section 8

4. FIRST AID MEASURES

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. Seek immediate medical attention/advice.

Skin Contact Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for further treatment advice.

Inhalation Move to fresh air. If person is not breathing, contact emergency medical services, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

Ingestion Rinse mouth. Do not induce vomiting. If conscious, give 2 glasses of water. Get immediate medical attention. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed Hydrogen Peroxide irritates respiratory system and, if inhaled, may cause inflammation and pulmonary edema. The effects may not be immediate. Overexposure symptoms are coughing, giddiness and sore throat. In case of accidental ingestion, necrosis may result from mucous membrane burns (mouth, esophagus and stomach). Oxygen rapid release may cause stomach swelling and hemorrhaging, which may product major, or even fatal, injury to organs if a large amount has been ingested.
In case of skin contact, may cause burns, erythema, blisters or even necrosis.

Indication of immediate medical attention and special treatment needed, if necessary Hydrogen peroxide at these concentrations is a strong oxidant. Direct contact with the eye is likely to cause corneal damage especially if not washed immediately. Careful opthalmologic evaluation is recommended and the possibility of local corticosteroid therapy should be considered. Because of the likelihood of corrosive effects on the gastrointestinal tract after ingestion, and the unlikelihood of systemic effects, attemps at evacuating the stomach via emesis induction or gastric lavage should be avoided. There is a remote possibility, however, that a nasogastric or orogastric tube may be required for the reduction of severe distension due to gas formation.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media Water. Do not use any other substance.

Specific Hazards Arising from the Chemical In closed unventilated containers, risk of rupture due to the increased pressure from decomposition.

Flamable Properties Contact with combustible material may cause fire.

Hazardous Combustion Products On decomposition product releases oxygen which may intensify fire.

Explosion data
Sensitivity to Mechanical Impact Not sensitive.
Sensitivity to Static Discharge Not sensitive.

Protective equipment and precautions for firefighters Use water spray to cool fire exposed surfaces and protect personnel. Move containers from fire area if you can do it without risk. As in any fire, wear self-contained breathing apparatus and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions Avoid contact with skin, eyes and clothing. Wear personal protective equipment. Isolate and post spill area. Keep people away from and upwind of spill/leak. Eliminate all sources of ignition and remove combustible materials.

Other Combustible materials exposed to hydrogen peroxide should be immediately submerged in or rinsed with large amounts of water to ensure that all hydrogen peroxide is removed. Residual hydrogen peroxide that is allowed to dry (upon evaporation hydrogen peroxide can concentrate) on organic materials such as paper, fabrics, cotton, leather, wood or other combustibles can cause the material to ignite and result in fire.

Environmental Precautions See Section 12 for additional Ecological Information.

Methods for Containment Dike to collect large liquid spills. Stop leak and contain spill if this can be done safely. Small spillage: Dilute with large quantities of water.

Methods for cleaning up Flush area with flooding quantities of water. Hydrogen peroxide may be decomposed by adding sodium metabisulfite or sodium sulfite after diluting to about 5%.

7. HANDLING AND STORAGE

Handling Use only in well-ventilated areas. Keep/Store away from clothing/ combustible materials. Wear personal protective equipment. Never return unused hydrogen peroxide to original container. Contamination may cause decomposition and generation of oxygen gas which could result in high pressures and possible container rupture. Empty drums should be triple rinsed with water before discarding. Utensils used for handling hydrogen peroxide should only be made of glass, stainless steel, aluminum or plastic. Pipes and equipment should be passivated before first use. Hydrogen peroxide should be stored only in vented containers and transferred only in a prescribed manner.

Storage Keep containers in cool areas out of direct sunlight and away from combustibles. Provide mechanical general and/or local exhaust ventilation to prevent release of vapor or mist into work environment. Containers must be vented. Keep/store only in original container. Store rooms or warehouses should be made of non-combustible materials with impermeable floors. In case of release, spillage should flow to safe area. Containers should be visually inspected on a regular basis to detect any abnormalities (swollen drums, increases in temperature, etc.).

Incompatible products Combustible materials. Copper alloys, galvanized iron. Strong reducing agents. Heavy metals. Iron. Copper alloys. Contact with metals, metallic ions, alkalis, reducing agents and organic matter (such as alcohols or terpenes) may produce self-accelerated thermal decomposition.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines Ingredients with workplace control parameters.

Chemical name	ACGIH TLV	OSHA PEL	NIOSH	Mexico
Hydrogen peroxide 7722-84-1	TWA: 1 ppm	TWA: 1 ppm TWA: 1.4 mg/m^3	IDLH: 75 ppm TWA: 1 ppm TWA: 1.4 mg/m^3	Mexico: TWA 1 ppm Mexico: TWA 1.5 mg/m^3 Mexico: STEL 2 ppm Mexico: STEL 3 mg/m^3
Chemical name	**British Columbia**	**Quebec**	**Ontario TWAEV**	**Alberta**
Hydrogen peroxide 7722-84-1	TWA: 1 ppm	TWA: 1 ppm TWA: 1.4 mg/m^3	TWA: 1 ppm	TWA: 1 ppm TWA: 1.4 mg/m^3

Appropriate engineering controls

Engineering measures Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Use chemical splash-type monogoggles and a full-face shield made of polycarbonate, acetate, polycarbonate/acetate, PETG or thermoplastic.

Skin and Body Protection For body protection wear impervious clothing such as an approved splash protective suit made of SBR rubber, PVC (PVC Outershell w/Polyester Substrate), Gore-Tex (Polyester trilaminate w/Gore-Tex), or a specialized HAZMAT Splash or Protective Suite (Level A, B, or C). For foot protection, wear approved boots made of NBR, PVC, Polyurethane, or neoprene. Overboots made of Latex or PVC, as well as firefighter boots or specialized HAZMAT boots are also permitted. DO NOT wear any form of boot or overboot made of nylon or nylon blends. DO NOT USE cotton, wool or leather as these materials react rapidly with higher concentrations of hydrogen peroxide. Completely submerge hydrogen peroxide contaminated clothing or other materials in water prior to drying. Residual hydrogen peroxide, if allowed to dry on materials such as paper, fabrics, cotton, leather, wood or other combustibles, can cause the material to ignite and result in a fire.

Hand Protection For hand protection, wear approved gloves made of nitrile, PVC, or neoprene. DO NOT use cotton, wool or leather for these materials react RAPIDLY with higher concentrations of hydrogen peroxide. Thoroughly rinse the outside of gloves with water prior to removal. Inspect regularly for leaks.

Respiratory Protection If concentrations in excess of 10 ppm are expected, use NIOSH/DHHS approved self-contained breathing apparatus (SCBA) or other approved air-supplied respirator (ASR) equipment (e.g., a full-face airline respirator (ALR)). DO NOT use any form of air-purifying respirator (APR) or filtering facepiece (dust mask), especially those containing oxidizable sorbants such as activated carbon.

Hygiene measures Avoid breathing vapors, mist or gas. Clean water should be available for washing in case of eye or skin contamination.

General information Protective engineering solutions should be implemented and in use before personal protective equipment is considered.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Clear, colorless liquid
Physical State	Liquid
Color	Colorless
Odor	odorless
Odor threshold	Not applicable
pH	<= 3.0
Melting point/freezing point	-52 °C
Boiling Point/Range	114 °C
Flash point	Not flammable
Evaporation Rate	> 1 (n-butyl acetate=1)
Flammability (solid, gas)	Not flammable
Flammability Limit in Air	Not applicable
Upper flammability limit:	No information available
Lower flammability limit:	No information available
Vapor pressure	18 mm Hg @ 30 °C
Vapor density	No information available
Density	1.2 g/cm³ @ 20 °C
Specific gravity	1.2
Water solubility	Completely soluble
Solubility in other solvents	No information available

Partition coefficient	log Kow = -1.5 @ 20 °C
Autoignition temperature	Not combustible
Decomposition temperature	100 °C (adiabatic)
Viscosity, kinematic	1.17 cP @ 20 °C
Viscosity, dynamic	No information available
Explosive properties	No information available
Oxidizing properties	Powerful oxidizer
Molecular weight	34
Active Oxygen Content	23.5%
Bulk density	Not applicable

10. STABILITY AND REACTIVITY

Reactivity Reactive and oxidizing agent.

Chemical Stability Stable under normal conditions. Decomposes on heating. Stable under recommended storage conditions.

Possibility of Hazardous Reactions Contact with organic substances may cause fire or explosion. Contact with metals, metallic ions, alkalis, reducing agents and organic matter (such as alcohols or terpenes) may produce self-accelerated thermal decomposition.

Hazardous polymerization Hazardous polymerization does not occur.

Conditions to avoid Excessive heat; Contamination; Exposure to UV-rays; pH variations.

Incompatible materials Combustible materials. Copper alloys, galvanized iron. Strong reducing agents. Heavy metals. Iron. Copper alloys. Contact with metals, metallic ions, alkalis, reducing agents and organic matter (such as alcohols or terpenes) may produce self-accelerated thermal decomposition.

Hazardous Decomposition Products Oxygen which supports combustion. Liable to produce overpressure in container.

11. TOXICOLOGICAL INFORMATION

Product Information

LD50 Oral	50% solution: LD50 > 225 mg/kg bw (rat) 35 % solution:LD50 1193 mg/kg bw (rat) 70 % solution: LD50 1026 mg/kg bw (rat)
LD50 Dermal	35% solution: LD50 > 2000 mg/kg bw (rabbit) 70 % solution: LD50 9200 mg/kg bw (rabbit)
LC50 Inhalation	50% solution: LC50 > 170 mg/m³ (rat) (4-hr) Hydrogen Peroxide vapors: LC0 9400 mg/m³ (mouse) (5 - 15 minutes) Hydrogen Peroxide vapors: LC50 > 2160 mg/m³ (mouse)
Serious eye damage/eye irritation	Corrosive. Risk of serious damage to eyes.
Skin corrosion/irritation	Corrosive to skin. Causes severe burns.
Sensitization	Did not cause sensitization on laboratory animals.

Information on toxicological effects

Symptoms Vapors, mists, or aerosols of hydrogen peroxide can cause upper airway irritation, inflammation of the nose, hoarseness, shortness of breath, and a sensation of burning or tightness in the chest. Prolonged exposure to concentrated vapor or to dilute solutions can cause irritation and temporary bleaching of skin and hair. Exposure to vapor, mist, or aerosol can cause stinging pain and tearing of eyes.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity

This product contains hydrogen peroxide. The International Agency for Research on Cancer (IARC) has concluded that there is inadequate evidence for carcinogenicity of hydrogen peroxide in humans, but limited evidence in experimental animals (Group 3 - not classifiable as to its carcinogenicity to humans). The American Conference of Governmental Industrial Hygienists (ACGIH) has concluded that hydrogen peroxide is a 'Confirmed Animal Carcinogen with Unknown Relevance to Humans' (A3).

Chemical name	ACGIH	IARC	NTP	OSHA
Hydrogen peroxide 7722-84-1	A3	3		

Mutagenicity

This product is not recognized as mutagenic by Research Agencies
In vivo tests did not show mutagenic effects

Reproductive toxicity

This product is not recognized as reprotox by Research Agencies. No toxicity to reproduction in animal studies.

STOT - single exposure

May cause respiratory irritation.

STOT - repeated exposure

Not classified.

Target organ effects

Eyes, Respiratory System, Skin.

Aspiration hazard

No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects

Hydrogen peroxide is naturally produced by sunlight (between 0.1 and 4 ppb in air and 0.001 to 0.1 mg/L in water). Not expected to have significant environmental effects.

Hydrogen peroxide (7722-84-1)				
Active Ingredient(s)	Duration	Species	Value	Units
Hydrogen peroxide	96 h LC50	Fish Pimephales promelas	16.4	mg/L
Hydrogen peroxide	72 h LC50	Fish Leuciscus idus	35	mg/L
Hydrogen peroxide	48 h EC50	Daphnia pulex	2.4	mg/L
Hydrogen peroxide	24 h EC50	Daphnia magna	7.7	mg/L
Hydrogen peroxide	72 h EC50	Algae Skeletonema costatum	1.38	mg/L
Hydrogen peroxide	21 d NOEC	Daphnia magna	0.63	mg/L

Persistence and degradability

Hydrogen peroxide in the aquatic environment is subject to various reduction or oxidation processes and decomposes into water and oxygen. Hydrogen peroxide half-life in freshwater ranged from 8 hours to 20 days, in air from 10 - 20 hours, and in soils from minutes to hours depending upon microbiological activity and metal contamination.

Bioaccumulation

Material may have some potential to bioaccumulate but will likely degrade in most environments before accumulation can occur.

Mobility

Will likely be mobile in the environment due to its water solubility but will likely degrade over time.

Other Adverse Effects

Decomposes into oxygen and water. No adverse effects.

13. DISPOSAL CONSIDERATIONS

Waste disposal methods Dispose of in accordance with local regulations. Can be disposed as waste water, when in compliance with local regulations.

US EPA Waste Number D001; D002

Contaminated Packaging Dispose of in accordance with local regulations.
Drums - Empty as thoroughly as possible. Triple rinse drums before disposal. Avoid contamination; impurities accelerate decomposition. Never return product to original container.

14. TRANSPORT INFORMATION

DOT

UN/ID no	UN 2014
Proper Shipping Name	HYDROGEN PEROXIDE, AQUEOUS SOLUTION, STABILIZED
Hazard class	5.1
Subsidiary class	8
Packing Group	II

TDG

UN/ID no	UN 2014
Proper Shipping Name	HYDROGEN PEROXIDE, AQUEOUS SOLUTION, STABILIZED
Hazard class	5.1
Subsidiary class	8
Packing Group	II

ICAO/IATA Hydrogen peroxide (>40%) is forbidden on Passenger and Cargo Aircraft. Air regulation permit shipment of Hydrogen Peroxide (>40%) in non-vented containers for Air Cargo Only aircraft, as well as for Passenger and Cargo aircraft. HOWEVER, all Hydrogen Peroxide containers are vented and therefore, air shipments of H2O2 are not permitted. IATA air regulations state that venting of packages containing oxidizing substances is not permitted for air transport.

IMDG/IMO

UN/ID no	UN 2014
Proper Shipping Name	HYDROGEN PEROXIDE, AQUEOUS SOLUTION, STABILIZED
Hazard class	5.1
Subsidiary Hazard Class	8
Packing Group	II

OTHER INFORMATION Protect from physical damage. Keep drums in upright position. Drums should not be stacked in transit. Do not store drums on wooden pallets.

15. REGULATORY INFORMATION

U.S. Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories
This product has the following hazards that are reportable under The Emergency Planning and Community Right-to-Know rule (EPCRA Tier II):

- Oxidizer
- Acute toxicity
- Serious eye damage/eye irritation
- Skin corrosion/irritation
- Specific Target Organ Toxicity (STOT) - Single Exposure

Clean Water Act
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA/EPCRA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Response Compensation and Liability Act (CERCLA) or as an extremely hazardous substance (EHS) under the Emergency Planning and Community Right to Know Act (EPCRA) / Superfund Amendments and Reauthorization Act (SARA).

Chemical name	CERCLA Hazardous Substances RQs (40 CFR 302.4)	SARA Sec 304 Extremely Hazardous Substance RQ (40 CFR 355 Appendix A)	SARA Section 302 EHS Threshold Planning Quantity (40 CFR 355)
Hydrogen peroxide 7722-84-1		1000 lb	1000 lb

Hydrogen Peroxide RQ is for concentrations of > 52% only

US State Regulations

U.S. State Right-to-Know Regulations
This product contains the following substances regulated under state Right-to-Know laws:

Chemical name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Hydrogen peroxide	X	X	X		X

California Proposition 65
This product does not contain any Proposition 65 chemicals

CANADA

Environmental Emergencies

Component	Canada - Environmental Emergencies - Part 1 Substances - Substances Likely to Explode - Minimum Threshold Quantities	Canada - Environmental Emergencies - Part 1 Substances - Substances Likely to Explode - Minimum Mixture Concentrations	Canada - Environmental Emergencies - Part 2 Substances - Substances Hazardous When Inhaled - Minimum Threshold Quantities	Canada - Environmental Emergencies - Part 2 Substances - Substances Hazardous When Inhaled - Minimum Mixture Concentrations
Hydrogen peroxide 7722-84-1 (50)			3.40 tonnes Minimum quantity	52

Canadian National Pollutant Release Inventory
This product contains no substances reportable under Canada's National Pollutant Release Inventory regulations.

International Inventories

Component	TSCA (United States)	DSL (Canada)	EINECS/ELINCS (Europe)	ENCS (Japan)	China (IECSC)	KECL (Korea)	PICCS (Philippines)	AICS (Australia)	NZIoC (New Zealand)
Hydrogen peroxide 7722-84-1 (50)	X	X	X	X	X	X	X	X	X

Mexico

Mexico - Grade Serious risk, Grade 3

16. OTHER INFORMATION

NFPA	**Health Hazards** 3	**Flammability** 0	**Stability** 1	**Special Hazards** OX
HMIS	**Health Hazards** 3	**Flammability** 0	**Physical hazard** 1	**Special precautions** H

NFPA/HMIS Ratings Legend Severe = 4; Serious = 3; Moderate = 2; Slight = 1; Minimal = 0
Special Hazards: OX = Oxidizer
Protection = H (Safety goggles, gloves, apron, the use of supplied air or SCBA respirator is required in lieu of a vapor cartridge respirator)

Uniform Fire Code Oxidizer: Class 2--Liquid

Revision date: 2021-05-25
Revision note SDS sections updated: 1 - Recommended use. 9 - Added active oxygen content. All pages - updated product name.

Disclaimer

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Prepared By:

United Initiators
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End of Safety Data Sheet

NORTHLAND CHEMICAL
Expert Wastewater Treatment

Technical Data Sheet
NORFLOC 18816

DESCRIPTION: Liquid Grade Cationic Polyelectrolyte – Copolymer of acrylamide and quaternized cationic monomer

NORFLOC 18816 is a high-performance cationic polyelectrolyte emulsion used to condition substrates found in industrial and municipal wastewater treatment systems.

APPLICATION USE

- Used for liquid-solid phase separation of industrial and municipal bio-solids/substrates.
- Highly effective for mechanical dewatering, thickening, floatation and clarification.
- Very effective for waste activated and septic sludges on thickening/dewatering
- Effective over wide pH range (4 – 9)

TYPICAL PROPERTIES

Appearance/Physical Form	Inverse Emulsion / Opaque white liquid
Active Content	40%
Cationic Charge	Medium-High
Molecular weight	Low
Specific Gravity 20°C,	1.03 g/cm3
Bulk Density	8.60 lb/gal
pH (1% solution)	4 – 6
Shelf Life (months)	6-12 months

Apparent Viscosity/(cP) @ 25 °C			
Concentration	0.25%	0.50%	1.0%
Viscosity	350	600	1,200

PACKAGING

- **20 kg pail**
- **200 kg drum**
- **1,040 kg tote**
- **10,000 – 20,000 kg bulk tanker**

STORAGE AND HANDLING

NORFLOC 18816 requires storage conditions with temperature range of 5-25 deg C (41-77 deg F.) with standard humidity levels. Storage outside these conditions may affect product flowability and performance. Product will be stable for 6 months. If product is mixed regularly, shelf life may extend up to 12 months.

PREPARATION FOR USE

It is recommended that stock solutions at 0.25 – 1.0 % are prepared regularly and for maximum effect such solutions should be used within 2-5 days. Beyond this some loss of efficiency may occur.
When handling NORFLOC 18816 wear proper PPE (safety goggles or face shield and neoprene gloves).

HEALTH HAZARDS

As with all cationic polyelectrolyte polymers this product exhibits toxicity towards fish. It is important that precautions are taken where the product may come into direct contact with fresh water courses, streams and rivers.
Corrosion towards most standard materials of construction is very low. Stainless steel, fiberglass, polyethylene, polypropylene and epoxy coat-ed surfaces are recommended. Ethylene propylene rubber (EPDM), natural rubber, polyurethane, and PVC should all be avoided when handling neat product.
Spilled product is slippery neat and when wet. Product should be protected from frost and stirred before use and if separation occurs. Information on the shipping and handling of this product can be found in the relevant SDS.
Disposal of product must comply with all national, state and local laws.

TECHNICAL SERVICE

Northland technical representatives are available to advise and assist in the running of laboratory tests and full- scale plant testing to select correct product to suit the application conditions.

NORTHLAND CHEMICAL
Expert Wastewater Treatment

Technical Data Sheet
NORFLOC 18868

DESCRIPTION: Liquid Grade Cationic Polyelectrolyte

NORFLOC 18868 is a high-performance cationic polyelectrolyte emulsion used to condition substrates found in industrial and municipal wastewater treatment systems.

APPLICATION USE

- Used for liquid-solid phase separation of industrial and municipal bio-solids/substrates.
- Highly effective for mechanical dewatering, thickening, floatation and clarification.
- Very effective for waste activated and septic sludges on thickening/dewatering
- Effective over wide pH range (4 – 9)

TYPICAL PROPERTIES

Appearance/Physical Form	Inverse Emulsion / Opaque white liquid
Active Content	40%
Cationic Charge	High
Molecular weight	Low
Specific Gravity 20°C,	1.03 g/cm3
Bulk Density	8.60 lb/gal
pH (1% solution)	4 – 6
Shelf Life (months)	6-12 months

Apparent Viscosity/(cP) @ 25 °C			
Concentration	0.25%	0.50%	1.0%
Viscosity	300	700	1,700

PACKAGING

- **20 kg pail**
- **200 kg drum**
- **1,040 kg tote**
- **10,000 – 20,000 kg bulk tanker**

STORAGE AND HANDLING

NORFLOC 18868 requires storage conditions with temperature range of 5-25 deg C (41-77 deg F.) with standard humidity levels. Storage outside these conditions may affect product flowability and performance. Product will be stable for 6 months. If product is mixed regularly, shelf life may extend up to 12 months.

PREPARATION FOR USE

It is recommended that stock solutions at 0.25 – 1.0 % are prepared regularly and for maximum effect such solutions should be used within 2-5 days. Beyond this some loss of efficiency may occur.
When handling NORFLOC 18868 wear proper PPE (safety goggles or face shield and neoprene gloves).

HEALTH HAZARDS

As with all cationic polyelectrolyte polymers this product exhibits toxicity towards fish. It is important that precautions are taken where the product may come into direct contact with fresh water courses, streams and rivers.
Corrosion towards most standard materials of construction is very low. Stainless steel, fiberglass, polyethylene, polypropylene and epoxy coat-ed surfaces are recommended. Ethylene propylene rubber (EPDM), natural rubber, polyurethane, and PVC should all be avoided when handling neat product.
Spilled product is slippery neat and when wet. Product should be protected from frost and stirred before use and if separation occurs. Information on the shipping and handling of this product can be found in the relevant SDS.
Disposal of product must comply with all national, state and local laws.

TECHNICAL SERVICE

Northland technical representatives are available to advise and assist in the running of laboratory tests and full- scale plant testing to select correct product to suit the application conditions.

SECTION I: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: **THIXOGREASE No. 2**

Product use: Lubricating Grease

Manufacturer:
WYS Manufacturing Ltd.
Bay 7 & 8, 4216 – 54th Ave. SE
Calgary, Alberta T2C 2E3
Phone 1-403-252-2239
Canada

Supplier:
Maryn International Ltd.
Bay 5 & 6, 4216 – 54th Ave. SE
Calgary, Alberta T2C 2E3
Phone 1-403-252-2239
Canada

Emergency Phone Number:
CANUTEC – 24 hr Emergency No. 1-613-996-6666
Business Hour Number 1-403-252-2239
(Monday through Friday 8:00am to 4:30pm MST)

MSDS Prepared By
Z. Ansarizadeh
Phone 1-403-252-2239

Date Prepared July 24, 2008

SECTION II: COMPOSITION/ INFORMATION ON INGREDIENTS

Hazardous Ingredients	Concentration %	C.A.S. #	LD_{50} (Species/Route)	LC_{50} (Species/Route)
Proprietary Mixture	60-100%	Trade Secret	NA	NA

SECTION III: Hazards Identification

Emergency Overview May cause eye and skin irritation.

Route of entry Skin and eye contact are the primary routes of exposure to this product.

Ingestion No significant hazard. Not expected to be toxic by ingestion.

Inhalation Aspiration may cause pulmonary edema or aspiration pneumonia.

Skin Contact and absorption	Frequent or prolonged contact may irritate the skin and cause a skin rash.
Eye Contact	Slight irritation to the eyes but will not cause injury to the eye tissue.
Effects of Chronic Exposure	Repeated exposure over prolonged periods of time may cause irritation to the skin, respiratory system and eyes. Follow good industrial hygiene practices to avoid exposure.
Effects of Acute Exposure	Breathing mist caused by high temperature or swallowing large quantities may be irritating to skin, respiratory system, mucous membranes and eyes.

SECTION IV: First Aid Measures

Ingestion	Consult physician. Never give anything by mouth to an unconscious person. Do not induce vomiting as aspiration may occur.
Skin Contact	Wash well with mild soap and warm water. If hot material contacts the skin, cool immediately before attempting removal. If irritation persists or if contact has been prolonged, consult physician. If pressure forces the product under the skin, obtain immediate medical attention. Launder clothes prior to re-use.
Inhalation	Remove victim to fresh air. Aspiration may cause pulmonary edema or aspiration pneumonia. If breathing is difficult, oxygen may be administered by qualified personnel. Consult physician if symptoms persist.
Eye Contact	Flush with clean tepid water for 15 minutes keeping eyelids open. If irritation persists, consult physician.
Notes to Physician	Not available.

SECTION V: Fire-Fighting Measures

Flammability	Non flammable at ambient temperature. Liquid may burn at temperatures above flash point if exposed to an open flame.
Means of Extinction	Carbon dioxide foam, dry chemicals, dry sand, vermiculite. Use water fog or foam for larger fires. Keep containers cool with water spray. When fighting fire, treat as petroleum product, wear full protective clothing, including NIOSH approved self-contained breathing apparatus with full face piece operated in positive pressure mode. Avoid spreading with water flooding.
Flash Point (ASTM D92)	>180°C (356°F)
Upper Flammability Limits	Not Determined.
Lower Flammability Limits	Not Determined.
Auto Ignition Temperature	Not Determined.
Hazardous Combustion Products	Oxides of carbon, oxides of sulphur, and oxides of calcium.
Fire and Explosion Hazards	None.

Sensitivity to impact Static Discharge None at normal temperatures below flash point. Do not cut, weld, or pressurize empty container. Container may explode in heat of fire.

SECTION VI: Accidental Release Measures

Personal Protection Wear suitable protective equipment. Eliminate sources and or potential sources of ignition.

Environmental Precautions Product has very low solubility in water. Do not flush to sewers, streams or other bodies of water. For disposal, see Section XIII.

Methods for cleaning up Absorb on inert material such as sand, earth, vermiculite. Sweep up and collect in a suitable container for disposal. Observe government regulations.

Large spills Stop leak if without risk. Dike to contain spill. Pump excess material into suitable container (metal drums, metal tanks, or such).

SECTION VII: Handling and Storage

Handling Keep drums tightly closed to prevent contamination. Avoid contact with eyes, skin and clothing. Wear recommended personal protection equipment.

Storage Store in a cool well ventilated area. Keep away from strong oxidizing agents.

SECTION VIII: Exposure Controls / Personal Protection

Exposure Limits

If used in a way that generates a mist, observe the limits for mineral oil mist

Component	Exposure Limit (ACGIH)	Exposure Limit (OSHA)	Immediately Dangerous to Life and Health (IDLH)
Mineral Oil Mist	5 mg/m^3 TWA-TLV 10 mg/m^3 STEL-TLV	5 mg/m^3 TWA-PEL Not Established STEL-PEL	2500 mg/m^3

Engineering Controls For normal application, special ventilation is not necessary. If user's operation generates mist, use local ventilation to keep exposure to airborne contaminants below exposure limits

Respiratory Protection None required under normal conditions of use. Use approved respirator with dual organic vapour / mist and particulate cartridge if vapour concentration exceeds permissible exposure limit

Eye Protection Use chemical splash goggles or full face shield if risk of splashing present.

Skin Protection Use rubber or plastic apron. Wear protective clothing to minimize skin contact. Use heat protective equipment when handling molten material.

Hand Protection Use oil resistant gloves.

SECTION IX: Physical and Chemical Properties

Physical State:	Semi-solid
Odour:	Mild petroleum odour
Appearance:	Brown
Odour Threshold:	Not established
Specific Gravity:	0.95 – 1.05 g/cm^3 at 25°C (77°F)
Vapour Pressure:	<0.0008 hPa (0.00 mm Hg) at 20°C (68°F)
Vapour Density:	Not available
Evaporation Rate:	Not available
Boiling Point:	Not available
Pour Point:	Not applicable
Solubility in Water:	Negligible
pH:	Not available
Partitioning Coefficient:	Not available

SECTION X: Stability and Reactivity

Chemical Stability: Stable
Incompatibility: Avoid contact with oxidizing agents.
Reactivity: No reactivity
Polymerization: Will not occur
Decomposition Products: Oxides of carbon, oxides of sulphur, and oxides of calcium.

SECTION XI: Toxicological Information

Effects of Acute and Chronic Exposure: No evidence of harmful effects from available information.

Skin Contact May cause irritation.

Skin Absorption If high pressure forces the product under the skin, get immediate medical attention.

Eye Contact May cause irritation.

Inhalation No information available. Mist or spray may cause delayed onset of pulmonary edema.

Ingestion No significant hazard. No evidence of harmful effects from available information. May cause diarrhea

Irritancy: Slight irritation to eyes. Frequent or prolonged contact may irritate skin. If misted, inhalation of mist may cause irritation.

Sensitization: No information is available and no adverse effects are anticipated.

Carcinogenicity: This product contains material that has not been listed as a carcinogen or potential carcinogen by the National Toxicology Program, International Agency for Research on Cancer, or the Occupational Safety and Health Administration.

Reproductive Toxicity:	No information is available and no adverse effects are anticipated.
Teratogenicity:	No information is available and no adverse effects are anticipated.
Embryotoxicity:	No information is available and no adverse effects are anticipated.
Mutagenicity:	No information is available and no adverse effects are anticipated.
Toxicologically Synergistic Products:	Not available.

SECTION XII: Ecological information

Environmental Fate:

No specific environmental fate data is available. This product is not expected to be readily biodegradable. This product is stable in water, and can be mechanically separated from water. The water may be suitable for disposal in a biological waste water treatment plant.

Environmental Effects:

No specific toxicity or environmental effect data is available.

SECTION XIII: Disposal Consideration

RCRA 40 CFR 261 Classification Not listed
US EPA Waste Number / Classification Not available

Waste Disposal

Dispose of waste material in compliance with all federal, state, provincial and local regulations. Incinerate in a furnace or bury in an approved landfill where permitted under appropriate federal, provincial and local regulations.

SECTION XIV: Transport Information

Department of Transport:	Not regulated under DOT
TDG – Canada	Not regulated under TDG.
DOT/TDG Proper Shipping Name:	None
DOT/TDG Hazard Class:	None
Product Identification Number:	None
Packing Group:	None
DOT/TDG Labels: Primary:	None required
Subsidiary:	None required
DOT/TDG Placards:	None required

SECTION XV: Regulatory Information

CPR Compliance:

This product has been classified in accordance with the hazard criteria of *the Controlled Products Regulations* and the MSDS contains all of the information required by those regulations.

OSHA Hazard Communication Standards 29CFR 1910.1200:

This product is not known to contain any of the carcinogens required to be listed under OSHA Hazards Communication Standards 29 CFR 1910.1200.

WHMIS Classification:

Not a controlled product under WHMIS.

CERCLA:

Not listed on CERCLA (40CFR 302.4). If this product is accidentally spilled, it is not subject to special reporting under requirements of the Comprehensive Environmental Response and Liability Act. We recommend you contact local authorities to determine if there may be other local reporting requirements.

SARA Title III Section 311/312:

Under the provisions of Title III, Section 311/312 of the Superfund Amendments and Reauthorization Act, this product is classified into the following hazard category: **NONE.**

SARA Title III Section 313:

This product does not contain more than 1 % of any of the chemical substances listed under SARA Section 313.

RCRA:

Not listed on the **RCRA** (40 CFR 261.33) for hazardous waste.

NPRI:

Not listed in the **NPRI** under Canadian EPA.

Chemical Inventory

Canada: The ingredients of this product are on the DSL.
United States: The ingredients of this product are on the TSCA

SECTION XVI Other Information

HMIS Information

Degree of Hazard	HMIS Rating
4= Severe 3= Serious 2= Moderate 1= Slight 0= Minimal	Health 1 Flammability 1 Reactivity 0

Revision Information
Prepared by: Maryn Research
Phone: 1-403-252-2239
Effective Date: July 24th 2008
Supersedes: February 14, 2008
Revision: 3.0

Maryn International Ltd. (the "Company"), shall not be liable for any damages arising from the information contained on this data sheet howsoever caused, if the product in question is not employed in a normal or foreseeable use or circumstances. The Company shall not be liable for any indirect or consequential damages arising out of the use of the information contained on this data sheet howsoever caused.

Material Safety Data Sheet Index

October 2000

Click on a product name to jump to the proper MSDS page.

If you can't find your MSDS, call (216) 566-2902

TRI-FLOW™ Industrial Lubricant with Teflon® (Non-Aerosol)

TRI-FLOW™ Industrial Lubricant With Teflon® (Aerosol)

TRI-FLOW™ Synthetic Food Grade Grease (Non-Aerosol)

TRI-FLOW™ Synthetic Food Grade Oil

TRI-FLOW™ Synthetic Grease With Teflon® (Aerosol)

Material Safety Data Sheet

TF-FG-GREASE
2000

MANUFACTURER'S NAME
THE SHERWIN-WILLIAMS COMPANY
Consumer Group - Industrial
Cleveland, OH 44115

EMERGENCY TELEPHONE NO.
(216) 566-2917

DATE OF PREPARATION
18-AUG-00

INFORMATION TELEPHONE NO.
(800) 251-2486

Section 1 - Product Identification

PRODUCT NUMBERS

22002	22013	22022
22003	22014	22023
22004	22020	22024
22012	22021	

HMIS CODES

Health	1
Flammability	1
Reactivity	0

PRODUCT NAME
TRI-FLOW™ Synthetic Food Grade Grease
PRODUCT CLASS
Lubricant

Section 2 - Hazardous Ingredients

INGREDIENT / CAS No.	% by WT	ACGIH TLV	OSHA PEL	UNITS	V.P.

No ingredients in this product are hazardous as defined by the Department of Labor.

Section 3 - Physical Data

PRODUCT WEIGHT -- 7.43 lb./gal. EVAPORATION RATE -- Slower than Ether
SPECIFIC GRAVITY -- 0.89 VAPOR DENSITY -- Heavier than Air
BOILING POINT -- N.A. MELTING POINT -- N.A.
VOLATILE VOLUME -- 0 % SOLUBILITY IN WATER -- N.A.
VOC (Theoretical) -- 0.00 lb. 0 gm. (less Federally Exempt Solvents)

Section 4 - Fire and Explosion Hazard Data

FLASH POINT	LEL	UEL
>200 °F COC	N.Ap.	N.Ap.

FLAMMABILITY CLASSIFICATION
Not Applicable
EXTINGUISHING MEDIA
Carbon Dioxide, Dry Chemical, Foam
UNUSUAL FIRE AND EXPLOSION HAZARDS
Not Applicable
SPECIAL FIRE FIGHTING PROCEDURES
Not Applicable

Continued on page 2

Section 5 - Health Hazard Data

ROUTES OF EXPOSURE

Exposure may be by INHALATION and/or SKIN or EYE contact, depending on conditions of use. To minimize exposure, follow recommendations for proper use, ventilation, and personal protective equipment.

ACUTE Health Hazards

EFFECTS OF OVEREXPOSURE

Irritation of eyes, skin and upper respiratory system. In a confined area vapors in high concentration may cause headache, nausea or dizziness.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

Redness and itching or burning sensation may indicate eye or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

None generally recognized.

EMERGENCY AND FIRST AID PROCEDURES

If INHALED: If affected, remove from exposure. Restore breathing. Keep warm and quiet.

If on SKIN: Wash affected area thoroughly with soap and water.

If in EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention.

If SWALLOWED: Get medical attention.

CHRONIC Health Hazards

No ingredient in this product is an IARC, NTP or OSHA listed carcinogen.

Section 6 - Reactivity Data

STABILITY -- Stable

CONDITIONS TO AVOID

None known.

INCOMPATIBILITY

None known.

HAZARDOUS DECOMPOSITION PRODUCTS

By fire: Carbon Dioxide, Carbon Monoxide

HAZARDOUS POLYMERIZATION

Will not occur

Section 7 - Spill or Leak Procedures

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Ventilate and remove with inert absorbent.

WASTE DISPOSAL METHOD

Waste from this product is not hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261.

Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State, and Local regulations regarding pollution.

Section 8 - Protection Information

PRECAUTIONS TO BE TAKEN IN USE

Use only with adequate ventilation. Avoid breathing vapor and spray mist. Avoid contact with skin and eyes. Wash hands after using.

VENTILATION

Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

Continued on page 3

RESPIRATORY PROTECTION

If personal exposure cannot be controlled below applicable limits by ventilation, wear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section 2.

PROTECTIVE GLOVES

Required for long or repeated contact.

EYE PROTECTION

Wear safety spectacles with unperforated sideshields.

Section 9 - Precautions

DOL STORAGE CATEGORY

3B

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the reach of children.

Section 10 - Other Regulatory Information

SARA 313 (40 CFR 372.65C) SUPPLIER NOTIFICATION

CAS No.	CHEMICAL/COMPOUND	% by WT	% Element

No ingredients in this product are subject to SARA 313 (40 CFR 372.65C) Supplier Notification.

TSCA CERTIFICATION

All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

Material Safety Data Sheet

TF-FG-GREASE-AER
2000

MANUFACTURER'S NAME
THE SHERWIN-WILLIAMS COMPANY
Consumer Group - Industrial
Cleveland, OH 44115

EMERGENCY TELEPHONE NO.
(216) 566-2917

DATE OF PREPARATION
23-AUG-00

INFORMATION TELEPHONE NO.
(800) 251-2486

Section 1 - Product Identification

PRODUCT NUMBER

22020

HMIS CODES

Health	2
Flammability	4
Reactivity	0

PRODUCT NAME
TRI-FLOW™ Synthetic Grease With Teflon® (Aerosol)
PRODUCT CLASS
Aerosol Lubricant

Section 2 - Hazardous Ingredients

INGREDIENT CAS No.	% by WT	ACGIH TLV	OSHA PEL	UNITS	V.P.
Propane 74-98-6	10	2500	1000	PPM	760.00
Heavy Aliphatic Naphtha. 68551-20-2	74	Not Established			0.50

Section 3 - Physical Data

PRODUCT WEIGHT	6.43 lb/gal	770 g/l
SPECIFIC GRAVITY	0.77	
BOILING POINT	<0 - 550 F	<-18 - 287 C
MELTING POINT	Not Available	
VOLATILE VOLUME	86 %	
EVAPORATION RATE	Faster than ether	
VAPOR DENSITY	Heavier than air	
SOLUBILITY IN WATER	N.A.	
VOLATILE ORGANIC COMPOUNDS	(VOC Theoretical)	
Volatile Weight 84.00 %	Less Federally Exempt Solvents	

Section 4 - Fire and Explosion Hazard Data

FLASH POINT	LEL	UEL
Propellant < 0 F	0.6	9.5

EXTINGUISHING MEDIA
Carbon Dioxide, Dry Chemical, Foam

Continued on page 2

UNUSUAL FIRE AND EXPLOSION HAZARDS

Isolate from heat, electrical equipment, sparks, and open flame. Closed containers may explode when exposed to extreme heat. Application to hot surfaces requires special precautions. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

SPECIAL FIRE FIGHTING PROCEDURES

Full protective equipment including self-contained breathing apparatus should be used. Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

Section 5 - Health Hazard Data

ROUTES OF EXPOSURE

Exposure may be by INHALATION and/or SKIN or EYE contact, depending on conditions of use. To minimize exposure, follow recommendations for proper use, ventilation, and personal protective equipment.

ACUTE Health Hazards

EFFECTS OF OVEREXPOSURE

Irritation of eyes, skin and respiratory system. May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists.

Redness and itching or burning sensation may indicate eye or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

None generally recognized.

EMERGENCY AND FIRST AID PROCEDURES

If INHALED:	If affected, remove from exposure. Restore breathing. Keep warm and quiet.
If on SKIN:	Wash affected area thoroughly with soap and water. Remove contaminated clothing and launder before re-use.
If in EYES:	Flush eyes with large amounts of water for 15 minutes. Get medical attention.
If SWALLOWED:	Never give anything by mouth to an unconscious person. DO NOT INDUCE VOMITING. Give conscious patient several glasses of water. Seek medical attention.

CHRONIC Health Hazards

No ingredient in this product is an IARC, NTP or OSHA listed carcinogen.

Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

Section 6 - Reactivity Data

STABILITY -- Stable

CONDITIONS TO AVOID

None known.

INCOMPATIBILITY

None known.

Continued on page 3

HAZARDOUS DECOMPOSITION PRODUCTS

By fire: Carbon Dioxide, Carbon Monoxide HAZARDOUS POLYMERIZATION

Will not occur

Section 7 - Spill or Leak Procedures

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Ventilate and remove with inert absorbent.

WASTE DISPOSAL METHOD

Waste from this product may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261.

Waste must be tested for ignitability to determine the applicable EPA hazardous waste numbers.

Do not incinerate. Depressurize container. Dispose of in accordance with Federal, State, and Local regulations regarding pollution.

Section 8 - Protection Information

PRECAUTIONS TO BE TAKEN IN USE

Use only with adequate ventilation. Avoid breathing vapor and spray mist. Avoid contact with skin and eyes. Wash hands after using.

VENTILATION

Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

RESPIRATORY PROTECTION

If personal exposure cannot be controlled below applicable limits by ventilation, wear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section 2.

PROTECTIVE GLOVES

None required for normal application of aerosol products where minimal skin contact is expected. For long or repeated contact, wear chemical resistant gloves.

EYE PROTECTION

Wear safety spectacles with unperforated sideshields.

Section 9 - Precautions

DOL STORAGE CATEGORY

1A

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep away from heat, sparks, and open flame. Vapors will accumulate readily and may ignite explosively.

During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition.

Consult NFPA Code. Use approved Bonding and Grounding procedures.

Contents under pressure. Do not puncture, incinerate, or expose to temperature above 120F. Heat from sunlight, radiators, stoves, hot water, and other heat sources could cause container to burst. Do not take internally. Keep out of the reach of children.

OTHER PRECAUTIONS

Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

Continued on page 4

Section 10 - Other Regulatory Information

SARA 313 (40 CFR 372.65C) SUPPLIER NOTIFICATION

CAS No. CHEMICAL/COMPOUND % by WT % Element

No ingredients in this product are subject to SARA 313 (40 CFR 372.65C) Supplier Notification.

TSCA CERTIFICATION

All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

Material Safety Data Sheet

TF-FG-OIL
2000

MANUFACTURER'S NAME
THE SHERWIN-WILLIAMS COMPANY
Consumer Group - Industrial
Cleveland, OH 44115

EMERGENCY TELEPHONE NO.
(216) 566-2917

DATE OF PREPARATION
18-AUG-00

INFORMATION TELEPHONE NO.
(800) 251-2486

Section 1 - Product Identification

PRODUCT NUMBERS

23011 23013
23012 23014

HMIS CODES	
Health	2
Flammability	1
Reactivity	0

PRODUCT NAME
TRI-FLOW™ Synthetic Food Grade Oil
PRODUCT CLASS
Lubricant

Section 2 - Hazardous Ingredients

INGREDIENT / CAS No.	% by WT	ACGIH TLV	OSHA PEL	UNITS	V.P.

No ingredients in this product are hazardous as defined by the Department of Labor.

Section 3 - Physical Data

PRODUCT WEIGHT -- 7.00 lb./gal.
SPECIFIC GRAVITY -- 0.84
BOILING POINT -- N.A.
VOLATILE VOLUME -- 0 %
VOC (Theoretical) -- 0.00 lb.
EVAPORATION RATE -- Slower than Ether
VAPOR DENSITY -- Heavier than Air
MELTING POINT -- N.Ap.
SOLUBILITY IN WATER -- N.Av.
0 gm. (less Federally Exempt Solvents)

Section 4 - Fire and Explosion Hazard Data

FLASH POINT	LEL	UEL
>200 °F PMCC	N.Ap.	N.Ap.

FLAMMABILITY CLASSIFICATION
Not Applicable
EXTINGUISHING MEDIA
Carbon Dioxide, Dry Chemical, Foam
UNUSUAL FIRE AND EXPLOSION HAZARDS
Not Applicable
SPECIAL FIRE FIGHTING PROCEDURES
Not Applicable

Continued on page 2

Section 5 - Health Hazard Data

ROUTES OF EXPOSURE

Exposure may be by INHALATION and/or SKIN or EYE contact, depending on conditions of use. To minimize exposure, follow recommendations for proper use, ventilation, and personal protective equipment.

ACUTE Health Hazards

EFFECTS OF OVEREXPOSURE

Irritation of eyes, skin and upper respiratory system. In a confined area vapors in high concentration may cause headache, nausea or dizziness.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

Redness and itching or burning sensation may indicate eye or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

None generally recognized.

EMERGENCY AND FIRST AID PROCEDURES

If INHALED:	If affected, remove from exposure. Restore breathing. Keep warm and quiet.
If on SKIN:	Wash affected area thoroughly with soap and water. Remove contaminated clothing and launder before re-use.
If in EYES:	Flush eyes with large amounts of water for 15 minutes. Get medical attention.
If SWALLOWED:	Get medical attention.

CHRONIC Health Hazards

No ingredient in this product is an IARC, NTP or OSHA listed carcinogen.

Section 6 - Reactivity Data

STABILITY -- Stable

CONDITIONS TO AVOID

None known.

INCOMPATIBILITY

None known.

HAZARDOUS DECOMPOSITION PRODUCTS

By fire: Carbon Dioxide, Carbon Monoxide

HAZARDOUS POLYMERIZATION

Will not occur

Section 7 - Spill or Leak Procedures

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Ventilate and remove with inert absorbent.

WASTE DISPOSAL METHOD

Waste from this product is not hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261.

Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State, and Local regulations regarding pollution.

Section 8 - Protection Information

PRECAUTIONS TO BE TAKEN IN USE

Use only with adequate ventilation. Avoid breathing vapor and spray mist. Avoid contact with skin and eyes. Wash hands after using.

Continued on page 3

VENTILATION

Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

RESPIRATORY PROTECTION

If personal exposure cannot be controlled below applicable limits by ventilation, wear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section 2.

PROTECTIVE GLOVES

Wear gloves which are recommended by glove supplier for protection against materials in Section 2.

EYE PROTECTION

Wear safety spectacles with unperforated sideshields.

Section 9 - Precautions

DOL STORAGE CATEGORY

3B

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the reach of children.

Section 10 - Other Regulatory Information

SARA 313 (40 CFR 372.65C) SUPPLIER NOTIFICATION

CAS No.	CHEMICAL/COMPOUND	% by WT	% Element

No ingredients in this product are subject to SARA 313 (40 CFR 372.65C) Supplier Notification.

TSCA CERTIFICATION

All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

Material Safety Data Sheet

TF-FG-OIL-AER
2000

MANUFACTURER'S NAME
THE SHERWIN-WILLIAMS COMPANY
Consumer Group - Industrial
Cleveland, OH 44115

EMERGENCY TELEPHONE NO.
(216) 566-2917

DATE OF PREPARATION
23-AUG-00

INFORMATION TELEPHONE NO.
(800) 251-2486

Section 1 - Product Identification

PRODUCT NUMBER

23010

HMIS CODES	
Health	2
Flammability	4
Reactivity	0

PRODUCT NAME
TRI-FLOW™ Synthetic Oil With Teflon® (aerosol)
PRODUCT CLASS
Aerosol Lubricant

Section 2 - Hazardous Ingredients

INGREDIENT CAS No.	% by WT	ACGIH TLV	OSHA PEL	UNITS	V.P.
Propane 74-98-6	8	2500	1000	PPM	760.00
Heavy Aliphatic Naphtha. 68551-20-2	68	Not Established			0.50

Section 3 - Physical Data

PRODUCT WEIGHT	6.47 lb/gal	774 g/l
SPECIFIC GRAVITY	0.78	
BOILING POINT	<0 - 550 F	<-18 - 287 C
MELTING POINT	Not Available	
VOLATILE VOLUME	78 %	
EVAPORATION RATE	Faster than ether	
VAPOR DENSITY	Heavier than air	
SOLUBILITY IN WATER	N.A.	
VOLATILE ORGANIC COMPOUNDS	(VOC Theoretical)	
Volatile Weight 76.41 %	Less Federally Exempt Solvents	

Section 4 - Fire and Explosion Hazard Data

FLASH POINT	LEL	UEL
Propellant < 0 F	0.6	9.5

EXTINGUISHING MEDIA
Carbon Dioxide, Dry Chemical, Foam

Continued on page 2

UNUSUAL FIRE AND EXPLOSION HAZARDS

Isolate from heat, electrical equipment, sparks, and open flame. Closed containers may explode when exposed to extreme heat. Application to hot surfaces requires special precautions. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

SPECIAL FIRE FIGHTING PROCEDURES

Full protective equipment including self-contained breathing apparatus should be used. Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

Section 5 - Health Hazard Data

ROUTES OF EXPOSURE

Exposure may be by INHALATION and/or SKIN or EYE contact, depending on conditions of use. To minimize exposure, follow recommendations for proper use, ventilation, and personal protective equipment.

ACUTE Health Hazards

EFFECTS OF OVEREXPOSURE

Irritation of eyes, skin and respiratory system. May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists.

Redness and itching or burning sensation may indicate eye or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

None generally recognized.

EMERGENCY AND FIRST AID PROCEDURES

If INHALED:	If affected, remove from exposure. Restore breathing. Keep warm and quiet.
If on SKIN:	Wash affected area thoroughly with soap and water. Remove contaminated clothing and launder before re-use.
If in EYES:	Flush eyes with large amounts of water for 15 minutes. Get medical attention.
If SWALLOWED:	Never give anything by mouth to an unconscious person. DO NOT INDUCE VOMITING. Give conscious patient several glasses of water. Seek medical attention.

CHRONIC Health Hazards

No ingredient in this product is an IARC, NTP or OSHA listed carcinogen.

Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

Section 6 - Reactivity Data

STABILITY -- Stable

CONDITIONS TO AVOID

None known.

INCOMPATIBILITY

None known.

Continued on page 3

HAZARDOUS DECOMPOSITION PRODUCTS

By fire: Carbon Dioxide, Carbon Monoxide

HAZARDOUS POLYMERIZATION

Will not occur

Section 7 - Spill or Leak Procedures

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Ventilate and remove with inert absorbent.

WASTE DISPOSAL METHOD

Waste from this product may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261.

Waste must be tested for ignitability to determine the applicable EPA hazardous waste numbers.

Do not incinerate. Depressurize container. Dispose of in accordance with Federal, State, and Local regulations regarding pollution.

Section 8 - Protection Information

PRECAUTIONS TO BE TAKEN IN USE

Use only with adequate ventilation. Avoid breathing vapor and spray mist. Avoid contact with skin and eyes. Wash hands after using.

VENTILATION

Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section II is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

RESPIRATORY PROTECTION

If personal exposure cannot be controlled below applicable limits by ventilation, wear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section II.

PROTECTIVE GLOVES

None required for normal application of aerosol products where minimal skin contact is expected. For long or repeated contact, wear chemical resistant gloves.

EYE PROTECTION

Wear safety spectacles with unperforated sideshields.

Section 9 - Precautions

DOL STORAGE CATEGORY

1A

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep away from heat, sparks, and open flame. Vapors will accumulate readily and may ignite explosively.

During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition.

Consult NFPA Code. Use approved Bonding and Grounding procedures.

Contents under pressure. Do not puncture, incinerate, or expose to temperature above 120F. Heat from sunlight, radiators, stoves, hot water, and other heat sources could cause container to burst. Do not take internally. Keep out of the reach of children.

OTHER PRECAUTIONS

Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

Continued on page 4

Section 10 - Other Regulatory Information

SARA 313 (40 CFR 372.65C) SUPPLIER NOTIFICATION

CAS No.	CHEMICAL/COMPOUND	% by WT	% Element

No ingredients in this product are subject to SARA 313 (40 CFR 372.65C) Supplier Notification.

TSCA CERTIFICATION

All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

Material Safety Data Sheet

TF-LUBE
2000

MANUFACTURER'S NAME
THE SHERWIN-WILLIAMS COMPANY
Consumer Group - Industrial
Cleveland, OH 44115

EMERGENCY TELEPHONE NO.
(216) 566-2917

DATE OF PREPARATION
23-AUG-00

INFORMATION TELEPHONE NO.
(800) 251-2486

Section 1 - Product Identification

PRODUCT NUMBER

22025 26020 29200

HMIS CODES

Health	2
Flammability	2
Reactivity	0

PRODUCT NAME
TRI-FLOW™ Industrial Lubricant with Teflon® (Non-Aerosol)
PRODUCT CLASS
Lubricant

Section 2 - Hazardous Ingredients

INGREDIENT CAS No.	% by WT	ACGIH TLV	OSHA PEL	UNITS	V.P.
Heavy Aliphatic Solvent. 64742-96-7	29	Not Established			1.00
Naphthenic Oil. 64742-63-8	23	5		MG/M3 as Mist	0.00
Heavy Naphthenic Petroleum Oil. 64742-52-5	2	5	5	MG/M3 as Mist	0.00
Highly refined Naphthenic Oil. 64742-53-6	4	5	5	MG/M3 as Mist	0.00
Heavy Mineral Oil. 64741-96-4	23	5	5	MG/M3 as Mist	0.10
Distillates, petroleum, solvent-degr. 64742-65-0	4	5	5	MG/M3 as Mist	0.00
2-Methoxymethylethoxypropanol 34590-94-8	2	100 STEL 150	100 150	PPM (Skin) PPM (Skin)	0.40
Amyl Acetate. 628-63-7	3	100	100	PPM	4.00
Barium (as Ba; total)	0.9				

Continued on page 2

Section 3 - Physical Data

PRODUCT WEIGHT	7.30 lb/gal	875 g/l
SPECIFIC GRAVITY	0.88	
BOILING POINT	288 - 701 F	142 - 371 C
MELTING POINT	Not Available	
VOLATILE VOLUME	38 %	
EVAPORATION RATE	Slower than ether	
VAPOR DENSITY	Heavier than air	
SOLUBILITY IN WATER	N.A.	

VOLATILE ORGANIC COMPOUNDS (VOC Theoretical)

2.57 lb/gal	308 g/l	Less Federally Exempt Solvents
2.57 lb/gal	308 g/l	Emitted VOC

Section 4 - Fire and Explosion Hazard Data

FLASH POINT	LEL	UEL
146 F TCC	0.6	7.5

FLAMMABILITY CLASSIFICATION

Combustible, Flash above 99 and below 200 F

EXTINGUISHING MEDIA

Carbon Dioxide, Dry Chemical, Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS

Keep containers tightly closed. Isolate from heat, electrical equipment, sparks, and open flame. Closed containers may explode when exposed to extreme heat. Application to hot surfaces requires special precautions. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

SPECIAL FIRE FIGHTING PROCEDURES

Full protective equipment including self-contained breathing apparatus should be used. Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

Section 5 - Health Hazard Data

ROUTES OF EXPOSURE

Exposure may be by INHALATION and/or SKIN or EYE contact, depending on conditions of use. To minimize exposure, follow recommendations for proper use, ventilation, and personal protective equipment.

ACUTE Health Hazards

EFFECTS OF OVEREXPOSURE

Irritation of eyes, skin and respiratory system. May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists.

Redness and itching or burning sensation may indicate eye or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

None generally recognized.

Continued on page 3

EMERGENCY AND FIRST AID PROCEDURES

If INHALED: If affected, remove from exposure. Restore breathing. Keep warm and quiet.

If on SKIN: Wash affected area thoroughly with soap and water. Remove contaminated clothing and launder before re-use.

If in EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention.

If SWALLOWED: Get medical attention.

CHRONIC Health Hazards

No ingredient in this product is an IARC, NTP or OSHA listed carcinogen.

Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

Section 6 - Reactivity Data

STABILITY -- Stable

CONDITIONS TO AVOID

None known.

INCOMPATIBILITY

None known.

HAZARDOUS DECOMPOSITION PRODUCTS

By fire: Carbon Dioxide, Carbon Monoxide, Oxides of Metals in Section II

HAZARDOUS POLYMERIZATION

Will not occur

Section 7 - Spill or Leak Procedures

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Ventilate and remove with inert absorbent.

WASTE DISPOSAL METHOD

Waste from this product may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261.

Waste must be tested for extractability to determine the applicable EPA hazardous waste numbers.

Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State, and Local regulations regarding pollution.

Section 8 - Protection Information

PRECAUTIONS TO BE TAKEN IN USE

Use only with adequate ventilation. Avoid breathing vapor and spray mist. Avoid contact with skin and eyes. Wash hands after using.

VENTILATION

Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section II is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

RESPIRATORY PROTECTION

If personal exposure cannot be controlled below applicable limits by ventilation, wear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section II.

PROTECTIVE GLOVES

Wear gloves which are recommended by glove supplier for protection against materials in Section II.

Continued on page 4

EYE PROTECTION

Wear safety spectacles with unperforated sideshields.

Section 9 - Precautions

DOL STORAGE CATEGORY

3A

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Contents are COMBUSTIBLE. Keep away from heat and open flame.

Consult NFPA Code. Use approved Bonding and Grounding procedures.

Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the reach of children.

OTHER PRECAUTIONS

Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

Section 10 - Other Regulatory Information

SARA 313 (40 CFR 372.65C) SUPPLIER NOTIFICATION

CAS No.	CHEMICAL/COMPOUND	% by WT	% Element
	Barium Compound.	3	0.9

TSCA CERTIFICATION

All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

Material Safety Data Sheet

TF-LUBE-AER
2000

MANUFACTURER'S NAME
THE SHERWIN-WILLIAMS COMPANY
Consumer Group - Industrial
Cleveland, OH 44115

EMERGENCY TELEPHONE NO.
(216) 566-2917

DATE OF PREPARATION
23-AUG-00

INFORMATION TELEPHONE NO.
(216) 566-2902

Section 1 - Product Identification

PRODUCT NUMBER

20025 20027

HMIS CODES

Health	2
Flammability	4
Reactivity	0

PRODUCT NAME
TRI-FLOW™ Industrial Lubricant With Teflon® (Aerosol)
PRODUCT CLASS
Aerosol Lubricant

Section 2 - Hazardous Ingredients

INGREDIENT CAS No.	% by WT	ACGIH TLV	OSHA PEL	UNITS	V.P.
Propane 74-98-6	10	2500	1000	PPM	760.00
Butane 106-97-8	10	800	800	PPM	760.00
Heavy Aliphatic Solvent. 64742-96-7	24	Not Established			1.00
Naphthenic Oil. 64742-63-8	18	5		Mg/M3 as Mist	0.00
Heavy Naphthenic Petroleum Oil. 64742-52-5	2	5	5	Mg/M3 as Mist	0.00
Highly refined Naphthenic Oil. 64742-53-6	3	5	5	Mg/M3 as Mist	0.00
Heavy Mineral Oil. 64741-96-4	19	5	5	Mg/M3 as Mist	0.10
Distillates, petroleum, solvent-degr. 64742-65-0	3	5	5	Mg/M3 as Mist	0.00
2-Methoxymethylethoxypropanol 34590-94-8	2	100 STEL 150	100 150	PPM (Skin) PPM (Skin)	0.40
Amyl Acetate. 628-63-7	2	100	100	PPM	4.00
Barium (as Ba; total)	0.7				

Continued on page 2

Section 3 - Physical Data

PRODUCT WEIGHT	6.46 lb/gal	774 g/l
SPECIFIC GRAVITY	0.78	
BOILING POINT	<0 - 701 F	<-18 - 371 C
MELTING POINT	Not Available	
VOLATILE VOLUME	56 %	
EVAPORATION RATE	Faster than ether	
VAPOR DENSITY	Heavier than air	
SOLUBILITY IN WATER	N.A.	
VOLATILE ORGANIC COMPOUNDS	(VOC Theoretical)	
Volatile Weight 48.20 %	Less Federally Exempt Solvents	

Section 4 - Fire and Explosion Hazard Data

FLASH POINT	LEL	UEL
40 F TCC	0.6	9.5

EXTINGUISHING MEDIA

Carbon Dioxide, Dry Chemical, Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS

Isolate from heat, electrical equipment, sparks, and open flame. Closed containers may explode when exposed to extreme heat. Application to hot surfaces requires special precautions. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

SPECIAL FIRE FIGHTING PROCEDURES

Full protective equipment including self-contained breathing apparatus should be used. Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

Section 5 - Health Hazard Data

ROUTES OF EXPOSURE

Exposure may be by INHALATION and/or SKIN or EYE contact, depending on conditions of use. To minimize exposure, follow recommendations for proper use, ventilation, and personal protective equipment.

ACUTE Health Hazards

EFFECTS OF OVEREXPOSURE

Irritation of eyes, skin and respiratory system. May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists.

Redness and itching or burning sensation may indicate eye or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

None generally recognized.

Continued on page 3

EMERGENCY AND FIRST AID PROCEDURES

If INHALED: If affected, remove from exposure. Restore breathing. Keep warm and quiet.

If on SKIN: Wash affected area thoroughly with soap and water. Remove contaminated clothing and launder before re-use.

If in EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention.

If SWALLOWED: Get medical attention.

CHRONIC Health Hazards

No ingredient in this product is an IARC, NTP or OSHA listed carcinogen.

Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

Section 6 - Reactivity Data

STABILITY -- Stable

CONDITIONS TO AVOID

None known.

INCOMPATIBILITY

None known.

HAZARDOUS DECOMPOSITION PRODUCTS

By fire: Carbon Dioxide, Carbon Monoxide, Oxides of Metals in Section 2

HAZARDOUS POLYMERIZATION

Will not occur

Section 7 - Spill or Leak Procedures

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Ventilate and remove with inert absorbent.

WASTE DISPOSAL METHOD

Waste from this product may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261.

Waste must be tested for ignitability and extractability to determine the applicable EPA hazardous waste numbers.

Do not incinerate. Depressurize container. Dispose of in accordance with Federal, State, and Local regulations regarding pollution.

Section 8 - Protection Information

PRECAUTIONS TO BE TAKEN IN USE

Use only with adequate ventilation. Avoid breathing vapor and spray mist. Avoid contact with skin and eyes. Wash hands after using.

VENTILATION

Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

RESPIRATORY PROTECTION

If personal exposure cannot be controlled below applicable limits by ventilation, wear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section 2.

PROTECTIVE GLOVES

None required for normal application of aerosol products where minimal skin contact is expected. For long or repeated contact, wear chemical resistant gloves.

Continued on page 4

EYE PROTECTION

Wear safety spectacles with unperforated sideshields.

Section 9 - Precautions

DOL STORAGE CATEGORY

1A

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep away from heat, sparks, and open flame.

During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition.

Consult NFPA Code. Use approved Bonding and Grounding procedures.

Contents under pressure. Do not puncture, incinerate, or expose to temperature above 120F. Heat from sunlight, radiators, stoves, hot water, and other heat sources could cause container to burst. Do not take internally. Keep out of the reach of children.

OTHER PRECAUTIONS

Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

Section 10 - Other Regulatory Information

SARA 313 (40 CFR 372.65C) SUPPLIER NOTIFICATION

CAS No.	CHEMICAL/COMPOUND	% by WT	% Element
	Barium Compound.	3	0.7

TSCA CERTIFICATION

All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

MATERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: **TURCO 5351**

Proper Shipping Name: TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S. (CONTAINS 54% w/w DICHLOROMETHANE AND 17% w/w PHENOL)

Product Code(s): 377809 (20 litres), 377813 (200 litres), 382778 (4x5 litres)

Use: Industrial grade paint stripper.

Supplier: HENKEL AUSTRALIA PTY. LIMITED ABN 82 001 302 996
ADHESIVE TECHNOLOGIES
135-141 Canterbury Road, Kilsyth, Victoria,3137 Tel: (03) 9724 6444
24 HOUR EMERGENCY CONTACT NUMBER Tel: 1800 032 379

SECTION 2. HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE:
Hazardous according to the criteria of ASCC. This material has been classified as Toxic (T), Corrosive (C) and Harmful (Xn).

Risk phrase(s):
R20 Harmful by inhalation.
R23/24/25 Toxic by inhalation, in contact with skin and if swallowed.
R34 Causes burns.
R41 Risk of serious damage to eyes.
R42/43 May cause sensitisation by inhalation and skin contact.
R45(2) May cause cancer (Category 2, Carcinogen)
R46(2) May cause heritable genetic damage (Category 2 mutagen).
R48/20/21/22 Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
R60(2) May impair fertility (Toxic to Reproduction, Category 2).
R61(2) May cause harm to the unborn child (Toxic to Reproduction, Category 2).
R68 Possible risk of irreversible effects (Mutagenic Category 3).

Safety phrase(s):
S23 Do not breathe vapour.
S24/25 Avoid contact with skin and eyes.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S27 Take off immediately all contaminated clothing.
S28 After contact with skin, wash immediately with plenty of soap and water, then methylated spirit if available. Seek medical advice.
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label whenever possible.)

DANGEROUS GOODS INFORMATION:
Classified as Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code).

Class: 6.1 -Toxic
Subsidiary Risk: 8 - Corrosive

SUSDP POISON SCHEDULE: 6

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS:

CHEMICAL ENTITY	CAS NO.	PROPORTION
Dichloromethane	[75-09-2]	54% w/w
Phenol	[108-95-2]	17% w/w
Sodium dichromate,anh.	[10588-01-9]	<1% w/w
Petroleum sulphonate		low, less than 5% w/w
Other ingredients determined not to be hazardous		to 100% w/w

SECTION 4. FIRST AID MEASURES

Ingestion: If swallowed, **do not** induce vomiting. Seek immediate medical attention or contact a Poisons Information Centre (Phone 13 11 26). Avoid giving milk or oils.

Skin: If skin contact occurs, immediately remove any contaminated clothing and wash affected areas with soap and water, then methylated spirit or polyethylene glycol 300 or 400 if available. Seek medical attention or contact a Poisons Information Centre (Phone 13 11 26).

Eyes: Hold eyelids apart and flush the eye with running water for at least 15 minutes. Seek medical attention or contact a Poisons Information Centre (Phone 13 11 26).

Inhalation: If inhaled, remove from contaminated area. Apply artificial respiration if not breathing. For all but the most minor symptoms, arrange for patient to be seen by a doctor as soon as possible.

Advice to doctor: Treat symptomatically. Symptoms of lung oedema may not become apparent until several hours after exposure[1].

First Aid facilities: Eye wash and safety shower

SECTION 5. FIRE FIGHTING MEASURES

Suitable extinguishing media: Water fog, foam, carbon dioxide, dry chemical.

Hazards from combustion products: Under fire conditions, it will produce highly toxic fumes of phosgene and acrid smoke.

Precautions for fire fighters and special protective equipment: If product is involved in a fire, then fire fighters must be warned of hazardous nature of material. No flash point in conventional closed tester, but will form explosive air mixtures in an oxygen enriched atmosphere or if exposed to strong heat or flame. Wear full protective clothing and self-contained breathing apparatus.

Hazchem Code: 2XE

SECTION 6. ACCIDENTAL RELEASE MEASURES

Wear impervious gloves, chemical goggles and waterproof boots. Contain and collect spillage with absorbent materials (e.g. sand, earth, vermiculite). Transfer to sealable containers suitable for storing spilled material. Flush areas in contact with spilled material with adequate water to render the area

safe for human contact. Note: Residues are not water soluble. Wash down waters may still contain residues which require treatment through local effluent treatment plant. Do not contaminate watercourse. Dispose of residues in chemical waste disposal area in accordance with relevant State and Federal requirements.

SECTION 7. HANDLING AND STORAGE

Safe Handling: Observe recommendations made under SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION. Always handle with impervious gloves and chemical splash goggles. Use in a well ventilated area. This product contains dichloromethane which is a highly volatile solvent. Precautions should be taken to minimise vapour concentrations in the work environment. Workers should not work alone when dichloromethane is used in open tanks for paint stripping.[2]

Storage: Store indoors in a cool, dry, well ventilated area. Keep containers sealed when not in use. Containers may explode if heated beyond 60°C. Protect from physical damage. Keep away from incompatible materials. Store according to relevant State Dangerous Goods Storage Requirements.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

National exposure standards: TWA : 1 ppm (4 mg/m^3) as phenol
50 ppm (174 mg/m^3) as dichloromethane

Engineering controls: A local mechanical exhaust system is required where vapour or mist is being generated.

Personal protective equipment: Use good industrial hygiene. Avoid contact with skin and eyes. Wear suitable protective clothing, safety footwear, silver shield/4H gloves and chemical splash goggles or full face shield. Use in a well ventilated area. If inhalation risk exists, wear an organic vapour respirator or air supplied mask complying with the requirements of AS 1715 and AS 1716.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical data:

Appearance:	Viscous yellow two phase liquid.
Specific gravity	1.17-1.18 @ 20°C
Odour:	Phenolic
Solubility:	Partially soluble in water
Boiling point:	40°C approximately

SECTION 10. STABILITY AND REACTIVITY

Chemical stability: Stable under normal conditions of temperature and pressure.
Conditions to avoid: Avoid strong heat sources and open flames.
Incompatible materials: Keep away from alkalies, powdered metals and strong oxidising agents.
Hazardous decomposition products: When heated to decomposition, it will emit toxic fumes of phosgene and acrid smoke.
Hazardous reactions: Will not polymerise.

SECTION 11. TOXICOLOGICAL INFORMATION

HEALTH EFFECTS:

Acute:

Ingestion: Toxic if swallowed. This product can cause serious burns to the mouth, throat and digestive tract. Systemic effects by ingestion may include nausea, vomiting, stomach pain, blood disorders, convulsions, a change in cardiac rate, coma and damage to the liver, kidneys and pancreas.

Skin: Toxic and corrosive to skin. Absorption of this product through the skin may cause serious effects to the central nervous system, liver, kidneys and spleen. May cause sensitisation by skin contact.

Eyes: Liquid contact with the eyes can cause severe burns which may result in permanent injury or even blindness.

Inhalation: Inhalation of vapour or mist may cause respiratory irritation and burns to the mucous membranes. Exposure to high concentrations of vapour may cause irregular heartbeat, headache, lung congestion and narcosis. May cause respiratory sensitisation.

Chronic: This material can cause corrosive damage to skin tissue. Long term inhalation exposure may lead to blood disorders, kidney and liver damage, chest pain and harmful effects on the central nervous system. Dichloromethane is regarded as a Category 3 Carcinogen. This product contains less than one percent sodium dichromate, which is classified as a Category 2 Carcinogen, Category 2 Mutagen and is Toxic to reproduction (Category 2)

Toxicity information:

Acute Oral LD_{50} (rat)	:	2136 mg/kg as dichloromethane[4]
Inhal TCL_o (human)	:	500 ppm as dichloromethane[4]
Acute Oral LDLo (human)	:	140 mg/kg as phenol[4]

SECTION 12. ECOLOGICAL INFORMATION

Do not contaminate waterways and soil. This product will cause harmful effects to aquatic life. Dichloromethane is not readily biodegradable.

Fish toxicity: 96 h LC_{50} (P.promelas) : 310 mg/l as dichloromethane[5]
96 h LC_{50} (Oncorhynchus mykiss) : 5.4 mg/l as phenol[6]

Daphnia toxicity: 48 h EC_{50} (Daphnia magna) : 1682 mg/l as dichloromethane[5]
48h EC_{50} (Daphnia magna) : 10 mg/l as phenol[6]

SECTION 13. DISPOSAL CONSIDERATIONS

Dispose of residues in chemical waste disposal area in accordance with relevant State and Federal requirements. Empty containers should be left open to allow residual solvents to evaporate and then triple rinsed with fresh water prior to disposal to drum reconditioner or approved landfill site.

SECTION 14. TRANSPORT INFORMATION

UN Number:	2927
Proper Shipping Name:	TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S. (CONTAINS 54% w/w DICHLOROMETHANE AND 17% w/w PHENOL)
Class:	6.1, Toxic
Subsidiary Risk:	8, Corrosive
Packing Group:	II
Hazchem code:	2XE
Emergency Information:	Dangerous Goods-Initial Emergency Response Guide (SAA/SNZ HB 76), Guide 36 or EPG 6J4.

SECTION 15. REGULATORY INFORMATION

SUSDP POISON SCHEDULE: 6

SECTION 16. OTHER INFORMATION

Abbreviations/acronyms:
ASCC - Australian Safety and Compensation Council
SUSDP - Standard for the Uniform Scheduling of Drugs and Poisons
TWA - Time-weighted average

References:
1. NIOSH, International Chemical Safety Cards, Phenol, October 2001
2. NICNAS Alert No.3. Caution required for Methylene Chloride in Paint Stripping, Existing Chemicals, July 2004
3. Quick Selection Guide to Chemical Protective Clothing, Fifth Edition, 2007: Forsberg and Mansdorf, Wiley-Interscience3.
4. Sax and Lewis, Dangerous Properties of Industrial Materials, 7th Edition (1989).
5. Ecological data: Merck MSDS for Dichloromethane, Aug. 2001
6. Ecological data: Merck MSDS for Phenol, Jan. 2003

DISCLAIMER:

The percentage weight (% w/w) of ingredients is not to be taken as a specification guaranteed by Henkel Australia Pty. Limited, but only as an approximate guide to the content of hazardous ingredients in the material. The information contained herein does not constitute a guarantee by Henkel Australia Pty. Limited concerning the properties of the material.

The information contained in this Material Safety Data Sheet is offered in good faith and has been developed from what is believed to be accurate and reliable sources. The information is offered without warranty, representation, inducement or licence and Henkel Australia Pty. Limited assumes no legal responsibility for reliance upon same. Henkel Australia Pty. Limited disclaims any liability for loss, injury or damage incurred in connection with the use of the material or its associated Material Safety Data Sheet.

This information is not to be construed as a representation that the material is suitable for any particular purpose or use except those conditions and warranties implied by either Commonwealth or State statutes. Customers are encouraged to make their own enquiries as to the material's characteristics and, where appropriate, to conduct their own tests in the specific context of the material's intended use.

Material Safety Data Sheet

Revision Number: 003.4

Issue date: 10/17/2012

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: TURCO 5884
Product use: Cleaner

IDH number: 597177

Region: Canada

Company address:
Henkel Canada Corporation
2515 Meadowpine Boulevard
Mississauga, Ontario L5N 6C3

Contact information:
Telephone: 905.814.6511
MEDICAL EMERGENCY Phone: Poison Control Center
1-877-671-4608 (toll free) or 1-303-592-1711
TRANSPORT EMERGENCY Phone: CHEMTREC
1-800-424-9300 (toll free) or 1-703-527-3887
Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Physical state: Liquid
Color: Amber
Odor: Solvent

WHMIS hazard class: B.3, D.1.B, D.2.A, D.2.B

WARNING: CAUSES EYE, SKIN AND RESPIRATORY TRACT IRRITATION.
MAY CAUSE ALLERGIC SKIN REACTION.

Relevant routes of exposure: Skin, Inhalation, Eyes

Potential Health Effects

Inhalation: This product is irritating to the respiratory system. Inhalation of high vapor concentrations may produce respiratory irritation, and may cause central nervous system (CNS) depression.

Skin contact: This product is irritating to the skin. Prolonged contact with this product may cause allergic skin sensitization reactions. A component in this product may be absorbed through the skin in harmful amounts.

Eye contact: Vapors irritate the eyes. Contact with liquid or mist will irritate the eyes.

Ingestion: Ingestion of this product may cause nausea, vomiting and diarrhea. Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury.

Existing conditions aggravated by exposure: Eye, skin and respiratory disorders.

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous components	CAS NUMBER	%
Solvent naphtha (petroleum), heavy arom.	64742-94-5	30 - 60
Tall oil acids, amine soap	Proprietary	5 - 10
Triethanolamine	102-71-6	5 - 10
2-Butoxyethanol	111-76-2	1 - 5
2-Methylpentane-2,4-diol	107-41-5	1 - 5
Naphthalene	91-20-3	1 - 5
Alkylphenol ethoxylate	Proprietary	1 - 5
Diethanolamine	111-42-2	1 - 5
Benzotriazole	95-14-7	1 - 5

4. FIRST AID MEASURES

Inhalation:	If symptoms are experienced, remove source of contamination or move victim to fresh air. If not breathing, give artificial respiration. Get medical attention.
Skin contact:	For skin contact flush with large amounts of water. Obtain medical attention if irritation persists.
Eye contact:	In case of contact with the eyes, rinse immediately with plenty of water for 15 minutes, and seek immediate medical attention.
Ingestion:	Get immediate medical attention. DO NOT induce vomiting unless directed to do so by medical personnel. Give one to two glasses of water or milk. Never give anything by mouth to a victim who is unconscious or is having convulsions.
Notes to physician:	This material, if aspirated into the lungs, may cause chemical pneumonitis; treat the affected person appropriately.

5. FIRE FIGHTING MEASURES

Flash point:	62.8 °C (145.04 °F) calculated
Autoignition temperature:	Not determined
Flammable/Explosive limits - lower:	Not determined
Flammable/Explosive limits - upper:	Not determined
Extinguishing media:	Use media appropriate for surrounding material.
Special firefighting procedures:	Wear full protective clothing. Wear self-contained breathing apparatus.
Unusual fire or explosion hazards:	Do not cut, weld, solder, drill, grind, or expose containers to heat, flame, sparks, or other sources of ignition.
Hazardous combustion products:	Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.
Sensitivity to Mechanical Impact:	Not available.
Sensitivity to static discharge:	Not available.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions:	Prevent further leakage or spillage if safe to do so. Contain spill.
Clean-up methods:	Collect spilled material with an inert absorbent such as sand or vermiculite. Place in properly labeled closed container. Flush area with water to remove trace residue. Dispose of according to Federal, State and local governmental regulations.

7. HANDLING AND STORAGE

Handling:	Avoid contact with eyes, skin and clothing. Avoid breathing vapors or mists of this product. Keep container closed. Provide adequate ventilation. Wash thoroughly after handling. Keep away from heat, spark and flame. Do not cut or weld on empty drums. Sufficient vapors from residues may be present to cause explosion and serious injury and/or death.

Storage: For safe storage, store between 40 °F (4.4 °C) and 100 °F (37.8 °C) Store in a cool, dry, well-ventilated area. Store away from strong oxidizers. Thaw and mix thoroughly if frozen.

For information on product shelf life contact Henkel Canada Customer Service at 800-263-5043.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous components	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Solvent naphtha (petroleum), heavy arom.	None	None	None	None
Tall oil acids, amine soap	None	None	None	None
Triethanolamine	5 mg/m3 TWA	None	None	None
2-Butoxyethanol	20 ppm TWA	(SKIN) 50 ppm (240 mg/m3) TWA	None	None
2-Methylpentane-2,4-diol	25 ppm Ceiling	None	None	None
Naphthalene	15 ppm STEL (SKIN) 10 ppm TWA	10 ppm (50 mg/m3) TWA	None	None
Alkylphenol ethoxylate	None	None	None	None
Diethanolamine	1 mg/m3 TWA Inhalable fraction and vapor. (SKIN) Inhalable fraction and vapor.	None	None	None
Benzotriazole	None	None	None	None

Engineering controls: Provide local and general exhaust ventilation to effectively remove and prevent buildup of any vapors or mists generated from the handling of this product.

Respiratory protection: If ventilation is not sufficient to effectively prevent buildup of aerosols, mists or vapors, appropriate NIOSH/MSHA respiratory protection must be provided.

Eye/face protection: Wear chemical goggles; face shield (if splashing is possible).

Skin protection: Chemical resistant, impermeable gloves. Use of impervious apron and boots are recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid
Color: Amber
Odor: Solvent
Odor threshold: Not available.
pH: 8.3 - 9.3
Vapor pressure: Not determined
Boiling point/range: > 100 °C (> 212°F)
Melting point/ range: Not determined
Specific gravity: 0.96 - 0.98 at 23.9 °C (75.02 °F)
Vapor density: Not determined
Flash point: 62.8 °C (145.04 °F) calculated
Flammable/Explosive limits - lower: Not determined
Flammable/Explosive limits - upper: Not determined
Autoignition temperature: Not determined
Evaporation rate: Not determined
Solubility in water: Disperses in water as emulsion
Partition coefficient (n-octanol/water): Not determined
VOC content: 405 g/l

10. STABILITY AND REACTIVITY

Stability: Stable at normal conditions.

Hazardous reactions: Will not occur.

Hazardous decomposition products: Upon decomposition, this product may yield gaseous nitrogen oxides, carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

Incompatible materials: This product may react with strong acids or oxidizing agents. Nitrites may react with organic amines to form nitrosamines which can cause cancer.

Conditions to avoid: Avoid excessive heat and ignition sources.

11. TOXICOLOGICAL INFORMATION

Toxicologically synergistic products: Not available.

Refer to the following for Irritancy of Product, Sensitization to Product, Carcinogenicity, Reproductive Toxicity, Teratogenicity, and Mutagenicity.

Hazardous components	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)	ACGIH Carcinogen
Solvent naphtha (petroleum), heavy arom.	No	No	No	No
Tall oil acids, amine soap	No	No	No	No
Triethanolamine	No	No	No	No
2-Butoxyethanol	No	No	No	Group A3
2-Methylpentane-2,4-diol	No	No	No	No
Naphthalene	Reasonably Anticipated to be a Human Carcinogen.	Group 2B	No	Group A4
Alkylphenol ethoxylate	No	No	No	No
Diethanolamine	No	Group 2B	No	Group A3
Benzotriazole	No	No	No	No

Hazardous components	LD50s and LC50s	Health Effects/Target Organs
Solvent naphtha (petroleum), heavy arom.	None	Irritant
Tall oil acids, amine soap	None	Allergen, Irritant
Triethanolamine	Oral LD50 (RAT) = 8.0 g/kg Dermal LD50 (rabbit) > 20,000 mg/kg	Irritant, Allergen
2-Butoxyethanol	Oral LD50 (rabbit) = 0.32 g/kg Oral LD50 (RAT) = 560 mg/kg Oral LD50 (RAT) = 1.48 g/kg Dermal LD50 (rabbit) = 400 mg/kg Inhalation LC50 (RAT, 4 h) = 450 mg/l Inhalation LC50 (RAT, 4 h) = 486 mg/l	Blood, Central nervous system, Irritant, Kidney, Liver
2-Methylpentane-2,4-diol	Oral LD50 (RAT) = 4.79 g/kg	Irritant, Central nervous system
Naphthalene	Oral LD50 (RAT) = 2.6 g/kg Oral LD50 (RAT) = 2,200 mg/kg Oral LD50 (RAT) = 2,400 mg/kg Oral LD50 (RAT) = 490 mg/kg Dermal LD50 (RAT) > 20 g/kg Dermal LD50 (rabbit) > 2.0 g/kg	Blood, Central nervous system, Eyes, Irritant
Alkylphenol ethoxylate	None	Irritant
Diethanolamine	Oral LD50 (RAT) = 710 mg/kg Oral LD50 (RAT) = 1.82 g/kg	Allergen, Blood, Brain, Central nervous system, Corrosive, Heart, Irritant, Kidney, Liver, Respiratory, Spleen
Benzotriazole	Oral LD50 (RAT) = 600 mg/kg	Irritant, Central nervous system

12. ECOLOGICAL INFORMATION

Ecological information: Not available.

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Follow all local, state, federal and provincial regulations for disposal.

14. TRANSPORT INFORMATION

Canada Transportation of Dangerous Goods - Ground

Proper shipping name:	Not regulated
Hazard class or division:	None
Identification number:	None
Packing group:	None

International Air Transportation (ICAO/IATA)

Proper shipping name:	Environmentally hazardous substance, liquid, n.o.s. (Petroleum distillates)
Hazard class or division:	9
Identification number:	UN 3082
Packing group:	III

Water Transportation (IMO/IMDG)

Proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Petroleum distillates)
Hazard class or division:	9
Identification number:	UN 3082
Packing group:	III
Marine pollutant:	Petroleum distillates
Exceptions:	Classified per IMDG Amendment 34; Effective Jan 1, 2010.

15. REGULATORY INFORMATION

Canada Regulatory Information

CEPA DSL/NDSL Status: All components are listed on or are exempt from listing on the Canadian Domestic Substances List.

United States Regulatory Information

TSCA 8 (b) Inventory Status: All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.

16. OTHER INFORMATION

This material safety data sheet contains changes from the previous version in sections: This Material Safety Data Sheet contains changes from the previous version in Section(s): 14

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulation (CPR), and the MSDS contains all the information required by the CPR.

Prepared by: John DiCerbo, Sr. Regulatory Affairs Specialist

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Newell Rubbermaid Brands That Matter | Office Products Group

MATERIAL SAFETY DATA SHEET

MSDS # 60052

Section One: Identification

Sanford, L.P.
2707 Butterfield Road
Oak Brook, IL 60523 USA
800-323-0749 or 630-481-2000

EMERGENCY MEDICAL NUMBER:
888-786-0972

Product Name: Uni-Ball Deluxe Micro and Fine Point Pen

Colors: Black, Red, Blue

Section Two: Hazard Identification

This product is considered safe under normal use conditions.

Section Three: Composition

Water, ethylene glycol (107-21-1), propylene glycol (57-55-6), coloring agents, resins, additives

Section Four: First Aid Measures

Inhalation: This product is considered safe under normal use conditions.

Skin Contact: This product is considered safe under normal use conditions.

Eye Contact: This product is considered safe under normal use conditions.

Ingestion: This product is considered safe under normal use conditions.

Section Five: Fire Fighting Measures

Flash Point: 231.8°F $_{\text{ethylene glycol}}$

Flammability Limits (% by volume): Lower: Not applicable Upper: Not applicable

Extinguishing Media: As appropriate for surrounding area.

Special Fire Fighting Measures: None

Unusual Fire and Explosion Hazards: None

Section Six: Accidental Release Measures

In Case of Spill or Accidental Release: Wipe up with absorbent material and dispose of in accordance with federal, state and local regulations.

Section Seven: Handling and Storage

Handling: Do not shake pen.

Storage: Keep cap on pen when not in use.

Section Eight: Exposure Controls and Personal Protection

Eye Protection: None under normal use conditions.

Clothing: None under normal use conditions.

Respirator: None under normal use conditions.

Ventilation: None under normal use conditions.

Section Nine: Physical and Chemical Properties

For ink unless otherwise specified:

Boiling Point:	Approximately 100C
Solubility in Water:	Soluble
Evaporation Rate:	Not determined
Appearance/Odor:	Colored liquid; no odor

Section Ten: Stability and Reactivity

Stability:	Stable
Conditions to Avoid:	None known
Chemical Incompatibility:	None known
Hazardous Decomposition:	None known
Hazardous Polymerization:	Will not occur.

Section Eleven: Toxicological Information

See Section Two: Hazard Identification for any hazards

Section Twelve: Ecological Information

Not available

Section Thirteen: Disposal Considerations

Dispose in accordance with Federal, State, and Local Regulations.

Section Fourteen: Transport Information

DOT:	Not regulated
IATA:	Not regulated
IMO:	Not regulated

Section Fifteen: Regulatory Information

TSCA: The product listed on this Material Safety Data Sheet is not listed on the Toxic Substances Control Act Inventory. All ingredients used to manufacture this product are listed on the TSCA Inventory

Section Sixteen: Other Information

HMIS Code	
Health	N/A
Flammability	N/A
Reactivity	N/A
Personal Protection	N/A

0=Minimal / 4 = Severe

NewellRubbermaid, Inc (Sanford L.P) has been advised by Counsel that the OSHA Hazard Communication Standard and the Health Canada Workplace Hazardous Materials Information Standard do not apply to the product described in this Material Safety Data Sheet. The reasons for the exemptions are contained in 29 CFR 1910.1200(b)(6)(ix) as amended Sept 14, 2009 per the Code of Federal Regulations and also Canadian Hazardous Products Act part 12 section (f) as amended June 1, 2009. The information contained in this MSDS is forwarded to you for your information, but is not meant to imply that the product is covered by nor is this MSDS meant to comply with all requirements of the hazard communication standards.

Newell Rubbermaid Brands That Matter | Office Products Group

MATERIAL SAFETY DATA SHEET

MSDS # 60040

Section One: Identification

Sanford, L.P.
2707 Butterfield Road
Oak Brook, IL 60523 USA
800-323-0749 or 630-481-2000

EMERGENCY MEDICAL NUMBER:
888-786-0972

Product Name: Uni-Ball Onyx Fine and Micro Point Pen

Colors: Black, Red, Blue

Section Two: Hazard Identification

This product is considered safe under normal use conditions.

Section Three: Composition

Water, propylene glycol (57-55-6), ethylene glycol (107-21-1), coloring agents, additives

Section Four: First Aid Measures

Inhalation: This product is considered safe under normal use conditions.

Skin Contact: This product is considered safe under normal use conditions.

Eye Contact: This product is considered safe under normal use conditions.

Ingestion: This product is considered safe under normal use conditions.

Section Five: Fire Fighting Measures

Flash Point: 231.8°F$_{\text{ethylene glycol}}$

Flammability Limits (% by volume): Lower: Not applicable Upper: Not applicable

Extinguishing Media: As appropriate for surrounding area.

Special Fire Fighting Measures: None

Unusual Fire and Explosion Hazards: None

Section Six: Accidental Release Measures

In Case of Spill or Accidental Release: Wipe up with absorbent material and dispose of in accordance with federal, state and local regulations.

Section Seven: Handling and Storage

Handling: Do not shake pen.

Storage: Keep cap on pen when not in use.

Section Eight: Exposure Controls and Personal Protection

Eye Protection: None under normal use conditions.

Clothing: None under normal use conditions.

Respirator: None under normal use conditions.

Ventilation: None under normal use conditions.

Section Nine: Physical and Chemical Properties

For ink unless otherwise specified:

Boiling Point:	Approximately 100C
Solubility in Water:	Soluble
Evaporation Rate:	Not determined
Appearance/Odor:	Colored liquid; no odor

Section Ten: Stability and Reactivity

Stability:	Stable
Conditions to Avoid:	None known
Chemical Incompatibility:	None known
Hazardous Decomposition:	None known
Hazardous Polymerization:	Will not occur.

Section Eleven: Toxicological Information

See Section Two: Hazard Identification for any hazards

Section Twelve: Ecological Information

Not available

Section Thirteen: Disposal Considerations

Dispose in accordance with Federal, State, and Local Regulations.

Section Fourteen: Transport Information

DOT:	Not regulated
IATA:	Not regulated
IMO:	Not regulated

Section Fifteen: Regulatory Information

TSCA: The product listed on this Material Safety Data Sheet is not listed on the Toxic Substances Control Act Inventory. All ingredients used to manufacture this product are listed on the TSCA Inventory

Section Sixteen: Other Information

HMIS Code	
Health	N/A
Flammability	N/A
Reactivity	N/A
Personal Protection	N/A

0=Minimal / 4 = Severe

NewellRubbermaid, Inc (Sanford L.P) has been advised by Counsel that the OSHA Hazard Communication Standard and the Health Canada Workplace Hazardous Materials Information Standard do not apply to the product described in this Material Safety Data Sheet. The reasons for the exemptions are contained in 29 CFR 1910.1200(b)(6)(ix) as amended Sept 14, 2009 per the Code of Federal Regulations and also Canadian Hazardous Products Act part 12 section (f) as amended June 1, 2009. The information contained in this MSDS is forwarded to you for your information, but is not meant to imply that the product is covered by nor is this MSDS meant to comply with all requirements of the hazard communication standards.

Newell Rubbermaid Brands That Matter | Office Products Group

MATERIAL SAFETY DATA SHEET

MSDS # 60101

Section One: Identification

Sanford, L.P.
2707 Butterfield Road
Oak Brook, IL 60523 USA
800-323-0749 or 630-481-2000

EMERGENCY MEDICAL NUMBER:
888-786-0972

Product Name: Uni-Ball Roller Fine and Micro Pen

Colors: Black, Red, Green, Blue

Section Two: Hazard Identification

This product is considered safe under normal use conditions.

Section Three: Composition

Water, propylene gylcol (57-55-6), ethylene glycol (107-21-1), coloring agents, resins, additives,

Section Four: First Aid Measures

Inhalation: This product is considered safe under normal use conditions.

Skin Contact: This product is considered safe under normal use conditions.

Eye Contact: This product is considered safe under normal use conditions.

Ingestion: This product is considered safe under normal use conditions.

Section Five: Fire Fighting Measures

Flash Point: 231.8°F ethylene glycol

Flammability Limits (% by volume): Lower: Not applicable Upper: Not applicable

Extinguishing Media: As appropriate for surrounding area.

Special Fire Fighting Measures: None

Unusual Fire and Explosion Hazards: None

Section Six: Accidental Release Measures

In Case of Spill or Accidental Release: Wipe up with absorbent material and dispose of in accordance with federal, state and local regulations.

Section Seven: Handling and Storage

Handling: Do not shake pen.

Storage: Keep cap on pen when not in use.

Section Eight: Exposure Controls and Personal Protection

Eye Protection: None under normal use conditions.

Clothing: None under normal use conditions.

Respirator: None under normal use conditions.

Ventilation: None under normal use conditions.

Section Nine: Physical and Chemical Properties

For ink unless otherwise specified:

Boiling Point:	Approximately 100C
Solubility in Water:	Soluble
Evaporation Rate:	Not determined
Appearance/Odor:	Colored liquid; no odor

Section Ten: Stability and Reactivity

Stability:	Stable
Conditions to Avoid:	None known
Chemical Incompatibility:	None known
Hazardous Decomposition:	None known
Hazardous Polymerization:	Will not occur.

Section Eleven: Toxicological Information

See Section Two: Hazard Identification for any hazards

Section Twelve: Ecological Information

Not available

Section Thirteen: Disposal Considerations

Dispose in accordance with Federal, State, and Local Regulations.

Section Fourteen: Transport Information

DOT:	Not regulated
IATA:	Not regulated
IMO:	Not regulated

Section Fifteen: Regulatory Information

TSCA: The product listed on this Material Safety Data Sheet is not listed on the Toxic Substances Control Act Inventory. All ingredients used to manufacture this product are listed on the TSCA Inventory

Section Sixteen: Other Information

HMIS Code	
Health	N/A
Flammability	N/A
Reactivity	N/A
Personal Protection	N/A

0=Minimal / 4 = Severe

NewellRubbermaid, Inc (Sanford L.P) has been advised by Counsel that the OSHA Hazard Communication Standard and the Health Canada Workplace Hazardous Materials Information Standard do not apply to the product described in this Material Safety Data Sheet. The reasons for the exemptions are contained in 29 CFR 1910.1200(b)(6)(ix) as amended Sept 14, 2009 per the Code of Federal Regulations and also Canadian Hazardous Products Act part 12 section (f) as amended June 1, 2009. The information contained in this MSDS is forwarded to you for your information, but is not meant to imply that the product is covered by nor is this MSDS meant to comply with all requirements of the hazard communication standards.

The Clorox Company of Canada, Ltd.
150 Biscayne Crescent
Brampton, Ontario
L6W 4V3

Material Safety Data Sheet

SECTION 1 - PRODUCT IDENTIFICATION AND USE

PRODUCT NAME:	**CLOROX® COMMERCIAL SOLUTIONS™ ULTRA CLOROX® DISINFECTING BLEACH - DIN 02333007**	**PRODUCT IDENTIFICATION NUMBER:** Not applicable.
PRODUCT USE:	Hard surface disinfecting bleach	

MANUFACTURER	**SUPPLIER**
The Clorox Company of Canada, Ltd. 150 Biscayne Crescent Brampton, Ontario L6W 4V3 EMERGENCY PHONE NO.: 1-800-446-1014	The Clorox Company of Canada, Ltd. 150 Biscayne Crescent Brampton, Ontario L6W 4V3 EMERGENCY PHONE NO.: 1-800-446-1014

SECTION 2 - HAZARDOUS INGREDIENTS

Hazardous Ingredient	% (w/w)	CAS Number	LD50 of Material (Specify Species & Route)	LC50 of Material (Specify Species)
Sodium hypochlorite	5 - 8	7681-52-9	13 g/kg (5.25% NaOCl, rat, oral)	Not available.

SECTION 3 - PHYSICAL DATA

Physical State: Liquid	**Odour & Appearance:** Clear, lime-yellow, thin liquid with characteristic bleach odour.		**Odour Threshold:** Not available.	**Specific Gravity:** ≈1.1 at 20°C
Vapour Pressure: Not available.	**Vapour Density:** N. Av.	**Evaporation Rate:** N. Av.	**Boiling Point:** N. Av.	**Freezing Point:** N. Av.
% Volatile (by volume): 85 - 90	**Solubility in Water:** Complete.	**pH:** 11 - 12	**Coeff. of Water/Oil Dist.:** Not available.	

SECTION 4 - FIRE AND EXPLOSION DATA

Flammability: **Yes:** ___ **No:** _X_ **If yes, under which conditions?**		
Means of Extinction:	Not flammable.	
Special Procedures:	In a fire, cool containers to prevent rupture and release of sodium chlorate.	
Flashpoint & Method: Not applicable.	**Upper Flammable Limit (% by volume):** Not applicable.	**Lower Flammable Limit (% by volume):** Not applicable.
Autoignition Temperature: N. Ap.	**Hazardous Combustion Products:** Not applicable.	
Explosion Data - Sensitivity to Impact: Not applicable.	**Explosion Data - Sensitivity to Static Discharge:** Not applicable.	

SECTION 5 - REACTIVITY DATA

Chemical Stability: **Yes:** _X_ **No:** ___ **If no, under which conditions?**	
Incompatibility with other substances: **Yes:** _X_ **No:** ___ **If so, which ones?**	Reacts with other chemicals such as toilet bowl cleaners, rust removers, acids, and ammonia-containing products to produce hazardous gases, such as chlorine and other chlorinated compounds. Avoid contact with metals, reducing agents, and other oxidizing agents.
Reactivity, if any, and under what conditions?	See above.
Hazardous decomposition products?	Exposure to extreme heat may release sodium chlorate.

SECTION 6 - TOXICOLOGICAL PROPERTIES

Route of Entry? **Skin Contact:** _X_ **Skin Absorption:** ___ **Eye Contact:** _X_ **Inhalation Acute:** _X_ **Inhalation Chronic:** ___ **Ingestion:** _X_			
Effects of Acute Exposure to Material: May cause severe irritation or damage (burns) to eyes, skin, gastrointestinal tract, and respiratory tract. Harmful if swallowed. Exposure to high concentrations of vapour or mist may aggravate the following medical conditions: heart conditions or chronic respiratory problems such as asthma, emphysema, chronic bronchitis, or obstructive lung disease.			
Effects of Chronic Exposure to Material: See Sensitization section below.			
Exposure Limits (TLV, ACGIH): Not applicable.	**Irritancy of Material:** Corrosive to eyes. Severely irritating or corrosive to skin, nose, lungs, throat, and gastrointestinal tract.	**Sensitization Property of Material:** Some clinical reports suggest a low potential for skin sensitization upon exaggerated exposure to sodium hypochlorite if skin damage occurs during exposure.	**Carcinogenicity of Material:** Not a carcinogen.
Teratogenicity/Embryotoxicity: Not teratogenic or embryotoxic.	**Reproductive Toxicity:** Not a reproductive toxicant.	**Mutagenicity:** Not mutagenic.	**Synergistic Materials:** None known.

SECTION 7 - PREVENTATIVE MEASURES

Personal Protective Equipment:		
Gloves (specify): Wear nitrile, neoprene, butyl rubber, or other protective gloves.	**Respirator (specify):** In situations where high concentrations of vapour or mist may be generated, a NIOSH-approved respirator is advised.	**Eye (specify):** Safety glasses.
Footwear (specify): Not applicable.	**Clothing (specify):** Not applicable.	**Other (specify):** Not applicable.
Engineering Controls (specify, e.g. ventilation, enclosed process):	Use general ventilation to minimize exposure to product vapour or mist.	
Leak and Spill Procedure:	Absorb and containerize. Wash residual down to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed-down material. For spills of multiple products, responders should evaluate the MSDS's of the products for incompatibility with sodium hypochlorite. Breathing protection should be worn in enclosed and/or poorly-ventilated areas until hazard assessment is complete.	
Waste Disposal:	Dispose of in accordance with existing federal, provincial, and municipal environmental regulations.	
Handling Procedures & Equipment:	Wash hands after direct contact. Do not wear product-contaminated clothing for prolonged periods. Do not reuse empty container. Rinse container and replace cap before recycling or discarding.	
Storage Requirements:	**STORE AWAY FROM CHILDREN.** Reclose cap tightly after each use. Store this product upright in a cool, dry area away from direct sunlight and heat to avoid deterioration.	
Special Shipping Information:	Not restricted per TDG regulations.	

SECTION 8 - FIRST AID MEASURES

Eye Contact:	If in eyes, rinse with water for 15 minutes. Call a doctor immediately.
Skin Contact:	If on skin, rinse well with water. If on clothes, remove clothes. If irritation persists, call a doctor.
Ingestion:	If swallowed, call a poison control centre or doctor immediately. Do not induce vomiting.
Inhalation:	If breathed in, move person to fresh air. If breathing problems develop, call a doctor.

SECTION 9 - PREPARATION DATE OF MSDS

Prepared by (group, department, etc.)	**Phone Number:**	**Date:**
Clorox Services Company	1-925-425-6100	July 19, 2010 V1

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N. Av. = Not available.
N. Ap. = Not applicable.

The Clorox Company 7/19/10 6:58 PM
Comment [1]: Page: 2
This is a new MSDS for this product, which is the same as the U.S. Clorox Regular-Bleach (6% NaOCl). It is a renaming of Ultra Javex Professional Bleach by Clorox. It is a new registration.

Jim Wiersig
July 19, 2010

Safety Data Sheet

1 - Identification

Trade Name: WD-40 Aerosol **Product Use:** Lubricant, Penetrant, Drives Out Moisture, Removes and Protects Surfaces From Corrosion **Restrictions on Use:** None identified **SDS Date Of Preparation:** November 15, 2016	**Canadian Office:** WD-40 Products [Canada] Ltd. P.O. Box 220 Toronto, Ontario M9C 4V3 **Information Phone #:** (416) 622-9881 **Emergency Phone # 24 hr:** Canutec: (613) 996-6666 - Designated for use only in the event of chemical emergencies involving a spill, leak, fire exposure or accident involving chemicals

2 – Hazards Identification

WHMIS 2015/GHS Classification:
Flammable Aerosol Category 1
Gas Under Pressure: Compressed Gas
Aspiration Toxicity Category 1
Specific Target Organ Toxicity Single Exposure Category 3 (nervous system effects)

Note: This product is a consumer product and is labeled in accordance with the Consumer Chemicals and Containers Regulations (CCCR) which take precedence over WHMIS 2015 labeling. The actual container label will not include the label elements below. The labeling below applies to industrial/professional products.

Label Elements:

DANGER!
Extremely flammable aerosol.
Contains gas under pressure; may explode if heated.
May be fatal if swallowed and enters airways.
May cause drowsiness or dizziness.

Prevention
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not spray on an open flame or other ignition source.
Do not pierce or burn, even after use.
Avoid breathing mist or vapors.
Use only outdoors or in a well-ventilated area.
Response
IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a POISON CENTER or doctor if you fell unwell.
Storage
Store locked up.
Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F. Store in a well-ventilated place.
Disposal

Dispose of contents and container in accordance with local and national regulations.

3 - Composition/Information on Ingredients

Ingredient	CAS #	Weight Percent	WHMIS 2015/ GHS Classification
Aliphatic Hydrocarbon	64742-47-8	50-70%	Flammable Liquid Category 3 Aspiration Toxicity Category 1 Specific Target Organ Toxicity Single Exposure Category 3 (nervous system effects)
Petroleum Base Oil	64742-56-9 64742-65-0 64742-53-6 64742-54-7 64742-71-8	30-35%	Not Hazardous
Carbon Dioxide	124-38-9	2-3%	Simple Asphyxiant

4 – First Aid Measures

Ingestion (Swallowed): Aspiration Hazard. DO NOT induce vomiting. Call physician, poison control center or the WD-40 Safety Hotline at 1-888-324-7596 immediately.
Eye Contact: Flush thoroughly with water. Remove contact lenses if present after the first 5 minutes and continue flushing for several more minutes. Get medical attention if irritation persists.
Skin Contact: Wash with soap and water. If irritation develops and persists, get medical attention.
Inhalation (Breathing): If irritation is experienced, move to fresh air. Get medical attention if irritation or other symptoms develop and persist.
Signs and Symptoms of Exposure: Harmful or fatal is swallowed. If swallowed, may be aspirated and cause lung damage. May cause eye irritation. Inhalation of mists or vapors may cause nasal and respiratory tract irritation and central nervous system effects such as headache, dizziness and nausea. Skin contact may cause drying of the skin.
Indication of Immediate Medical Attention/Special Treatment Needed: Immediate medical attention is needed for ingestion.

5 – Fire Fighting Measures

Suitable (and unsuitable) Extinguishing Media: Use water fog, dry chemical, carbon dioxide or foam. Do not use water jet or flooding amounts of water. Burning product will float on the surface and spread fire.
Specific Hazards Arising from the Chemical: Contents under pressure. Keep away from ignition sources and open flames. Exposure of containers to extreme heat and flames can cause them to rupture often with violent force. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back. Combustion will produce oxides of carbon and hydrocarbons.
Special Protective Equipment and Precautions for Fire-Fighters: Firefighters should always wear positive pressure self-contained breathing apparatus and full protective clothing. Cool fire-exposed containers with water. Use shielding to protect against bursting containers.

6 – Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures: Wear appropriate protective clothing (see Section 8). Eliminate all sources of ignition and ventilate area.
Methods and Materials for Containment/Cleanup: Leaking cans should be placed in a plastic bag or open pail until the pressure has dissipated. Contain and collect liquid with an inert absorbent and place in a container for disposal. Clean spill area thoroughly. Report spills to authorities as required.

7 – Handling and Storage

Precautions for Safe Handling: Avoid contact with eyes. Avoid prolonged contact with skin. Avoid breathing vapors or aerosols. Use only with adequate ventilation. Keep away from heat, sparks, pilot lights, hot surfaces and open flames. Unplug electrical tools, motors and appliances before spraying or bringing the can near any source of electricity. Electricity can burn a hole in the can and cause contents to burst into flames. To avoid

serious burn injury, do not let the can touch battery terminals, electrical connections on motors or appliances or any other source of electricity. Wash thoroughly with soap and water after handling. Keep containers closed when not in use. Keep out of the reach of children. Do not puncture, crush or incinerate containers, even when empty.
Conditions for Safe Storage: Store in a cool, well-ventilated area, away from incompatible materials Do not store above 120°F or in direct sunlight. U.F.C (NFPA 30B) Level 3 Aerosol. Store away from oxidizers.

8 – Exposure Controls/Personal Protection

Chemical	Occupational Exposure limits
Aliphatic Hydrocarbon	1200 mg/m3 TWA (manufacturer recommended)
Petroleum Base Oil	5 mg/m3 TWA (Inhalable) ACGIH TLV (as mineral oil) 5 mg/m3 TWA, 10 mg/m3 STEL Canada- Québec (as oil mist, mineral) 5 mg/m3 TWA, 10 mg/m3 STEL Canada- Ontario (as oil mist, mineral) 1 mg/m3 TWA British Columbia (as Oil mist-mineral, severely refined)
Carbon Dioxide	5000 ppm TWA, 30000 ppm STEL ACGIH TLV 5000 ppm TWA, 30000 ppm STEL Canada- Ontario 5000 ppm TWA, 30000 ppm STEL Canada- Québec 5000 ppm TWA. 15000 ppm STEL British Columbia

The Following Controls are Recommended for Normal Consumer Use of this Product
Appropriate Engineering Controls: Use in a well-ventilated area.
Personal Protection:
Eye Protection: Avoid eye contact. Always spray away from your face.
Skin Protection: Avoid prolonged skin contact. Chemical resistant gloves recommended for operations where skin contact is likely.
Respiratory Protection: None needed for normal use with adequate ventilation.

For Bulk Processing or Workplace Use the Following Controls are Recommended
Appropriate Engineering Controls: Use adequate general and local exhaust ventilation to maintain exposure levels below that occupational exposure limits.
Personal Protection:
Eye Protection: Safety goggles recommended where eye contact is possible.
Skin Protection: Wear chemical resistant gloves.
Respiratory Protection: None required if ventilation is adequate. If the occupational exposure limits are exceeded, wear a NIOSH approved respirator. Respirator selection and use should be based on contaminant type, form and concentration. Follow applicable regulations and good Industrial Hygiene practice.
Work/Hygiene Practices: Wash with soap and water after handling.

9 – Physical and Chemical Properties

Appearance:	Light amber liquid	Flammable Limits: (Solvent Portion)	LEL: 0.6% UEL: 8%
Odor:	Mild petroleum odor	Vapor Pressure:	95-115 PSI @ 70°F
Odor Threshold:	Not established	Vapor Density:	Greater than 1 (air=1)
pH:	Not Applicable	Relative Density:	0.8 – 0.82 @ 60°F
Melting/Freezing Point:	Not established	Solubilities:	Insoluble in water
Boiling Point/Range:	361 - 369°F (183 - 187°C)	Partition Coefficient; n-octanol/water:	Not established
Flash Point:	122°F (49°C) Tag Open Cup (liquid)	Autoignition Temperature:	Not established
Evaporation Rate:	Not established	Decomposition Temperature:	Not established
Flammability (solid, gas):	Flammable Aerosol	Viscosity:	2.79-2.96 cSt @ 100°F
VOC:	65%	Pour Point:	-63°C (-81.4°F) ASTM D-97

10 – Stability and Reactivity

Reactivity: Not reactive under normal conditions
Chemical Stability: Stable
Possibility of Hazardous Reactions: May react with strong oxidizers generating heat.
Conditions to Avoid: Avoid heat, sparks, flames and other sources of ignition. Do not puncture or incinerate containers.
Incompatible Materials: Strong oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide and carbon dioxide.

11 – Toxicological Information

Symptoms of Overexposure:
Inhalation: High concentrations may cause nasal and respiratory irritation and central nervous system effects such as headache, dizziness and nausea. Intentional abuse may be harmful or fatal.
Skin Contact: Prolonged and/or repeated contact may produce mild irritation and defatting with possible dermatitis.
Eye Contact: Contact may be irritating to eyes. May cause redness and tearing.
Ingestion: This product has low oral toxicity. Swallowing may cause gastrointestinal irritation, nausea, vomiting and diarrhea. This product is an aspiration hazard. If swallowed, can enter the lungs and may cause chemical pneumonitis, severe lung damage and death.
Chronic Effects: None expected.
Carcinogen Status: None of the components are listed as a carcinogen or suspect carcinogen by IARC, NTP, ACGIH or OSHA.
Reproductive Toxicity: None of the components is considered a reproductive hazard.

Numerical Measures of Toxicity:
Acute Toxicity Estimates: Oral > 5,000 mg/kg; Dermal >2,000 mg/kg based on an assessment of the ingredients. This product is not classified as toxic by established criteria. It is an aspiration hazard.

12 – Ecological Information

Ecotoxicity: No specific aquatic toxicity data is currently available; however components of this product are not expected to be harmful to aquatic organisms
Persistence and Degradability: Components are readily biodegradable.
Bioaccumulative Potential: Bioaccumulation is not expected based on an assessment of the ingredients.
Mobility in Soil: No data available
Other Adverse Effects: None known

13 - Disposal Considerations

Aerosol containers should not be punctured, compacted in home trash compactors or incinerated. Empty containers may be disposed of through normal waste management options. Dispose of all waste product, absorbents, and other materials in accordance with applicable Federal, state and local regulations.

14 – Transportation Information

DOT Surface Shipping Description: UN1950, Aerosols, 2.1 Ltd. Qty
(Note: Shipping Papers are not required for Limited Quantities unless transported by air or vessel – each package must be marked with the Limited Quantity Mark)
Canadian TDG Classification: Limited Quantity
IMDG Shipping Description: Un1950, Aerosols, 2.1, LTD QTY
ICAO Shipping Description: UN1950, Aerosols, flammable, 2.1

NOTE: WD-40 Company does not test aerosol cans to assure that they meet the pressure and other requirements for transport by air. We do not recommend that our aerosol products be transported by air.

15 – Regulatory Information

National Pollutant Release Inventory (NPRI): This product contains the following chemicals that are listed on the NPRI Substance List: Aliphatic Hydrocarbon (64742-47-8) 50-70%

Canadian Environmental Protection Act: All of the ingredients are listed on the Canadian Domestic Substances List or exempt from notification.

16 – Other Information

HMIS Hazard Rating:
Health – 1 (slight hazard), Fire Hazard – 4 (severe hazard), Physical Hazard – 0 (minimal hazard)

Revision Date: November 15, 2016 Supersedes: March 27, 2014

Prepared by: Industrial Health & Safety Consultants, Inc. Shelton, CT, USA

Reviewed by: I. Kowalski Regulatory Affairs Dept.

1014100/No.0084103

Material Safety Data Sheet

MULTI-FILL PTY LTD

Hazardous according to the criteria of NOHSC

1 IDENTIFICATION

Product Name: Weller Butane Gas Refill
Pack Size: 200 g
Manufacturer's Code: 226003

Supplier: Multi-Fill Pty. Ltd.
A.C.N.: 053 439 080
Street Address: 14 Garling Rd.
Kings Park, 2148
NSW Australia

Telephone: +61 2 9621 6000
Facsimile: +61 2 9831 2635
Use: Used to refill the Weller butane tool.

Emergency Telephone Number: No emergency telephone number available.

2. HAZARDS IDENTIFICATION

Classified as Dangerous Goods Class 2.1, by the criteria of the Australian Dangerous Goods Code for transport by road and rail. and NOHC.

Hazard Category:

Propane is an asphyxiant

F+ Extremely Flammable

R-Phrase(s):	R-Phrase(s):	R20 Harmful by inhalation
	R36/37/38	Irritating to eyes, respiratory system and skin

S-Phrase(s):	S2	Keep out of reach of children
	S9	Keep container in a well ventilated place
	S16	Keep away from sources of Ignition – No smoking
	S24/25	Avoid contact with skin and eyes
	S26	In case of contact with eyes, rinse immediately with plenty of water and contact a doctor or Poisons Information Centre. Phone 13 11 26.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Entity	CAS Number	Proportion (%w/w)
Propane/Butane	74-98-6/106-97-8	100%

All the constituents of this material are listed on the Australian Inventory of Chemical Substances

4. FIRST AID MEASURES

Skin: Wash contaminated skin with plenty of soap and water. Remove contaminated clothing and wash before re-use. If irritation occurs seek medical advice.

Eyes: Irrigate with copious amounts of water for 15 minutes. In all cases of eye contamination, it is recommended to seek medical advice.

Inhalation: Remove victim from exposure – avoid becoming a casualty. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. If breathing is laboured and patient cyanotic (blue), ensure airways are clear and have a qualified person give oxygen through facemask. If breathing has stopped, apply artificial respiration at once. In event of cardiac arrest, apply external cardiac massage. Seek medical advice.

Ingestion: Give a little water to drink. **Do NOT induce vomiting**. Avoid giving milks, oils or alcohol. Seek medical advice

Advice to doctor – treat symptomatically.

5. FIRE FIGHTING MEASURES

Specific hazards: Aerosol cans may rupture or explode when exposed to temperatures above 50°C. Propellant is extremely flammable and heavier than air. Do not allow vapours to build up in pits or hollows.

Fire fighting further advice: Fight fire from protected position or use unmanned hose holders or monitor nozzles. If safe to do so, move undamaged containers from fire area. Do not approach hot containers. Cool containers with water before handling. If impossible to extinguish fire, protect surroundings, withdraw from area and allow fire to burn

Fire-fighters to wear self-contained breathing apparatus (SCBA) and protective gloves. Structural fire-fighter's uniform provides limited protection.

Suitable extinguishing media: For small fires use water spray, dry chemical or carbon dioxide
For large fires use water spray or fog

Additional Information: The product is a **UN 1950** and has a **HAZCHEM CODE : 2YE**

6. ACCIDENTAL RELEASE MEASURES

Eliminate all sources of ignition. Contain spill for disposal. Add absorbent (sand, earth, sawdust, etc.) to spill area. Keep out of drains and waterways. Dispose of adsorbed material at an approved disposal site according to local government regulations. Ventilate confined spaces well.

7. HANDLING AND STORAGE

Storage: Store away from oxidising agents and corrosive subtances. Do not store above 50°C. Do **NOT** allow cartons to become wet.

Classified as Class 2.1(Aerosols) for the purpose of storage and handling, in accordance with the requirements of AS 2278. Refer to State and Territory Dangerous Goods regulations.

Handling: label of can states
"CAUTION: EXTREMELY FLAMMABLE. KEE POUT FO REACH OF CHILDREN. Pressurised dispenser. Protect from sunlight and do not expose to temperatures exceeding 50°C.

Do not pierce or burn can, even after use. Do not spray on a naked flame or any incandescent material. Keep away from sources of ignition. No Smoking.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

National occupational exposure limits
The assigned value is TWA 800ppm for propellant butane as given by the National Occupational Health and Safety Commission.
Propane is an asphyxiant

Engineering measures
Use explosion proof equipment. Use only in a well ventilated area. Do **NOT** use near naked flames.

Personal Protection
At all times protect eyes and avoid direct contact with eyes. In a work environment wear gloves. Avoid breathing odour in an industrial area and where the exposure standard is exceeded use a supplied air facemask or a self contained breathing apparatus complying with AS1715 and AS1716

Flammability
Use in well ventilated areas. Do **NOT** use near ignition sources.

Biological Limit Values
No biological limit allocated

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Use: Is a gas at normal atmospheric pressure and is a dispenser to refill the cooper tools
Flashpoint: -62°C

Flammability Limits:	9.6% (upper) 1.9% (lower)
Boiling Point (°C):	Not Applicable
Solubility in Water:	Soluble
Pressure (25°C):	350 – 450kPa
Specific Gravity:	0.55g/mL

10. STABILITY AND REACTIVITY

Product is stable under normal ambient conditions. Not to be stored above 50°C. Propellant can react with oxidising agents – chlorine, pool chlorine and nitric acid. Store away from oxygen cylinders, oxidising materials and ignition sources.

11. TOXICOLOGICAL INFORMATION

No adverse health effects are expected if the product is handled in accordance with this Safety Data sheet and product label.

WARNING: INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING CONTENTS CAN BE HARMFUL OR FATAL. Propellent: Hydrocarbons."

Acute Effects

Skin contact: Contact with skin may result in mild irritation. Vapourising liquid or liquid contact can result in cold contact burns

Eye contact: Liquid will cause severe damage. Vapour will cause irritation

Inhalation: Vapour is a mild irritant. Inhalation of vapour can result in headaches, dizziness and possible nausea. Inhalation of high concentrations can produce central nervous system depression, which can lead to loss of coordination and impaired judgement.

Ingestion: Ingestion can result in nausea, vomiting and diarrhoea.

Chronic Effects
No chronic systemic effects reported from industrial exposures.
Carcinogenicity, Mutigenicity, Teratogenicity : No Known effect.

Hazard Category:

Propane is an asphyxiant

12. ECOLOGICAL INFORMATION

Avoid contaminating waterways. No data available for persistence/degradability or mobility.

13. DISPOSAL CONSIDERATIONS

Aerosols should be completely empty before disposing. Recycle can if a facility is available or place can in household rubbish

14. TRANSPORT INFORMATION

Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code for transport by Road and Rail.

UN Number:	1950
UN Proper Shipping Name:	Aerosols
Class and Subsidiary Risk:	2.1
Packing Group:	None allocated
Hazchem Code:	2YE

Do not allow cartons to become wet. Do not store above 50°C.

15. REGULATORY INFORMATION

Classified as Dangerous Goods Class 2.1, by the criteria of the Australian Dangerous Goods Code for transport by road and rail. and NOHC.

Hazard Category:

Propane is an asphyxiant

F+ Extremely Flammable

R-Phrase(s):	R-Phrase(s):	R20 Harmful by inhalation
	R36/37/38	Irritating to eyes, respiratory system and skin

S-Phrase(s):	S2	Keep out of reach of children
	S9	Keep container in a well ventilated place
	S16	Keep away from sources of Ignition – No smoking
	S24/25	Avoid contact with skin and eyes
	S26	In case of contact with eyes, rinse immediately with plenty of water and contact a doctor or Poisons Information Centre. Phone 13 11 26.

Poisons Schedule (Aust)/Toxic Substance (NZ): None Allocated

16. OTHER INFORMATION

This MSDS summarises at the date if issue our best knowledge of the health and safety hazard information of this product. Although this information is presented in good faith and compiled from various sources,(for example and where applicable from Raw material MSDS, List of material compiled by the Australian Government Hazardous Substance Information System,

Standard for the Uniform Scheduling of Drugs and Poisons, Australian Dangerous Good Code for Road and Rail, Australian Pesticides and Veterinary Medicine labelling code for Agricultural

Products, Environmental Risk Management Authority (ERMA) New Zealand Group Code Standards for Aerosols NZ, Food Standards Australia and New Zealand labelling and other Information Requirements), believed to be accurate, Multi-Fill Pty Ltd make no representations or warranty as to the completeness or accuracy thereof. If clarification or further information is needed to ensure that an appropriate assessment can be made, the user should contact this company.

CONTACT POINT: Multi-Fill Pty Ltd
Technical Manager
(02) 9621 6000

PREPARED BY: P Exadaktylos **APPROVED BY:** Peter Exadaktylos

Material Safety Data Sheet

WORX ALL NATURAL POWDERED HAND CLEANER

Product: 005 Revision Date: 2009/11/30

Section 1: PRODUCT INFORMATION

Chemical family: Not available.

Product uses: Product is a safe skin cleanser, used with water, for multiple daily hand and body washes. It is comparable in safety to conventional household body soaps and hair shampoos.

Supplier: Worx Environmental Products
Unit 10, 2305 52nd Ave, SE
Calgary, AB
T2C 4X7.

Emergency Phone Number: 800−424−9679
214−769−9028

Manufacturer: Same as supplier.

TDG classification: Not regulated.

WHMIS classification:

Not controlled.

DSL status: Not available.

Section 2: HAZARDOUS INGREDIENTS

C.A.S.	CONCENTRATION %	Ingredient Name	T.L.V.	LD/50	LC/50
	*	NO HAZARDOUS INGREDIENTS	NOT AVAILABLE	NOT AVAILABLE	NOT AVAILABLE

Section 2A: ADDITIONAL INGREDIENT INFORMATION

***:** A combination of anionic and nonionic surfactants with plant cellulosic colloids. Includes juniper berry essential oils. No inert fillers, 100% concentrated cleansing agent.

Section 3: PHYSICAL DATA

Physical state: Solid

Appearance & odor: Green, lemon or orange powder.
Assumes fragrance of one of the cleaning agents: juniper berry essential oils, lemon or orange oil scents.

Odor threshold (ppm):	Not available.
Vapour pressure (mmHg):	Not applicable.
Vapour density (air=1):	Not available.
Volatiles (%)	
By volume:	Not available.
Evaporation rate (butyl acetate = 1):	Not available.
Boiling point (°C):	Not applicable.
pH:	7.8
Specific gravity @ 20 °C:	0.710−0.788
Solubility in water (%):	Mostly full and immediate in water, cellulosic balance is subsequently rapidly biodegradable.
Coefficient of water\oil dist.:	Not available.
Melting point (°C):	Not available.
VOC:	Not available.

Section 4: FIRE & EXPLOSION DATA

Flammability:	Not flammable.
Conditions of flammability:	Surrounding fire.
Extinguishing media:	Use appropriate extinguishing media for surrounding fire.
Special procedures:	Self−contained breathing apparatus required. Firefighters should wear the usual protective gear.
Auto−ignition temperature (°C):	Not available.
Flash point (°C), method:	Not available.
Lower flammability limit (% vol):	Not available.
Upper flammability limit (% vol):	Not available.
Explosion Data	
Sensitivity to static discharge:	Not available.
Sensitivity to mechanical impact:	Not available.
Hazardous combustion products:	Oxides of carbon (CO, CO2). Oxides of sulfur (SOx).
Explosive power:	Not available.

Section 5: REACTIVITY DATA

Chemical stability:	Stable under normal conditions.
Conditions of instability:	Not available.
Hazardous polymerization:	Not available.

Incompatible substances: Not available.

Hazardous decomposition products: See hazardous combustion products.

Section 6: TOXICOLOGICAL PROPERTIES

Route of entry: Eye contact and ingestion.

Effects of acute exposure

Eye contact: May cause transient irritation.

Skin contact: Concentrate may cause skin irritation.

Inhalation: May cause breathing difficulty.

Ingestion: May cause diarrhea.

Effects of chronic exposure: None known.

LD50 of product, species & route: Not available.

LC50 of product, species & route: Not available.

Exposure limit of material: Not available.

Sensitization to product: Not available.

Carcinogenic effects: IARC, NTP, and OSHA do not list this product or its ingredients as carcinogens.

Reproductive effects: Not available.

Teratogenicity: Not available.

Mutagenicity: Not available.

Synergistic materials: Not available.

Section 7: PREVENTATIVE MEASURES

Precautionary Measures

Gloves/Type: None required with normal use.

Respiratory/Type: None required under normal use.

Eye/Type:

Safety glasses.

Footwear/Type: As per local regulations.

Clothing/Type: None required under normal use.

Other/Type: None, as intended cosmetic hand cleaner end use.

Ventilation requirements: Normal ventilation.

Leak/Spill: Ventilate area.
Wear appropriate protective equipment.
Place in a labelled container for later disposal.

Waste disposal: In accordance with municipal, provincial and federal regulations.

Handling procedures and equipment: Avoid contact with eyes.
No other handling requirements needed for intended product end use; cosmetic hand cleaner.
See container label for proper use.

Storage requirements: Store in closed containers.
No other storage requirements needed for intended product end use; cosmetic hand cleaner.
See container label for proper use.

Special shipping information: Not regulated.

Section 8: FIRST AID MEASURES

Skin contact: No first aid should be needed.

Eye contact: Flush with water for at least 15 minutes.
Consult a physician if irritation persists.

Inhalation: No first aid should be needed.

Ingestion: Induce vomiting as directed by medical personnel.
Consult a physician.
Never give anything by mouth to an unconscious person.

Section 9: ADDITIONAL INFORMATION

General note: This material safety data sheet was prepared from information obtained from various sources, including product suppliers and the Canadian Center for Occupational Health and Safety.

Data prepared by: Conform−Action Data Systems
A division of 2843471 Canada Inc.
1804 Transcanada, suite 101
Dorval, QC H9P 1H7
Tel: (514) 683−2060 Fax: (514) 683−1445
24 hr. 1−866−628−7522 support@netmsds.com.

This MSDS was generated by *Conform−Plus* Application Service. Visit us at www.netmsds.com.

SECTION 1. IDENTIFICATION

Product identifier

Trade name : Zalta™ MA11-751 ANTISCALANT
™ Trademark, Solenis or its subsidiaries or affiliates, registered in various countries

Recommended use of the chemical and restrictions on use

Use of the Substance/Mixture : Industrial chemical

Details of the supplier of the safety data sheet	**Emergency telephone number**
Solenis Canada ULC 942 Brant St. Burlington, ON L7R 3X8 Canada EHSProductSafetyTeam@solenis.com	1-844-SOLENIS (844-765-3647) **Product Information** Contact your local Solenis representative

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the Hazardous Products Regulations

This material is not considered hazardous under WHMIS 2015.

GHS label elements

This material is not considered hazardous under WHMIS 2015.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

No hazardous ingredients

SECTION 4. FIRST AID MEASURES

General advice : No hazards which require special first aid measures.

If inhaled : If breathed in, move person into fresh air.
If unconscious, place in recovery position and seek medical

advice.
If symptoms persist, call a physician.

In case of skin contact	:	First aid is not normally required. However, it is recommended that exposed areas be cleaned by washing with soap and water.
In case of eye contact	:	Remove contact lenses. Protect unharmed eye.
If swallowed	:	Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.
Most important symptoms and effects, both acute and delayed	:	No symptoms known or expected.
Notes to physician	:	No hazards which require special first aid measures.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Water spray Foam Carbon dioxide (CO2) Dry chemical
Specific hazards during firefighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	:	corrosive vapors toxic fumes Oxides of phosphorus Carbon monoxide Carbon dioxide (CO2) phosphine
Specific extinguishing methods	:	Product is compatible with standard fire-fighting agents.
Further information	:	Standard procedure for chemical fires.
Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and	:	Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.

emergency procedures		Comply with all applicable federal, state, and local regulations.
Environmental precautions	:	Prevent further leakage or spillage if safe to do so.
Methods and materials for containment and cleaning up	:	Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	Normal measures for preventive fire protection.
Advice on safe handling	:	Smoking, eating and drinking should be prohibited in the application area. For personal protection see section 8.
Conditions for safe storage	:	Electrical installations / working materials must comply with the technological safety standards.
Materials to avoid	:	No materials to be especially mentioned.
Further information on storage stability	:	No decomposition if stored and applied as directed.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures	:	General room ventilation should be adequate for normal conditions of use. However, if unusual operating conditions exist, provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.

Personal protective equipment

Respiratory protection	:	No personal respiratory protective equipment normally required.
Eye protection	:	Not required under normal conditions of use. Wear splash-proof safety goggles if material could be misted or splashed into eyes.
Skin and body protection	:	Wear as appropriate: Safety shoes Wear resistant gloves (consult your safety equipment supplier).

Hygiene measures : General industrial hygiene practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Colour	:	yellow, brown
Odour	:	acrylic-like
Odour Threshold	:	No data available
pH	:	5
Melting point/freezing point	:	6 °F
Initial boiling point and boiling range	:	100 °C (1,013.333333 hPa) Calculated Phase Transition Liquid/Gas
Flash point	:	Not applicable
Evaporation rate	:	> 1 Ethyl Ether
Flammability (solid, gas)	:	No data available
Self-ignition	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	23.3333333 hPa (20 °C) Calculated Vapor Pressure
Relative vapour density	:	> 1 AIR=1
Relative density	:	No data available
Density	:	1.260 g/cm3 (77.00 °F)
Solubility(ies)		
Water solubility	:	completely soluble
Solubility in other solvents	:	No data available

Partition coefficient: n-octanol/water	:	No data available
Decomposition temperature	:	No data available
Viscosity		
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Oxidizing properties	:	No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No decomposition if stored and applied as directed.
Chemical stability	:	Stable under recommended storage conditions.
Possibility of hazardous reactions	:	Product will not undergo hazardous polymerization.
Incompatible materials	:	Oxidizing agents strong mineral acids
Hazardous decomposition products	:	corrosive vapors Carbon monoxide Carbon dioxide (CO_2) Oxides of phosphorus Phosphorus trihydride (phosphine)

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Not classified based on available information.

Product:

Acute dermal toxicity	:	Acute toxicity estimate: > 5,000 mg/kg Method: Calculation method

Skin corrosion/irritation

Not classified based on available information.

Serious eye damage/eye irritation

Not classified based on available information.

Product:

Remarks	:	Unlikely to cause eye irritation or injury.

Respiratory or skin sensitisation

Skin sensitisation
Not classified based on available information.

Respiratory sensitisation
Not classified based on available information.

Germ cell mutagenicity
Not classified based on available information.

Carcinogenicity
Not classified based on available information.

Reproductive toxicity
Not classified based on available information.

STOT - single exposure
Not classified based on available information.

STOT - repeated exposure
Not classified based on available information.

Aspiration toxicity
Not classified based on available information.

Product:
No aspiration toxicity classification

Further information

Product:
Remarks : No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 7,070 mg/l Exposure time: 96 h Test Type: static test LC50 (Pimephales promelas (fathead minnow)): 6,160 mg/l Exposure time: 96 h Test Type: static test
Toxicity to daphnia and other aquatic invertebrates	:	LC 50 (Daphnia magna (Water flea)): 2,020 mg/l Exposure time: 48 h Test Type: static test

Persistence and degradability

Product:

Biochemical Oxygen Demand (BOD)	:	Biochemical oxygen demand within 5 days 1,600 mg/l
Chemical Oxygen Demand (COD)	:	200,000 mg/l Method: Chemical oxygen demand

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

Product:

Additional ecological information	:	No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	Dispose of in accordance with all applicable local, state and federal regulations.
Contaminated packaging	:	Empty remaining contents.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations

TDG
Not regulated as a dangerous good

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data

Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

The components of this product are reported in the following inventories:

TCSI	:	On the inventory, or in compliance with the inventory
TSCA	:	All substances listed as active on the TSCA inventory
AIIC	:	All components are listed on the inventory, regulatory obligations/restrictions apply
DSL	:	All components of this product are on the Canadian DSL
ENCS	:	On the inventory, or in compliance with the inventory
KECI	:	On the inventory, or in compliance with the inventory
PICCS	:	On the inventory, or in compliance with the inventory
IECSC	:	On the inventory, or in compliance with the inventory

Canadian lists

No substances are subject to a Significant New Activity Notification.

SECTION 16. OTHER INFORMATION

Further information

Revision Date	:	11/22/2022

Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test

population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

Sources of key data used to compile the Safety Data Sheet
Key literature references and sources of data
SOLENIS Internal data
SOLENIS internal data including own and sponsored test reports
The UNECE administers regional agreements implementing harmonised classification for labelling (GHS) and transport.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. This SDS has been prepared by the Solenis Environmental Health and Safety Department.

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