Bradley Frères Bradley Bros.

Material Safety Data Sheet (MSDS) - English
Product Listing

Acetylene - Boc Gases
Acid battery - Hall Chem MFG Inc.
Aerosol - WD-40
AFG-2 Anti-friction grease - Hipertech
Anitfreeze Super Diesel - Hall Chem MFG Inc.
Antifreeze/Coolant - Esso
Big Bear Diamond Drill Rod Grease - West Coast Drilling Supplies Ltd
Calcium Aluminate Cement - Lafarge North America Inc.
Chain Oil - all grades - Produits Lubri-Delta Inc.
Chainoil Winter - Esso
DDR Grease - Esso
Derma-Kleen (Dermagel) - Dana Chemicals Inc.
Diesel Fuel Oil Conditioner - Kleen-Flo Tumbler Industries Ltd
Gear Oil GX 80W-90 - Esso
Hydrofluoric Acid Solution - Nymoc Ltd.
J-Shop General Purpose Alkaline Degreaser- Johnson Wax Professional
Kleen-Start - Kleen-Flo Tumbler Industries Ltd
Lead Acid Battery Wet, filled with acid - East Penn Man. Co. Inc.
Light Distillate - Esso
Methyl Hydrate - Produits Lubri-Delta Inc.
Nuto H32 Hydraulic fluid - Esso
Oxygen - Boc Gases
Polymer 550X- West Coast Drilling Supplies Ltd
Polymer DR-133 - West Coast Drilling Supplies Ltd
Polymer W-OB - West Coast Drilling Supplies Ltd
Portland Cement - Lafarge North America Inc.
Propane - Superior Propane Inc.
Repex - Mosquito Control
Silicone Gasket Marker- Kleen-Flo Tumbler Industries Ltd
Snowmobile Oil - Esso
Thredkote 706
Turbine Fuel Aviation, Wide Cut Type - Esso
Unleaded Gasoline - Esso
Vibra Stop - Control Chemical Corporation
Visco L - Lucien Mirault Inc.
XD-3 Extra Engine Oil 10W-30 - Esso
XD-3 Extra Engine Oil 15W-40 - Esso

BOC GASES

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: ACETYLENE

1. Product and Company Identification

BOC Gases,
Division of,
The BOC Group, Inc.
575 Mountain Avenue
Murray Hill, NJ 07974

TELEPHONE NUMBER: (908) 464-8100
24-HOUR EMERGENCY TELEPHONE NUMBER:
CHEMTREC (800) 424-9300

BOC Gases
Division of
BOC Canada Limited
5975 Falbourne Street, Unit 2
Mississauga, Ontario L5R 3W6

TELEPHONE NUMBER: (905) 501-1700
24-HOUR EMERGENCY TELEPHONE NUMBER:
(905) 501-0802
EMERGENCY RESPONSE PLAN NO: 2-0101

PRODUCT NAME: ACETYLENE
CHEMICAL NAME: Acetylene
COMMON NAMES/SYNONYMS: Ethyne, Acetylen, Ethine
TDG (Canada) CLASSIFICATION: 2.1
WHMIS CLASSIFICATION: A, B1, F

PREPARED BY: Loss Control (908)464-8100/(905)501-1700
PREPARATION DATE: 6/1/95
REVIEW DATES: 11/12/03

2. Composition, Information on Ingredients

EXPOSURE LIMITS[1]:

INGREDIENT	% VOLUME	PEL-OSHA[2]	TLV-ACGIH[3]	LD_{50} or LC_{50} Route/Species
Acetylene FORMULA: C_2H_2 CAS: 74-86-2 RTECS #: AO9600000	95.0 to 99.6	Not Available	Simple Asphyxiant	Not Available
Acetone FORMULA: C_3H_60 CAS: 67-64-1 RTECS #: AL3150000	Not Available	1000 ppm TWA	500 ppm TWA 750 ppm STEL	LD_{50}: 1297 mg/kg ingestion/mouse

[1] Refer to individual state or provincial regulations, as applicable, for limits which may be more stringent than those listed here.
[2] As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)
[3] As stated in the ACGIH 2003 Threshold Limit Values for Chemical Substances and Physical Agents.

OSHA Regulatory Status: This material is classified as hazardous under OSHA regulations.

3. Hazards Identification

EMERGENCY OVERVIEW

Flammable colorless gas with slight garlic odor. Dangerous fire and explosion hazard. Avoid heat, sparks and flame. Simple Asphyxiant. This product does not contain oxygen and may cause asphyxia if released in a confined area. Maintain oxygen levels above 19.5%. May cause anesthetic effects. Highly flammable under pressure. Spontaneously combustible in air at pressures above 15 psig. Acetylene liquid is shock sensitive. Contents under pressure. Use and store below 125 °F.

ROUTE OF ENTRY:

Skin Contact	Skin Absorption	Eye Contact	Inhalation	Ingestion
Yes	No	Yes	Yes	No

HEALTH EFFECTS:

Exposure Limits	Irritant	Sensitization
Yes	Yes	No
Teratogen	Reproductive Hazard	Mutagen
No	No	No
Synergistic Effects None Reported		

Carcinogenicity: -- NTP: No IARC: No OSHA: No

EYE EFFECTS: None known since product is a gas at room temperature. Contact of liquid acetylene with the eyes may cause temporary irritation.

SKIN EFFECTS: Skin effects are not likely. Contact with liquid acetylene may cause irritation and dermatitis upon repeated exposures.

INGESTION EFFECTS: Ingestion is unlikely, since acetylene is a gas at room temperature.

INHALATION EFFECTS: Acetylene is an asphyxiant and may cause anesthetic effects at high concentrations. High concentrations may exclude an adequate supply of oxygen to the lungs. Effects of oxygen deficiency resulting from simple asphyxiants may include: rapid breathing, diminished mental alertness, impaired muscular coordination, faulty judgement, depression of all sensations, emotional instability, and fatigue. As asphyxiation progresses, nausea, vomiting, prostration, and loss of consciousness may result, eventually leading to convulsions, coma, and death.

Under normal operating conditions, acetone is not released from the cylinder. However, if the cylinder is overcharged with acetone or acetylene, acetone may occasionally "spit" out. Acetone is primarily an irritant and CNS depressant. High concentrations may have central nervous system effects causing headache, nausea, dizziness, vomiting and fatigue.

Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: May aggravate pre-existing skin disorders.

POTENTIAL ENVIRONMENTAL EFFECTS: Not expected to be toxic to fish and wildlife.

4. First Aid Measures

EYES: None normally required. Consult a physician if direct contact with pressurized material occurs. Immediately flush with low pressure, cool water for at least 15 minutes, opening eyelids to ensure flushing. Get medical attention.

SKIN: Contaminated clothing presents a fire hazard and should be immediately removed. Wash affected areas with soap and warm water. If irritation develops, seek medical attention.

INGESTION: None normally required.

INHALATION: PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. Victims should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. If breathing has stopped administer artificial resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive. Keep victim warm and quiet.

5. Fire Fighting Measures

Conditions of Flammability: Flammable		
Flash point: Not Available	Method: Not Applicable	Autoignition: Temperature: 565°F (296°C)
LEL(%): 2.3	UEL(%): 100	
Hazardous combustion products: Carbon Monoxide, Carbon Dioxide		
Sensitivity to mechanical shock: May decompose		
Sensitivity to static discharge: May ignite		

FIRE AND EXPLOSION HAZARDS: Fire will produce carbon monoxide and carbon dioxide. Pure acetylene can ignite by decomposition above 15 psig; therefore, the UEL is 100% if the ignition source is of sufficient intensity. Pure acetylene is shock sensitive. Cylinder may vent rapidly or rupture violently from pressure when involved in a fire situation.

GASEOUS ACETYLENE IS SPONTANEOUSLY COMBUSTIBLE IN AIR AT PRESSURE ABOVE 15 PSI (207 kPa.). It requires a very low ignition energy so that fires which have been extinguished without stopping the flow of gas can easily reignite with possible explosive force. Acetylene has a density very similar to that of air so when leaking it does not readily dissipate. Gas may travel to a source of ignition and flash back.

Fires involving acetylene occur occasionally at fusible metal pressure relief plugs at the tops and bottoms of cylinders, commonly due to hot metal or slag being dropped on the fusible plugs. When the fusible plug releases a large volume of acetylene will rush out, creating a "roaring" sound. The flame may extend a foot or two away from the cylinder until the pressure is reduced. In some cases, the other end of the cylinder may develop a coating of frost.

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical.

FIRE FIGHTING INSTRUCTIONS: WARNING: ALWAYS EXTINGUISH A FIRE BEFORE CLOSING THE CYLINDER VALVE. If the flame is small from the fusible plug or valve stem, try to put it out. Use non-sparking tools to close container valves. Firefighters should wear respiratory protection (SCBA) and full turnout or Bunker gear. If the fire is allowed to keep burning it is likely that the fusible plug will melt and result in a large release of acetylene. A glove or heavy cloth or any wet material slapped on the flame will frequently extinguish it.

If the flame is large, burning from a fusible plug, DO NOT try to put it out unless the cylinder is outdoors or in a very well ventilated area free from sources of ignition. Usually it is very difficult to extinguish large fires because the escaping acetylene may be reignited by adjacent ignition sources, thereby possibly creating a confined space explosion. Keep containers cool with water spray. Continue to cool fire-exposed cylinders until well after flames are extinguished. Cylinders should not be moved until they have reached ambient temperature in case internal decomposition is taking place. Be cautious of a Boiling Liquid Evaporating Vapor Explosion, BLEVE, if flame is impinging on surrounding containers. Direct 500 GPM water stream onto containers above liquid level with remote monitors. Limit the number of personnel in proximity of fire and evacuate surrounding areas in all directions. Continue to cool fire-exposed cylinders until well after flames are extinguished.

6. Accidental Release Measures

Extinguish all ignition sources. No smoking, flames, flares, or sparks in hazard area. Evacuate all personnel from affected areas and provide maximum explosion-proof ventilation. Never enter a confined space or other area where the concentration is greater than 10% of the LEL (0.23%). Isolate the area for over 1/2 mile in all directions in the event of leakage of a tank, rail car or tank truck. Use appropriate protective equipment (See Section 8). If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or container valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest BOC location.

If possible to do safely, shut off ignition sources and stop the leak by closing the valve. For small leaks, cylinders may be moved to an area outdoors and away from any source of ignition. Circumstances which, it is advisable to attempt removal of the cylinder are when cylinders are in close proximity to other compressed gases, when highly flammable materials or hazardous materials are in the vicinity of the acetylene cylinder(s), or where protection of the building is unusually difficult and spreading of a fire may produce a major loss of life or property. DO NOT ATTEMPT TO REMOVE CYLINDERS THAT HAVE BEEN EXPOSED TO HEAT. When the cylinder is removed, it may be hosed down with water to keep it cool. Open valve slowly to let the acetylene escape. Tag the cylinder with "WARNING - Leaking Flammable Gas". Close valve when empty.

7. Handling and Storage

Electrical Classification: Class 1, Group A.

All acetylene piped systems and associated equipment must be grounded. Never use copper piping for acetylene service. Only steel or wrought iron pipe should be used. Open cylinder valve minimum amount required (no more than 1-1.5 turns) to deliver acceptable flow to enable the cylinder to be closed quickly in an emergency situation. Acetylene is shipped in a cylinder packed with a porous mass material, and a liquid solvent, commonly acetone. Acetylene is dissolved in the acetone solution and dispersed throughout the porous medium. When the valve of a charged acetylene cylinder is opened, the acetylene comes out of solution and passes out in the gaseous form. IT IS CRUCIAL THAT FUSE PLUGS IN THE TOPS AND BOTTOMS OF ALL ACETYLENE CYLINDERS BE THOROUGHLY INSPECTED WHENEVER HANDLED. REMOVE AND QUARANTINE IN A SAFE LOCATION ANY DEFECTIVE CYLINDER.

Post "NO SMOKING OR OPEN FLAMES" signs in the storage area or use area. There should be no source for accidental ignition in the storage or use area. Never leak check with an open flame. Use only in well-ventilated areas. Stationary customer site vessels should be operated in accordance with the manufacturer's and BOC instructions. Do not attempt to repair, adjust or in any other way modify the operation of these vessels. If there is a malfunction or other type of operations problem with the vessel, contact the closest BOC location immediately for assistance.

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Outside or detached storage is preferred. DO NOT allow the temperature where cylinders are stored to exceed 125°F (52°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders from being stored for excessive periods of time.

Valve protection caps must remain in place unless container is secured with valve outlet piping to use point. Close valve after each use and when the container is empty. Do not drag, slide or roll cylinders on their sides.

Use a suitable hand truck for container movement. Use a pressure reducing regulator when connecting container to piping or systems. Do not use gas directly from container.
Do not heat container by any means to increase the discharge rate of product from the container. Never insert an object (i.e.: screwdriver, etc.) into valve cap openings as this can damage the valve causing leakage.

Never attempt to repair or alter cylinders. Never tamper with pressure relief devices or fusible plugs. Under no circumstances allow a torch flame to contact the fusible plug. While welding, avoid contact of the cylinder welding equipment or electrical circuits.

If rough handling or other occurrences should cause any fusible plug to leak, move the cylinder to an open space well away from an possible source of a sign on the cylinder warning of "Leaking Flammable Gas".

Unless oxygen and acetylene are separated, there should be a non-combustible partition of at least 5 ft high with a fire resistance rating of one-half hour between cylinders. In the U.S. cylinders stored inside a building near user locations must be limited to a total capacity of 2500 ft^3 of gas, exclusive of in-use or attached for use cylinders.

Do not store cylinders on their side. This makes the acetylene less stable and less safe, and increases the likelihood of solvent loss and resultant decomposition.

For additional information, consult the Compressed Gas Association (CGA) pamphlets P-1, G-1, G-1.1, AV-9, G-1.2, G-1.3, G-1.5, C-13, SB-4, G-1.6, G-1.7, NFPA #51, and OSHA 1910 Subpart H & Q.

8. Exposure Controls, Personal Protection

ENGINEERING CONTROLS:
Use local exhaust and general ventilation systems to prevent build up of flammable concentrations. Small quantities can be handled in forced ventilation hoods. If product is handled routinely where the potential for leaks exists, all electrical equipment must be rated for use in potentially flammable atmospheres. Consult the National Electrical Code for details.

EYE/FACE PROTECTION:
Safety goggles or glasses as appropriate for the job.

SKIN PROTECTION:
Protective gloves as necessary for the job. Gloves with thermal protection should be used for welding.

RESPIRATORY PROTECTION:
For emergency release use a positive pressure NIOSH approved air-supplying respirator systems (SCBA or airline/escape bottle) using at a minimum Grade D air.

OTHER/GENERAL PROTECTION:
Safety shoes. Cotton clothing is recommended to prevent static build-up.

9. Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure (@ 70 °F; 21.1 °C)	: 635	psig
Vapor density (Air = 1)	: Not Available	
Evaporation point	: Gas	
Boiling point	: -118.8	°F
	: -83.8	°C
Freezing point	: -113	°F
	: -80.6	°C
PH	: Not Available	
Specific gravity	: 0.906	
Oil/water partition coefficient	: Not Available	
Solubility (H_20)	: Soluble	
Odor threshold	: Not Available	
Odor and appearance	: Colorless; faint ethereal odor when pure. Commercial (carbide) acetylene has a distinctive garlic-like odor	

10. Stability and Reactivity

STABILITY: Unstable - shock sensitive in the liquid state. Do not allow free gas (outside of cylinder) to exceed 15 psig. Do not expose cylinders to sudden shock or heat. Acetylene will decompose violently with cylinder failure.

INCOMPATIBLE MATERIALS/CONDITIONS: Oxygen and other oxidizers including all halogens and halogen compounds. Forms explosive acetylide compounds with copper, mercury, silver, brasses containing >66% copper and brazing materials containing silver or copper. The use of acetylene and these metals, or their salts, compounds, and high concentration alloys should be avoided. Moisture, certain acids and alkaline materials may enhance the formation of copper acetylides. Keep away from heat, sparks, flames, and other ignition sources.

HAZARDOUS DECOMPOSITION PRODUCTS: Acetylene decomposes at high pressure to its constituent elements of carbon and hydrogen. Carbon monoxide and dioxide may be produced from burning.

HAZARDOUS POLYMERIZATION: Temperatures as low as 250°F (121°C) at high pressure, or at low pressure in the presence of a catalyst are sufficient to initiate a polymerization reaction. The hazard here is that the polymerization normally liberates heat and may, therefore, lead to ignition and decomposition of acetylene if conditions permit.

11. Toxicological Information

SKIN AND EYE: Adverse effects are not expected. Repeated contact may cause minor irritation.

INHALATION: High concentrations (10-20% in air) cause symptoms similar to that of being intoxicated. As a narcotic gas or intoxicant, it causes hypercapnia (an excessive amount of carbon dioxide in the blood). Repeated exposures to tolerable levels has not shown deleterious effects. TC_{LO}, human - Inhalation of 20 ppb inhaled has been shown to cause headache and dyspnea. Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.

12. Ecological Information

Product does not contain Class I or Class II ozone depleting substances. Not toxic. Will not bioconcentrate.

13. Disposal Considerations

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to BOC Gases or authorized distributor for proper disposal.

14. Transport Information

PARAMETER	United States DOT	Canada TDG
PROPER SHIPPING NAME:	Acetylene, dissolved	Acetylene, dissolved
HAZARD CLASS:	2.1	2.1
IDENTIFICATION NUMBER:	UN 1001	UN 1001
SHIPPING LABEL:	FLAMMABLE GAS	FLAMMABLE GAS

15. Regulatory Information

SARA TITLE III NOTIFICATIONS AND INFORMATION
SARA TITLE III - SECTION 313 SUPPLIER NOTIFICATION:
This product does not contain toxic chemicals subject to reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372.

SARA TITLE III - HAZARD CLASSES:
Fire Hazard
Sudden Release of Pressure Hazard
Reactivity Hazard

U.S. TSCA/Canadian DSL: All ingredients are listed on the U.S. Toxic Substances Control Act (TSCA) inventory or exempt from listing and on the Canadian Domestic Substance List (DSL).

California Proposition 65: This product does not contain ingredient(s) known to the State of California to cause cancer or reproductive toxicity.

Canadian Controlled Products Regulations (CPR): 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.

16. Other Information

NFPA HAZARD CODES		HMIS HAZARD CODES		RATINGS SYSTEM
Health:	0	Health:	0	0 = No Hazard
Flammability:	4	Flammability:	4	1 = Slight Hazard
Instability:	3	Reactivity:	2	2 = Moderate Hazard
				3 = Serious Hazard
				4 = Severe Hazard

Note: The Reactivity Hazard Rating is based on the 2nd Edition of the National Paint and Coatings Association's (NPCA's) Hazardous Materials Identification System (HMIS®). Hazard ratings were based on the best available information at the time of the review. Ratings will be reassigned in accordance with Compressed Gas Association (CGA) guidelines as published in the future edition of CGA Pamphlet P-19.

ACGIH	American Conference of Governmental Industrial Hygienists
DOT	Department of Transportation
IARC	International Agency for Research on Cancer
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
SARA	Superfund Amendments and Reauthorization Act
STEL	Short Term Exposure Limit
TDG	Transportation of Dangerous Goods
TLV	Threshold Limit Value
WHMIS	Workplace Hazardous Materials Information System

Compressed gas cylinders shall not be refilled without the express written permission of the owner. Shipment of a compressed gas cylinder which has not been filled by the owner or with his/her (written) consent is a violation of transportation regulations.

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES:
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 herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

HALL CHEM MFG. INC.
1270 rue Nobel
Boucherville Qc J4B 5H1
Tel. : (450) 645-0296
Fax : (450) 645-0444

MATERIAL SAFETY DATA SHEET
EMERGENCY : CANUTEC (613) 996-6666

MSDS: 1400 -2

PRODUCT IDENTIFICATION AND USE

NAME OF PRODUCT : Acid Battery

USE OF PRODUCT : Electric storage battery

TRANSPORTATION OF DANGEROUS GOODS

SHIPPING NAME : Battery fluid, acid

WHMIS CLASSIFICATION: D1A, E

P.N.I. : UN2796

PRIMARY CLASS : 8

PACKING GROUP : II

SUBSIDIARY CLASS :

COMPONENTS

COMPOSITION	% V/V	CASE #	LD_{50}mg/kg Oral/rat	LC_{50}	TLV ppm 8h
Sulfuric acid	> 35	7664-93-9	2140	510 mg/m^3	1 mg/m^3

PHYSICAL CARACTERISTICS

PHYSICAL STATE : Liquid	**APPEARANCE :** Colourless, amber	**ODOR :** Typical (SO_2)	**ODORTRESHOLD :** Not available
VAPOR TENSION : Not available	**VAPOR DENSITY :** > 1	**EVAPORATING RATE :** <1	
BOILING RANGE : 100°C	**FREEZING POINT :** -50 °C	**pH :** React with electrolyte	
DENSITY (25 °C) : 1,265	**DISTRIBUTION FACTOR WATER/OIL :** Not available	**SOLUBILITY IN WATER (25°C) :** 100 %	

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MATERIAL SAFETY DATA SHEET
EMERGENCY : CANUTEC (613) 996-6666

REACTIVITY DATA

CHEMICAL STABILITY : Stable

INCOMPATIBILITY WITH OTHER PRODUCTS : Combination of sulfuric acid with combustibles, and organic materials may cause fire and explosion. Also avoid strong reducing agents, most metals, carbides, chlorates, nitrates, picrate. Lead compound: potassium, carbides, sulfides, peroxides, phosphorus and sulfur.

REACTIVITY CONDITIONS : No hazardous polymerization.

EXPLOSION AND FIRE RISKS

FLAMMABILITY : Not flammable

EXTINGUISHING METHODS : CO_2, foam, dry chemical

FLASH POINT : Not applicable **AUTO-IGNITION TEMPS. :** None

FLAMMABILITY (% per volume)

SUPERIOR LIMIT : Not available **LOWER LIMIT :** Not available

HAZARDOUS COMBUSTION PRODUCT : Anhydrous hydrogen sulfur and sulfuric

EXPLOSIBILITY DATA : None

TOXICOLOGICAL PROPERTIES

ABSORPTION WAYS :			CONTACT :	
SKIN	INHALATION √	INGESTION √	WITH SKIN √	EYES √

EFFECTS OF EXPOSURE TO PRODUCT : High levels of sulfuric acid vapors or mist may cause severe respiratory irritation, severe eye irritation and burns, cornea damage and possible blindness. Sulfuric acid may cause severe irritation, burns and ulceration of skin, irritation of mouth, throat, esophagus and stomach, abdominal pain, nausea, headaches, vomiting, diarrhea, severe cramping.

SYMTOMS OF OVEREXPOSURE: Sulfuric acid may cause severe skin irritation, burns, damage to cornea and possible blindness and upper respiratory irritation. Exposition may cause inflammation of nose, throat and bronchial tubes and possible erosion of tooth enamel. May cause abdominal pain, nausea, headaches, vomiting, diarrhea, severe cramping, difficulty in sleeping, anemia, damage to the kidneys and nervous system, and reproductive change in both males and females.

PREVENTIVE MEASURES

HALL CHEM MFG. INC.
1270 rue Nobel
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Tel. : (450) 645-0296
Fax : (450) 645-0444

MATERIAL SAFETY DATA SHEET
EMERGENCY : CANUTEC (613) 996-6666

PROTECTIVE EQUIPMENT : Gloves, respirator, protective clothes.

GLOVES : Neoprene or PVC

RESPIRATORY SYSTEM : Use an MSHA/NIOSH approved respirator with filtering cartridges against acid gases, dust, mist, and vapors for maximal concentrations of 10 mg/m^3 of acid gas.

OCULAR INSTRUMENT : Chemical splash goggles or face shield.

CLOTHING : Acid resistant apron. Under severe exposure or emergency conditions, wear avid resistant clothing and boots.

TECHNICAL CONTROL : Ventilation

PROCEDURE IN CASE OF LEAKS/SPILLS : Remove combustible materials and all sources of ignition. Stop flow of material and contain spill by diking with soda ash (sodium carbonate) or quick lime (calcium oxide). Carefully neutralize spill with soda ash, etc. Make certain mixture is neutral then collect residue and place in a drum or other suitable container with a label specifying "contains hazardous waste". Dispose of as hazardous waste. If battery is leaking, place battery in a heavy duty plastic bag. Wear acid resistant boots and gloves, face shield and chemical splash goggles.

HANDLING : Use good hygiene and cleaning habits.

STORAGE : Store in well ventilated areas.

FIRST AID

SKIN : Flush with large amounts of water for at least 15 minutes, remove any contaminated clothing and do not wear again until cleaned.

EYES : Flush immediately with cool water for at least 15 minutes, then consult physician.

INHALATION : Remove victim to fresh air immediately. If breathing is difficult give oxygen.

INGESTION : Give large quantities of water. Do not induce vomiting. Consult physician.

INFORMATION ON THE M.S.D.S. PREPARATION

PREPARED BY : **TELEPHONE : (450) 645-0296** **REVISED: March 24, 2004**
Hall Chem Mfg. Inc.

NOTE : The information in this detailed M.S.D.S. is available on request, for the customer service. It must not be used for any other purpose and its reproduction and/or publication is forbidden without the consent of HALL CHEM

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MATERIAL SAFETY DATA SHEET

EMERGENCY : CANUTEC (613) 996-6666

MFG. INC. Even though this information is based on reliable sources, HALL CHEM MFG. INC. cannot guarantee its accuracy and formally excludes all explicit guarantee relative to the exactitude of this information or of the results following its application.

WD-40 Products (Canada) Ltd.

WD-40 PRODUCTS (CANADA) LTD.
P.O. BOX 220 TORONTO, ONTARIO M9C 4V3 (416) 622-9881 FAX (416) 622-8096 www.wd40.com

MATERIAL SAFETY DATA SHEET ☒ AEROSOL ☐ LIQUID

SECTION I: PRODUCT AND PREPARATION INFORMATION

MARKETED BY:	WD-40 PRODUCTS (CANADA) LTD.	TELEPHONE:		TRADE NAME AND SYNONYMS	WD-40 AEROSOL
ADDRESS	P.O. BOX 220 TORONTO, ONTARIO M9C 4V3	EMERGENCY ONLY (CHEMTREC):	1-800-424-9300	PRODUCT USE	LUBRICANT/PENETRANT
		INFORMATION:	(416) 622-9881	CHEMICAL NAMES AND SYNONYMS	ORGANIC MIXTURE

CODE NUMBER	01022, 01023, 01002, 01011, 01012, 01005
PREPARED BY:	TECHNICAL GROUP, (416) 622-9881
DATE OF PREPARATION:	MAY 1, 2002

SECTION II: HAZARDOUS INGREDIENTS

HAZARDOUS INGREDIENTS	%	T.L.V.	C.A.S. #	LD/50, ROUTE, SPECIES	LC/50, ROUTE, SPECIES
STODDARD SOLVENT	60 – 70	100 ppm	8052-41-3	5g/kg ORAL-RAT	5g/m³ INHAL-RAT
PETROLEUM BASE OIL	10 – 30	5 mg/m³	64742-65-0	NOT AVAILABLE	NOT AVAILABLE
CARBON DIOXIDE	1 – 5	5000 ppm	124-38-9	NONE	NONE

SECTION III: SHIPPING INFORMATION

NFPA CLASS – LEVEL 3

TDG CLASSES – CONSUMER COMMODITY

SHIPPING NAME – AEROSOLS

WHMIS – CONSUMER COMMODITY

PACKAGE GROUP – NOT APPLICABLE

UN NUMBER – 1950

SECTION IV: PHYSICAL DATA

PHYSICAL STATE	AEROSOL
BOILING POINT (DEG C)	NOT AVAILABLE
VAPOUR PRESSURE (PSIG) @ 20C	105 – 115
VAPOUR DENSITY (AIR=1) (BY WEIGHT)	GREATER THAN 1
SOLUBILITY IN WATER (% W/W)	NEGLIGIBLE
APPEARANCE	LIGHT AMBER
ODOR	CHARACTERISTIC
ODOR THRESHOLD	NOT AVAILABLE
SPECIFIC GRAVITY (WATER=1)	0.796 – 0.836
AEROSOL PERCENT VOLATILE BY VOLUME (%)	70
EVAPORATION RATE n-BUTYL ACETATE = 1	NOT ESTABLISHED
pH	NOT APPLICABLE
FREEZING POINT: (C)	NOT AVAILABLE
COEFFICIENT OF WATER/OIL DIST.	NOT AVAILABLE

SECTION V: FIRE AND EXPLOSION HAZARDS

AEROSOL FLAME PROJECTION CLASSIFIED AS:	>45 CM
FLASHBACK	NONE
FLAMMABILITY	EXTREMELY FLAMMABLE
IF YES,UNDER WHICH CONDITIONS?	EXCESSIVE HEAT, SPARKS AND OPEN FLAME
EXTINGUISHING MEDIA	CARBON DIOXIDE, DRY CHEMICAL, FOAM
SPECIAL PROCEDURES	WATER FROM FOGGING NOZZLES MAY BE USED TO COOL CLOSED CONTAINERS TO PREVENT BUILD-UP IF EXPOSED TO EXTREME TEMPERATURES. FULL PROTECTIVE EQUIPMENT INCLUDING SELF CONTAINED BREATHING APPARATUS SHOULD BE WORN IN A FIRE INVOLVING THIS MATERIAL
FLASH POINT (C), TAG CLOSED CUP	43
AUTO IGNITION TEMPERATURE (C)	NOT AVAILABLE
LOWER FLAMMABLE LIMIT (% BY VOLUME)	1.0
UPPER FLAMMABLE LIMIT (% BY VOLUME)	8.0
HAZARDOUS COMBUSTION PRODUCTS	HYDROCARBON FUMES AND SMOKE. CARBON MONOXIDE WHERE COMBUSTION IS INCOMPLETE
EXPLOSION DATA: SENSITIVITY TO STATIC	NOT APPLICABLE
DISCHARGE: SENSITIVITY TO IMPACT	NOT APPLICABLE

SECTION VI: REACTIVITY DATA

CHEMICAL STABILITY:

YES.....UNDER NORMAL CONDITIONS

NO, WHICH CONDITIONS?.....NOT APPLICABLE

COMPATABILITY WITH OTHER SUBSTANCES:

NO, WHICH ONES?.....STRONG OXIDIZING AGENTS.

HAZARDOUS PRODUCTS OF DECOMPOSITION.....HYDROCARBON FUMES AND SMOKE. CARBON MONOXIDE WHERE COMBUSTION IS INCOMPLETE.

REACTIVITY CONDITIONS?.....NOT APPLICABLE

SECTION VII: TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY:

SKIN CONTACT.....MAY CAUSE IRRITATION

SKIN ABSORPTION.....NO DATA AVAILABLE FOR THIS PRODUCT MIXTURE

EYE CONTACT.....MAY CAUSE IRRITATION

INHALATION.....INHALATION OF SOLVENTS MAY CAUSE IRRITATION. PROPELLANT IS A SIMPLE ASPHYSIANT.

INGESTION.....MAY CAUSE HEADACHE, NAUSEA, VOMITING AND WEAKNESS

EFFECTS OF ACUTE EXPOSURE.....DIZZINESS, NAUSEA, IRRITATION TO SKIN & EYES

EFFECTS OF CHRONIC EXPOSURE.....SOLVENTS MAY CAUSE DEFATTING DERMATITIS

EXPOSURE LIMIT OF MATERIAL.....SEE SECTION 11

IRRITANCY OF MATERIAL.....SKIN/EYE IRRITANT

SENSITIZING CAPABILITY OF MATERIAL.....UNKOWN

CARCINOGENICITY OF MATERIAL.....THE INGREDIENTS OF THIS PRODUCT ARE NOT LISTED AS CARCINOGENS BY NTP, (NATIONAL TOXICOLOGY PROGRAM), NOT REGULATED AS CARCINOGENS BY OSHA, (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION), AND HAVE NOT BEEN EVALUATED BY IRAC, (INTERNATIONAL AGENCY FOR RESEARCH ON CANCER), NOR BY ACGIH (AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS).

REPRODUCTIVE EFFECTS.....NO INFORMATION IS AVAILABLE AND NO ADVERSE REPRODUCTIVE EFFECTS ARE ANTICIPATED

TERATOGENICITY.....NO INFORMATION IS AVAILABLE AND NO ADVERSE TERATOGENIC EFFECTS ARE ANTICIPATED

MUTAGENICITY.....NO INFORMATION IS AVAILABLE AND NO ADVERSE MUTAGENIC EFFECTS ARE ANTICIPATED

SYNERGISTIC MATERIALS.....NONE KNOWN

SECTION VIII: PREVENTIVE MEASURES

GLOVES/TYPE.....WEAR CHEMICAL RESISTANT GLOVES

RESPIRATORY/TYPE.....IF USED INDOORS ON A CONTINUOUS BASIS, USE OF A CARTRIDGE TYPE RESPIRATOR (NIOSH/MSHATC 23C OR EQUIVALENT) IS RECOMMENDED

EYE/TYPE.....SAFETY GLASSES

FOOTWEAR/TYPE.....NOT NORMALLY REQUIRED

OTHER/TYPE.....NOT REQUIRED

ENGINEERING CONTROLS.....VENTILATION – LOCAL (MECHANICAL IF USED INDOORS ON A CONTINUOUS BASIS)

LEAK/SPILL.....REMOVE ALL SOURCES OF IGNITION. USE AN INERT ABSORBENT MATERIAL, AND NON-SPARKING TOOLS. AVOID BREATHING FUMES. VENTILATE AREA. PREVENT FROM ENTERING A WATERCOURSE.

HANDLING PROCEDURES AND EQUIPMENT.....STORE IN A COOL, WELL VENTILATED AREA NOT TO EXCEED 50 DEG C

WASTE DISPOSAL.....DO NOT PUNCTURE OR INCINERATE CONTAINERS, EVEN WHEN EMPTY. DISPOSE OF IN ACCORDANCE WITH LOCAL, PROVINCIAL AND FEDERAL REGULATIONS.

STORAGE NEEDS.....KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAMES.

SPECIAL SHIPPING INSTRUCTIONS.....SEE SECTION III. TDG CLASSIFICATION

SECTION IX: FIRST AID MEASURES

EMERGENCY FIRST AID PROCEDURE

IN CASE OF EYE CONTACT, FLUSH IMMEDIATELY WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES AND GET MEDICAL ATTENTION. FOR SKIN, WASH THOROUGHLY WITH SOAP AND WATER. IF AFFECTED BY INHALATION OF VAPOUR OR SPRAY MIST, REMOVE TO FRESH AIR. IF SWALLOWED; DO NOT INDUCE VOMITING, GET MEDICAL ATTENTION.

HIPERTECH

MATERIAL SAFETY DATA SHEET

PRODUCT IDENTIFICATION

COMMERCIAL NAME :	***AFG-2 ; ANTI-FRICTION GREASE, NLGI grade 2***
SYNONYM AND / OR APPLICATION :	Lubricating Grease
PRODUCT NUMBER :	142

REGULATORY CLASSIFICATION

WHMIS :
Not a controlled product.

HMIS RATINGS :

Health	1
Flammability	1
Reactivity	0
Personal protection	0

HMIS INDEX :

Minimal	0
Slight	1
Moderate	2
Serious	3
Severe	4

TRANSPORTATION OF DANGEROUS GOODS INFORMATION :
Shipping Name : Not regulated

INGREDIENTS

HAZARDOUS INGREDIENTS	CAS No	%	EXPOSURE LIMIT	LD50 / LC50
Not applicable				

TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY :	Skin and eye contact
ACUTE EFFECTS OF OVEREXPOSURE :	Low order of toxicity and irritancy. May cause skin and eye irritation with prolonged and repeated contact.
CHRONIC EFFECTS OF OVEREXPOSURE :	Not available
LD50 OF PRODUCT :	Not available
LC50 OF PRODUCT :	Not applicable
IRRITANCY OF PRODUCT :	May cause skin and eye irritation with prolonged and repeated contact.
SENSITIZATION OF PRODUCT :	Not applicable
CARCINOGENICITY :	Not applicable
MUTAGENICITY :	Not applicable
SYNERGISTIC PRODUCTS :	Not applicable

FIRST AID MEASURES

EYES :	Flush with clean water for at least 15 minutes and call a physician.
SKIN :	Wash thoroughly with soap and water.
INHALATION :	Remove victim to fresh air and call a physician.
INGESTION :	Call a physician immediately.

PHYSICAL DATA

PHYSICAL STATE :	Grease
APPEARANCE :	Green grease
ODOUR :	Oil odor
BOILING POINT (DEG C) :	Not applicable
FREEZING POINT (DEG C) :	Not applicable
SPECIFIC GRAVITY :	1,01
SOLUBILITY IN WATER :	Insoluble
VAPOUR PRESSURE (mm Hg) :	Not applicable
VAPOUR DENSITY (AIR = 1) :	Not applicable

EVAPORATION RATE :	Not applicable
pH :	Not applicable
COEFFICIENT OF WATER / OIL DISTRIBUTION :	Not available

REACTIVITY

STABILITY :	Stable
INCOMPATIBILITY :	Keep away from strong oxidizers, excessive heat and ignition sources.
CONDITION OF REACTIVITY :	Not available
HAZARDOUS DECOMPOSITION PRODUCTS :	CO_2, CO and oxides of sulfur are generated on combustion.

PREVENTION MEASURES

SPECIAL PROTECTION INFORMATION :	
VENTILATION TYPE REQUIRED :	Local exhaust
RESPIRATORY PROTECTION :	Not applicable
PROTECTION GLOVES :	Oil resistant
EYE PROTECTION :	Safety glasses
OTHER PROTECTIVE EQUIPMENT :	Not applicable
HANDLING OF SPILLS OR LEAKS :	
PROCEDURES FOR CLEAN-UP :	Shut off leak and dyke up large spills. Keep spills clear of flames and sparks. Absorb with inert material such as earth, sand or vermiculite.
WASTE DISPOSAL :	Dispose of in accordance with all applicable federal, provincial and local regulations.
STORAGE REQUIREMENTS :	Keep away from strong oxidizers, excessive heat and ignition sources.

FIRE / EXPLOSION

FLASH POINT :	175 ° C (ASTM D92)
AUTO-IGNITION TEMPERATURE :	Not available
FLAMMABLE LIMITS (%) :	Not available
CONDITIONS OF FLAMMABILITY :	Not available
EXTINGUISHING AGENTS :	Dry chemical / water Fog / CO_2 / Foam / Sand or Earth
SPECIAL FIRE FIGHTING PROCEDURES :	Wear self-contained breathing apparatus when fighting fires in confined spaces. Water spray is an unsuitable extinguishing agent.
UNUSUAL FIRE AND EXPLOSION HAZARDS :	Not applicable

PREPARATION INFORMATION

Prepared by :	***HIPERTECH SPECIALITIES INC***
Date :	NOVEMBER 1993
Revision date :	SEPTEMBER 1999, MAY 2000, APRIL 2003

HALL CHEM MFG. INC.
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Boucherville Qc J4B 5H1

Tel. : (450) 645-0296
Fax : (450) 645-0444

MATERIAL SAFETY DATA SHEET

EMERGENCY : CANUTEC (613) 996-6666

INGESTION : Do not induce vomiting. If spontaneous vomiting occurs, avoid the victim from inhaling its vomit. Keep victim at rest and warm. Call for medical assistance immediately and/or bring the victim to the hospital or the nearest poison center.

NOTE TO PHYSICIAN : This product contains ethylene glycol. Ethanol decreases the metabolism of ethylene glycol to toxic metabolites. Ethanol should be administered as soon as possible in cases of severe poisoning since the elimination half-life of ethylene glycol is 3 hours. If medical care will be delayed several hours, use three to four 1-ounce oral "shots" of 86-proof whiskey before or during transport to the hospital.

INFORMATION ON THE M.S.D.S. PREPARATION

PREPARED BY :
Hall Chem Mfg. Inc.

TELEPHONE : (514) 648-1918 REVISED – January 27, 2004

NOTE :
The information in this detailed M.S.D.S. is available on request, for the customer service. It must not be used for any other purpose and its reproduction and/or publication is forbidden without the consent of HALL CHEM MFG. INC. Even though this information is based on reliable sources, HALL CHEM MFG. INC. cannot guarantee its accuracy and formally excludes all explicit guarantee relative to the exactitude of this information or of the results following its application.

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PREVENTIVE MEASURES

PROTECTIVE EQUIPMENT : Gloves, security glasses and protective apron.

GLOVES : **RESPIRATORY SYSTEM :**

OCULAR INSTRUMENT : **CLOTHING :**

TECHNICAL CONTROL : Ventilation.

PROCEDURE IN CASE OF LEAKS/SPILLS : Wear suitable protective equipment. Large spills should be contained and collected. Small spills can be collected or may be absorbed with appropriate liquid absorbing materials. All spill response and disposal should be carried out in accordance with federal, provincial, and local regulations. Put the waste in a closed container until future disposal. Do not throw in the sewers or garbage.

HANDLING : Handle and open the containers with precaution. Do not weld or cut the containers because they can contain residues from flammable vapors. Do not heat or pressurize containers. Do not put any non-combustible material in empty containers, violent chemical reactions can occur. Do not smoke, eat or drink on working areas. Respect a good personal hygiene after manipulation of the product. Keep containers electrically grounded specially during manipulation or while transferring. The material can accumulate static.

WASTE DISPOSAL : Do not dispose in sewers nor in regular trashes.

STORAGE : In a cool, dry and well ventilated area. Keep away from incompatible material and from sources of ignition (naked flames, sparks, electricity). Keep the containers grounded especially during pumping and transfer operations.

FIRST AID

SKIN : Remove contaminated clothing. Wash exposed area with soap and water. If symptoms persist, seek medical attention.

EYES : Flush gently water yours eyes while holding eyelids apart; seek immediate medical attention.

INHALATION : If symptoms develop, immediately move individual away from exposure and into fresh air. Seek immediate medical attention; keep person warm and quiet. If person is not breathing, begin artificial respiration. If breathing is difficult, administer oxygen. Contact a physician.

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REACTIVITY DATA

CHEMICAL STABILITY : Stable

INCOMPATIBILITY WITH OTHER PRODUCTS : Avoid oxidizers.

REACTIVITY CONDITIONS : No hazardous polymerization

EXPLOSION AND FIRE RISKS

FLAMMABILITY : 1

EXTINGUISHING METHODS : Apply alcohol type or all purpose type foams by manufacturers recommended techniques for large fires. Use water spray, carbon dioxide or dry chemical media for small fires.

FLASH POINT : 116,1°C, Tag closed cup
115,6°C, Cleveland open cup

AUTO-IGNITION TEMPS. : 400°C

FLAMMABILITY (% per volume)
SUPERIOR LIMIT : 15,3

LOWER LIMIT :3,2

HAZARDOUS COMBUSTION PRODUCT : Burning may produce carbon oxide, carbon dioxide and water. Burning may also produce others organic compounds that can not be identified.

EXPLOSIBILITY DATA :

TOXICOLOGICAL PROPERTIES

ABSORPTION WAYS			CONTACT	
SKIN √	INHALATION √	INGESTION √	WITH SKIN √	EYES √

EFFECTS OF EXPOSURE TO PRODUCT : Product can irritate mucus glands. High doses can provoke headaches, drowsiness, nausea, dizziness and fainting. Inhalation may aggravate cases of emphysema and bronchitis. Repeated contact with skin provokes irritations, dryness of the skin and cracking of the skin.