

# **SPILL PREVENTION AND RESPONSE PLAN**

**MUSKOX PROPERTY  
NUNAVUT, CANADA**



**Original Effective Date: June 2015  
1<sup>st</sup> Amended Effective July 2015  
2<sup>nd</sup> Amended Effective August 2019**

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## 1 Introduction

This Spill Prevention and Response Plan (“SPRP”) applies to mineral exploration activities conducted by APEX Geoscience Ltd. (“APEX”) and/or Benchmark Metals Inc. (“Benchmark”) on the Muskox Property (the “Property”), Nunavut, Canada.

This SPRP will come into effect August 2019, pending approval. Copies and updates to this plan may be obtained via APEX and Benchmark (the “Companies”).

### 1.1 Contact Details

**APEX Geoscience Ltd.**

110 – 8429 24 Street NW

Edmonton, AB T6P 1L3

(780) 467-3532

[www.apexgeoscience.com](http://www.apexgeoscience.com)

**Benchmark Metals Inc.**

10545 45 Avenue NW/ Suite 300

250 Southridge NW

Edmonton, AB T6H 4M9

(780) 437-6624

[info@bnchmetals.com](mailto:info@bnchmetals.com)

### 1.2 Purpose and Scope

The SPRP provides straightforward procedures for the storage and handling of fuels and other hazardous materials for the purpose of reducing the risk of environmental contamination and to ensure the health and safety of all personnel from the accidental release of deleterious materials. If an accidental release should occur, the SPRP provides clear response procedures. The goals of the Spill Prevention and Response Plan are to:

- Promote safe handling and use of potentially hazardous materials;
- Promote effective and safe recovery of spilled, potentially hazardous materials;
- Reduce environmental impacts of spills to water and land;
- Identify responsibilities and reporting procedures for spill events;
- Provide site specific information about the facilities and contingencies in place;
- Provide readily accessible emergency information to clean-up crews, management, and government agencies;
- Comply with federal and territorial government regulations and guidelines pertaining to the preparation of a Spill Prevention and Response Plan and notification requirements in the event of a spill.

### 1.3 Environmental Policy

The Companies are firmly committed to the protection and conservation of the natural environment, and to ensuring the health and safety of all employees, contractors, and people in surrounding communities. The environmental policy for the Muskox Property is to:

- Develop the project in a socially and environmentally responsible manner;
- Fully comply with all applicable environmental legislation and regulations;
- Work in cooperation with federal, territorial, and local governments, as well as other relevant regulatory bodies, and the general public, on all aspects of environmental protection and policy;



- Assess and mitigate any potential environmental impacts and minimize risks to the health and safety of all employees, contractors, and the general public;
- Ensure contractors operate according to the Muskox Diamond Property environmental policies and procedures;
- Employ an emergency response plan to reduce impacts of unforeseen events;
- Provide ongoing instruction on Muskox Diamond Property environmental policies and spill prevention and response plans for all employees and contractors;
- Keep employees, contractors, inspectors, government, and regulatory bodies informed of any changes at the site or with project activities.

For further detail regarding environmental policy, please refer to the Muskox Diamond Property “Environmental Management Plan”.

#### 1.4 Applicable Legislation and Guidelines

Acts, regulations, and legislation that relate to Environmental Management and Spill Prevention and Response in Nunavut are listed below:

##### *1.4.1 Federal*

- Canadian Environmental Protection Act
- Environment Canada's Environmental Emergency (E2) Regulations
- Implementation Guidelines for the Environmental Emergency Regulations
- Canadian Standards Association (CSA) Z1600-14 - Emergency and continuity management program
- National Oil Spill Preparedness and Response Regime
- National Energy Board requirements such as those in the Canada Oil and Gas Operations Act and Regulations and the Onshore Pipeline Regulations, 1999
- Environment Canada's Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations
- Environment Canada's Guidelines for the Preparation of Hazardous Material Spill Contingency Plans, 1990
- Fisheries Act
- Migratory Birds Convention Act
- Nunavut Waters and Nunavut Surface Rights Tribunal Act
- Transportation of Dangerous Goods Act
- Transportation of Dangerous Good Regulations
- National Fire Code of Canada
- Northern Land Use Guidelines
- Workplace Hazardous Materials Information System (WHMIS)
- CCME Environmental Codes of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products
- Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations
- Guidelines for Spill Contingency Planning (AANDC)

### 1.4.2 Territorial

- Northwest Territories and Nunavut Spill Contingency Planning and Reporting Regulations
- Contingency Planning and Spill Reporting In Nunavut – A guide to the New Regulations
- Guideline for Industrial Waste Discharges in Nunavut
- Fire Prevention Act
- Environmental Protection Act
- Mine Health and Safety Act and Regulations
- Public Health Act
- Safety Act
- Nunavut Occupational Health and Safety Regulations
- Environmental Guideline for the General Management of Hazardous Waste

### 1.5 Other Plans

The SPRP should be considered as a part of the Property wide management system. Other management plans in place at the Muskox Property include:

- Abandonment and Restoration Plan (“ARP”)
- Emergency Response Plan (“ERP”)
- Environmental Management Plan (“EMP”)
- Fuel Management Plan (“FMP”)
- Waste Management Plan (“WMP”)

### 1.6 Property Description

The Muskox Property is composed of the Muskox and Contwoyto Diamond Projects and the Contwoyto Gold Project. The Property is located in the Kitikmeot Region, Nunavut Territory, within 1:250,000 scale NTS map sheets 76E, 76L and 86I. The Property is approximately 250 km southeast of the community of Kugluktuk, 400 km northeast of Yellowknife and is in close proximity the inactive Jericho and Lupin Mines. The Diamond Projects consists of 8 non-contiguous mineral claims, totaling 8884.73 hectares (ha) (Table 1.1, Figure 1.1).

Table 1.1 Muskox and Contwoyto Diamond Projects Mineral Tenures

Claim Number	Claim Name	Claim Status	Issue Date	Staking Date	Anniversary Date	Claim Area (ha)
F93677	MX 01	ACTIVE	2016-10-17	2016-09-13	2018-10-17	150
K91849	RH 2	ACTIVE	2017-12-06	2017-10-14	2019-12-06	1249.2
K91851	MU 1	ACTIVE	2017-12-06	2017-10-14	2019-12-06	1243.77
K91848	RH 1	ACTIVE	2017-12-06	2017-10-14	2019-12-06	1250
K91850	RH 3	ACTIVE	2017-12-06	2017-10-14	2019-12-06	1249.54
K91843	CL 1	ACTIVE	2017-12-06	2017-10-14	2019-12-06	1248.85
K91844	CL 2	ACTIVE	2017-12-06	2017-10-14	2019-12-06	1243.37
K91845	CL 5	ACTIVE	2017-12-06	2017-10-14	2019-12-06	1250

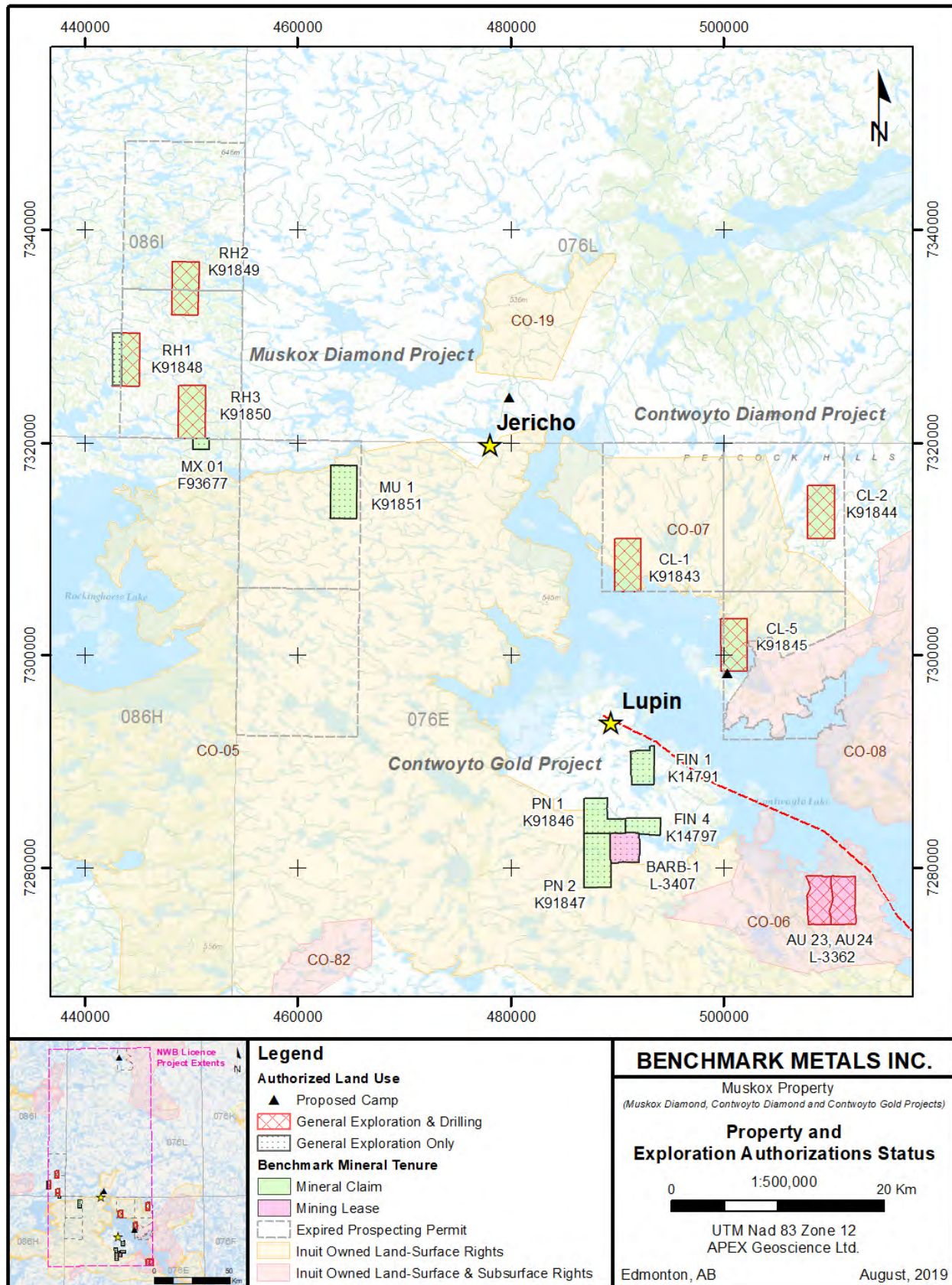


Figure 1.1 Muskox Property Location and Approved Exploration



The Contwoyto Gold Project is located directly south of the Contwoyto Diamond Project and consists of 4 mineral claims and 2 grandfathered mineral leases totaling 6,222.73 ha (Table 1.2, Figure 1.1).

Table 1.2 Contwoyto Gold Project Mineral Tenure

Claim Number	Claim Name	Claim Status	Issue Date	Staking Date	Anniversary Date	Claim Area (ha)
K14797	FIN 4	ACTIVE	2011-06-28	2011-06-02	2019-06-28	479.96
K14791	FIN 1	ACTIVE	2011-06-28	2011-06-02	2019-06-28	789.95
K91846	PN 1	ACTIVE	2017-12-06	2017-10-14	2019-12-06	951.22
K91847	PN 2	ACTIVE	2017-12-06	2017-10-14	2019-12-06	1240.84
L-3362	AU 23, AU 24	LEASED	1981-02-20	1981-02-20	2032-11-30	2010.88
L-3407	BARB-1	LEASED	1980-12-31	1980-12-31	2033-02-28	749.88

### 1.7 Land and Water Use Authorizations

All land and water use authorizations are currently held in the name of APEX Geoscience Ltd., with the exception of KTL315C011, which is in the name of Benchmark Metals Inc. The mineral tenures are held in the name of Crystal Exploration Ltd. Benchmark Metals Inc. changed its name from Crystal Exploration Inc. on May 25<sup>th</sup>, 2018. All mineral tenures and landuse authorizations will be transferred into the name of Benchmark Metals Inc. when applying for extensions and/or amendments.

Table 1.3 details the land and water use authorizations associated with the Muskox Property.

Table 1.3 Muskox Property Land and Water Use Authorizations

<u>Organization</u>	<u>Authorization</u>	<u>Licensee/ Permittee</u>	<u>Authorization Number</u>	<u>Expiration Date</u>
Nunavut Planning Commission ("NPC")	Conformity Determination	APEX Geoscience Ltd.	150515	N/A
Nunavut Impact Review Board (NIRB)	Screening Decision	APEX Geoscience Ltd.	15EN024	N/A
Crown-Indigenous Relations and Northern Affairs Canada ("CIRNAC")	Land Use Permit	APEX Geoscience Ltd.	N2015C0020	Sept 3, 2019
Nunavut Water Board ("NWB")	Water Licence	APEX Geoscience Ltd.	2BE-MDP1520	Sept 9, 2020
Kitikmeot Inuit Association ("KitlA")	Inuit Owned Land Use License	Benchmark Metals Inc.	KTL315C011	Aug 22, 2019
		APEX Geoscience Ltd.	KTL117B011	July 6, 2019

The proposed exploration programs will likely be supported by the Lupin Mine, but as an alternative three potential camp locations have been identified. The proposed camp would be a temporary, mobile 10-12 person exploration camp, therefore able to be moved to one of the other approved locations, if need be. The camp, with fuel cache, will be reclaimed prior to moving to one of the other approved locations and therefore no more than one campsite will be in use at one time. The exact timing of use for each of the campsites is unknown at this time, but CIRNAC and the NWB will be notified at least 30

days prior to camp construction. Personnel and cargo will be transported to and from Lupin/camp in the summer months by fixed wing (Twin Otter) from Yellowknife and due to the close proximity to the Tibbitt to Contwoyto Ice Road can be serviced by ground in the winter. Due to the remoteness of the Property location, the only people, who would be directly affected by a potential spill, are employees and contractors.

The proposed camp locations were selected due to appropriate terrain composed of a consolidated and durable surface, such as gravel or sand, which is able to withstand repeated, heavy use from aircraft and camp use. Structures for each of the proposed camps may include 6 sleeper tents, medical tent, kitchen, dry, office, shop, core shack, generator housing, incinerator, and 2 outhouses. The majority of the structures will be insulated Weatherhaven tents, or similar, with tarp floors.

A fuel cache of approximately 40,000 L (~ 200 drums) will be established on stable ground near the camp location in use, primarily to store diesel and jet fuel. Small quantities of gasoline and propane will also be stored. GPS locations of the camp fuel cache, hazardous waste storage areas and incinerator will be provided to the CIRNAC and the NWB once established and be included in annual reports. No fuel will be stored at camp locations that are not in use. Small temporary fuel caches, of less than 4,000 L, may also be required to supply the drilling and exploration programs. Within 30 days of any temporary fuel cache, CIRNAC, NWB and KitlA (if on IOL) will be notified of the details of the cache including: GPS location, fuel type, container sizes, method of storage and date of removal. The temporary fuel cache GPS locations will also be included in the annual reports.

The proposed exploration activities for the Muskox Property include geological mapping, till sampling, prospecting, ground geophysical surveys and diamond drilling. Exploration programs are anticipated to commence annually in June and terminate in October, but also have the potential to continue through the winter.

Drill programs of 5,000 to 10,000 m are anticipated annually, utilizing one to two diamond drills. The average hole depth is expected to be approximately 200 m, up to a maximum proposed depth of 700 m. The areas of proposed drilling are currently uncertain as additional exploration work, such as ground geophysical surveys, is required to define precise targets. Exact drillhole locations will be provided to CIRNAC, NWB and the KitlA (if on IOL) prior to commencement and will also be provided in the annual reports. Any ground disturbance work will be strictly confined to areas for which Benchmark (Crystal) holds the subsurface mineral rights within the original authorized area encompassed by the now-expired Prospecting Permits (Figure 1.1).

## 2 Hazardous Materials On-Site

A main fuel cache will be established proximal to the occupied camp, primarily to store diesel and jet fuel, with smaller quantities of gasoline and propane. No fuel will be stored at un-occupied camps. Small fuel caches will also be established at drill sites while drilling is in progress. These temporary caches will store small amounts of diesel and propane, as needed for drilling. Other hazardous materials found on site may include small

quantities of various lubricants/oil/grease for drilling and maintenance of motorized equipment, cleaning products, and waste oil.

Diesel, jet fuel, and gasoline will be stored in 205 litre (L) steel drums. Propane will be stored in 100 pound (lb) cylinders equipped with pressure relief valves. Waste oil will be sealed in 205 L steel drums and removed from camp for proper disposal.

Table 2.1 Potential Inventory of Hazardous Materials to be Stored at Camp

<b>Material</b>	<b>Container</b>	<b>Maximum On Site*</b>
Diesel	205 L Drum	100 Drums
Jet Fuel (Jet A or Jet B)	205 L Drum	100 Drums
Gasoline	205 L Drum	10 Drums
Propane	100 lb Cylinder	20 Cylinders

Further details on fuel storage and monitoring can be found in the Muskox Property “Fuel Management Plan”. Material Safety Data Sheets (“MSDS”) for each of the hazardous materials listed in Table 1.4 are included in Appendix 1.

### 3 Preventative Measures

All fuels and other hazardous materials will be stored within “Arctic Insta-Berms”, or similar products, for secondary containment. These types of berms utilize chemical and fire resistant fabric (generally polyurethane coated nylon or vinyl coated polyester material) designed for extreme arctic temperatures and puncture resistance. “RainDrain” or similar hydrocarbon filtration systems will be used to safely remove any water collected inside the berms, and as a safeguard against any potential overflows of contaminated water.

Fuel drums will be stored on their sides in organized rows with the bungs in the three o’clock and nine o’clock positions. Drums will be stood upright 1 to 2 days prior to use in order to allow any contaminants to settle. Daily inspections will be conducted to identify any damaged or leaking containers, and the findings reported in a “Daily Fuel Inspection Record.” In the event that a leak is discovered, the substance will either be used immediately or transferred to an undamaged container. Regular inspections and maintenance of motorized equipment will also be performed to avoid any fluid leaks onto the land. When possible, motorized equipment will be stored within berms.

Propane cylinders will be equipped with a pressure release valve that opens and closes to prevent a buildup of excessive internal pressure. Labels, showing data such as date of manufacture and re-testing dates, will be applied to the collar of the cylinders. Propane is non-toxic and will not contaminate soil, however secondary containment berms will be used for storage as a precaution. All propane cylinders will be secured for safety and stored away from any sources of ignition.

Electric or hand wobble pumps equipped with filtration devices will be used for the transfer of diesel, jet fuel, and gasoline from their storage containers directly to their end-use fuel

tanks. Portable drip trays or mini-berms will be used to mitigate the risk of any spillage. Proper grounding procedures will always be used during fuel transfer while using an electric pump. Cigarette smoking, sparks, open flames, and any potential ignition sources are prohibited within 100 m of any fuel storage site and at all times during fuel transfer.

All chemical and fuel storage and fuel transfer areas will be located a minimum distance of 31 m from the normal high water mark of any water body. Spill kits and firefighting equipment will be strategically located near where any hazardous materials are stored or transferred, at all drill sites, in the helicopter(s), and at other locations throughout the camp. Section 4.1 provides details on spill kit contents.

Camp grey water will be piped to a sump at least 31 m from the kitchen, office, and sleeping quarters and a minimum of 31 m from the normal high water mark of any water body. The sump must maintain a minimum 1 metre (m) freeboard at all times. The sump and pipe will be inspected at regular intervals for leaks or overflow.

## 4 Emergency Response Organization

In the case of a spill or environmental emergency, an immediate, safe and environmentally responsible reaction is required. All spills at the Muskox Diamond Property will be reported.

### 4.1 Basic Steps

The basic steps of the response plan are as follows:

1. **Ensure** the safety of all persons at all times.
2. **Identify** and find the spilled substance and its source, and if possible, stop the process or shut off the source.
3. **Inform** the on-site coordinator or his/her designate at once, so that immediate actions may be taken including notification of the 24 Hour Spill Report Line and an CIRNAC Water Resources Officer.
4. **Contain** the spill or environmental hazard.
5. **Implement** any necessary cleanup/remedial action.

### 4.2 Chain of Command

1. Notify the 24 Hour Spill Report Line by phone at (867) 920-8130, by Fax at (867) 873-6924 or by e-mail it to [spills@gov.nt.ca](mailto:spills@gov.nt.ca).
2. Before or after contacting the 24 Hour Spill Report Line, a Spill Report Form (Appendix 2) is to be filled out.
3. Notify the onsite Project Supervisor.
4. Notify the offsite Project Supervisor: Rob L'Heureux (APEX) at 780 467-5352 or (780) 916-5482.

Table 4.1 Other Contacts for Spill Reporting and Response

Contact	Telephone Number
24 Hour Spill Report Line	(867) 920-8130
Offsite Project Supervisor: Rob L'Heureux (APEX Geoscience Ltd.)	(780) 467-3532 (office) (780) 916-5482 (mobile)
CIRNAC (Nunavut)	(800) 567-9604
CIRNAC Manager of Field Operations	(867) 975-4295
Environment Canada	(867) 975-4644
Government of Nunavut, Department of Environment, [Manager of Environmental Protection (867) 975-7748]	(867) 975-7700 (Iqaluit) (867) 982-7450 (Kugluktuk)
DFO (Central and Arctic Branch)	(519) 383-1813
Nunavut Water Board	(867) 360-6338
RCMP (Kugluktuk)	(867) 982-0123
Kugluktuk Health Centre	(867) 982-4531
Medevac (Yellowknife)	(867) 873-5161
Project Satellite Phone	TBA
Helicopter Satellite Phone	TBA

\* The Phone numbers for the satellite phone system used in camp and for the helicopter change annually and the SPRP must be updated as soon as known and posted.

## 5 Action Plan

### 5.1 Potential Spill Hazards

Even with appropriate precautions, the potential for spills remains when dealing with fuel and other hazardous materials. The following is a list of potential spill hazards:

- 205 L drums holding diesel, jet fuel, gasoline, waste fuels, and waste oils have the potential to leak or rupture due to mishandling. Older or refilled drums are more prone to leaking around the bungs if the seals are not properly maintained.
- Propane cylinders may leak from the valves or rupture as a result of mishandling.
- Vehicles and other motorized equipment may experience fuel or oil leaks as a result of malfunctions, impacts, lack of maintenance, improper storage, or faulty operation.
- Leaks or spills may occur during fuel transfer due to over-fueling, improper fueling procedure, or faulty equipment.
- The risk of rupturing a fuel container increases during transport due to the increased amount of handling involved.

Regular inspection and maintenance of fuel caches, motorized equipment, and fuel transfer equipment will help to mitigate the risks outlined above. Training for proper maintenance of motorized equipment, fuel transfer and handling procedures, and spill response training will be provided to applicable personnel.

### 5.2 Potential Environmental Impacts

All hazardous materials pose a threat to the environment if spilled. Overall, spills in the winter are usually lower impact as snow is a natural sorbent and ice forms a barrier



against soil or water contamination. The following list outlines potential environmental impacts of hazardous materials stored on site:

- Gasoline may be harmful to wildlife and aquatic life. It is not readily biodegradable and has the potential for bioaccumulation in the environment. Gasoline volatilizes quickly.
- Diesel may be harmful to wildlife and aquatic life. It is not readily biodegradable and has the potential for bioaccumulation in the environment. Diesel burns slowly and thus the risk to the environment is reduced during recovery as it can be more readily contained compared to more volatile fuels.
- Jet fuel may be harmful to wildlife and aquatic life. It is not readily biodegradable and has the potential for bioaccumulation in the environment. Jet fuel volatilizes relatively quickly.
- Propane may be harmful to wildlife and the surrounding environment, and it has the potential to accumulate in the environment. Propane is extremely volatile and is the most flammable material stored on site. Impacts to the immediate surrounding environment are of greatest concern.
- Oils and greases may be harmful to wildlife and aquatic life. They are not readily biodegradable and have the potential for bioaccumulation in the environment.

Take action only if safety permits!

**NEVER SMOKE** when dealing with spills!

### 5.3 Initial Actions

- Ensure safety of all personnel.
- Assess spill hazards and risks.
- Remove all sources of ignition.
- Stop the spill if it is possible to do so safely.
- Notify the supervisor and request assistance if needed.
- Contain the spill.

### 5.4 Secondary Actions

- Determine the status of the spill event.
- If necessary, pump fuel from a damaged or leaking tank or drum into a refuge container.
- Notify the 24 Hour Spill Report Line.
- Complete and fax a copy of the Spill Report Form (Appendix 2).
- Notify permitting authorities.
- If possible, resume cleanup and containment.

### 5.5 Containment Procedures

- Ensure it is safe to initiate containment procedures.

- Always use applicable safety equipment (gloves, goggles/safety glasses, masks/respirators, etc.) before attempting to contain a spill.
- Initiate spill containment by first determining what will be affected by the spill.
- Assess speed and direction of the spill and the cause of movement (water, wind, slope).
- Determine the best location for containing the spill, avoiding water bodies.
- Have a contingency plan ready in case spill worsens beyond control or if other factors impede containment efforts.

### *5.5.1 Diesel, Jet Fuel, Gasoline, Hydraulic Oil and Lubricating Oil*

#### 5.5.1.1 Containment of Spills on Land

Spills on land include spills on rock, gravel, soil and/or vegetation. It is important to note that soil is a natural sorbent, thus spills on soil are generally less serious than spills on water as contaminated soil can be more easily recovered. Generally spills on land occur during the late spring, summer or fall when snow cover is at a minimum. It is important that all measures be undertaken to avoid spills reaching open water bodies.

#### **Dykes**

Dykes can be created using soil surrounding a spill on land. These dykes are constructed around the perimeter or down slope of the spilled fuel. A dyke needs to be built up to a size that will ensure containment of the maximum quantity of fuel that may reach it. A plastic tarp can be placed on and at the base of the dyke such that fuel can pool up and subsequently be removed with sorbent materials or by pump into barrels or bags. If the spill is migrating very slowly a dyke may not be necessary and sorbents can be used to soak up fuels before they migrate away from the source of the spill.

#### **Trenches**

Trenches can be dug out to contain spills as long as the top layer of soil is thawed. Shovels pick axes or a loader can be used depending on the size of trench required. It is recommended that the trench be dug to the bedrock or permafrost, which will then provide containment layer for the spilled fuel. Fuel can then be recovered using a pump or sorbent materials.

#### 5.5.1.2 Containment of Spills of Water

Spills on water such as rivers, streams or lakes are the most serious types of spills as they can negatively impact water quality and aquatic life. All measures need to be undertaken to contain spills on open water.

#### **Booms**

Booms are commonly used to recover fuel floating on the surface of lakes or slow moving streams. They are released from the shore of a water body to create a circle around the spill. If the spill is away from the shoreline a boat will need to be used to reach the spill, then the boom can be set out. More than one boom may be used at once. Booms may also be used in streams and should be set out at an angle to the current. Booms are

designed to float and have sorbent materials built into them to absorb fuels at the edge of the boom. Fuel contained within the circle of the boom will need to be recovered using sorbent materials or pumps and placed into barrels or bags for disposal.

### **Weirs**

Weirs can be used to contain spills in streams and to prevent further migration downstream. Plywood or other materials found on site can be placed into and across the width of the stream, such that water may still flow under the weir. Spilled fuel will float on the water surface and be contained at the foot of the weir. It can then be removed using sorbents, booms or pumps and placed into barrels or plastic bags.

### **Barriers**

In some situations barriers made of netting or fence material can be installed across a stream, and sorbent materials placed at the base to absorb spilled fuel. Sorbents will need to be replaced as soon as they are saturated. Water will be allowed to flow through. This is very similar to the weir option discussed above.

Note that in some cases, it may be appropriate to burn fuel or to let volatile fuels such as gasoline evaporate after containment on the water surface. This should only be undertaken in consultation with, and after approval from CIRNA/ KitlA or other lead agency Inspector.

#### **5.5.1.3 Containment of Spills on Ice**

Spills on ice are generally the easiest spills to contain due to the predominantly impermeable nature of the ice. For small spills, sorbent materials are used to soak up spilled fuel. Remaining contaminated ice/ slush can be scraped and shoveled into a plastic bag or barrel. However, all possible attempts should be made to prevent spills from entering ice covered waters as no easy method exists for containment and recovery of spills if they seep under ice.

### **Dykes**

Dykes can be used to contain fuel spills on ice. By collecting surrounding snow, compacting it and mounding it to form a dyke down slope of the spill, a barrier is created thus helping to contain the spill. If the quantity of spill is fairly large, a plastic tarp can be placed over the dyke such that the spill pools at the base of the dyke. The collected fuel can then be pumped into barrels or collected with sorbent materials.

### **Trenches**

For significant spills on ice, trenches can be cut into the ice surrounding and/or down slope of the spill such that fuel is allowed to pool in the trench. It can then be removed via pump into barrels, collected with sorbent materials, or mixed with snow and shoveled into barrels or bags.

## **Burning**

Burning should only be considered if other approaches are not feasible, and is only to be undertaken with the permission of the CIRNAC/ KitIA or other lead agency Inspector.

### **5.5.1.4 Containment of Spills on Snow**

Snow is a natural sorbent, thus as with spills on soil, spilled fuel can be more easily recovered. Generally, small spills on snow can be easily cleaned up by raking and shoveling the contaminated snow into plastic bags or empty barrels, and storing these at an approved location.

## **Dykes**

Dykes can be used to contain fuel spills on snow. By compacting snow down slope from the spill, and mounding it to form a dyke, a barrier or berm is created thus helping to contain the spill. If the quantity of spill is fairly large, a plastic tarp can be placed over the dyke such that the spill pools at the base of the dyke. The collected fuel/snow mixture can then be shoveled into barrels or bags, or collected with sorbent materials.

### **5.5.1.5 Storage, Transfer and Disposal**

In most cases, spill cleanups are initiated at the far end of the spill and contained moving toward the centre of the spill. Sorbent socks and pads are generally used for small spill clean-up. A pump with attached fuel transfer hose can suction spills from leaking containers or large accumulations on land or ice, and direct these larger quantities into empty drums. Hand tools such as cans, shovels, and rakes are also very effective for small spills or hard to reach areas. Heavy equipment can be used if deemed necessary, and given space and time constraints.

Used sorbent materials are to be immediately placed in plastic bags, and later in sealed containers for future disposal. All materials mentioned in this section are available in the spill kits located at camp, drill sites and fuel caches. Following clean up, any tools or equipment used will be properly washed and decontaminated, or replaced if this is not possible.

All contaminated soil, water, ice, snow, and supplies used for clean-up will be stored in sealed, labeled containers and removed from site for proper disposal at an approved facility. The movement of hazardous wastes will be monitored by the Nunavut Department of Environment and tracked with a Waste Manifest during all movements and transfers.

### **5.5.2 Propane**

It is not possible to contain vapors when released. Water spray can be used to knock down vapors if no chance of ignition exists. Personnel should leave the area immediately unless a small leak is stopped immediately following detection. Personnel should avoid touching release points on damaged containers as frost may form rapidly. If tanks are damaged, do not attempt a recovery – allow gas to disperse. Keep clear of tank ends. Small fires can be extinguished with a dry chemical CO2 fire extinguisher.

#### 5.5.2.1 Containment of Spills on Land

Do not attempt to contain propane release.

#### 5.5.2.2 Containment of Spills on Water

Do not attempt to contain propane release.

#### 5.5.2.3 Containment of Spills on Ice

Do not attempt to contain propane release.

#### 5.5.2.4 Containment of Spills on Snow

Do not attempt to contain propane release.

#### 5.5.2.5 Storage, Transfer and Disposal

It is not possible to contain released vapors. Contaminated materials and damaged containers will be sent to an approved facility for disposal. The movement of hazardous wastes will be monitored by the Nunavut Department of Environment and tracked with a Waste Manifest during all movements and transfers.

### 5.5.3 Chemical Spills

- Assess hazard of spilled material; **REFER TO MSDS**. Members of the emergency response team who are vulnerable to certain contaminants should be replaced with alternatives (e.g. Asthmatics where fumes or airborne particles are evident).
- Assemble applicable safety equipment (gloves, goggles/safety glasses, masks/respirators, etc.) before responding to a spill.
- Apply absorbents to soak up liquids.
- Solid chemicals such as dusts or powders should be covered with plastic sheeting to prevent disbursement by wind or animal.
- Neutralize acids or caustics. Place spilled material and contaminated clean-up supplies in empty refuge drums and seal for disposal.
- Contact the 24 Hour Spill Report Line.
- Proceed with clean-up in correspondence with the MSDS and steps in section 3.

## 6 Resource Inventory

Spill kits and firefighting equipment will be strategically located near where any hazardous materials are stored or transferred, at all fuel caches, drill sites, in the helicopter(s), and at numerous locations throughout the camp.

### 6.1 On-site Resources

**Spill kits will be in bright yellow 231 L rigid plastic containers and will contain:**

- 100 oil sorbent pads
- 6 small pillows
- 2 large pillows
- 2 3"x4' socks

5	3"x8' socks
2	4' socks
1	25 lb bag granular
2	pair splash goggles
2	poly coated Tyvek suits
2	disposable respirators
10	large bags with ties for temporary use
2	large tarps
1	collapsible shovel
1	roll duct tape
1	utility knife
2	spill kit labels
1	laminated copy of the Muskox Diamond Property Spill Prevention and Response Plan
1	231 L overpack drum
1	checklist of required items

Other equipment on-site:

2	38"x144' rolls absorbent matting
200	16"x20" enviro matting
10	booms
5	large tarps
5	shovels (minimum)
3	pick axes (minimum)
3	rakes (minimum)
10	empty 205 L drums (minimum)

Spill kits will be located:

- Main fuel cache
- Helicopter pad / air strip
- Drill fuel caches
- Generator shack
- Incinerator
- Additional spill kits around camp

## 7 Training Program

### 7.1 On-site Personnel

All on-site personnel will undergo an orientation and training program on initial spill response procedures and be familiar with spill reporting requirements. Fuel handling personnel will receive additional training in safe operation of fuel transfer equipment, spill

prevention techniques and spill response. The on-site project supervisor will keep detailed training records.

A designated Emergency Response Team (“ERT”) made up of on-site personnel will be established. Members of the ERT will receive comprehensive and ongoing training in emergency spill response. ERT members will be on-site at all times and will be made aware of the available resources and locations of spill kits.

Training will include, but not be limited, to the following:

- Review of the SPRP and ERT member responsibilities.
- Location of fuel and chemical storage sites.
- Causes and possible effects of spills.
- Use of on and off-site spill response resources.
- Exercises in spill response and spill kit use.
- Distribution of up-to-date copies of the SPRP and emergency contact lists.

All on-site personnel are required to have basic training in first aid, WHMIS, and Transportation of Dangerous Goods (“TDG”). Supervisors are required to have advanced first aid training, as well as a valid Occupational Health and Safety (“OHS”) Supervisor’s Certificate.

## 7.2 Contractors

All contractors will complete site-specific health and safety training including, but not limited to: WHMIS, TDG, and OSH training.

## Appendix 1: MSDS



# Material Safety Data Sheet

TWO CYCLE MOTOR OIL



## 1. Product and company identification

<b>Product name</b>	: TWO CYCLE MOTOR OIL
<b>Code</b>	: TWOCYC
<b>Material uses</b>	: A low ash 2-cycle engine oil designed to lubricate conventional pre-mixed fuel/oil as well as oil injection lubricated engines powering air-cooled two-stroke cycle engines.
<b>Manufacturer</b>	: Petro-Canada Lubricants Inc. 2310 Lakeshore Road West Mississauga, Ontario Canada L5J 1K2
<b>In case of emergency</b>	: Suncor Energy: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).

## 2. Hazards identification

<b>Physical state</b>	: Viscous liquid.
<b>Odour</b>	: Mild petroleum oil like.
<b>WHMIS (Canada)</b>	: Not controlled under WHMIS (Canada).
<b>OSHA/HCS status</b>	: While this material is not considered hazardous 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. This MSDS should be retained and available for employees and other users of this product.
<b>Emergency overview</b>	: No specific hazard.
<b>Routes of entry</b>	: Dermal contact. Eye contact. Inhalation. Ingestion.
<b>Potential acute health effects</b>	
<b>Inhalation</b>	: No known significant effects or critical hazards.
<b>Ingestion</b>	: No known significant effects or critical hazards.
<b>Skin</b>	: Slightly irritating to the skin.
<b>Eyes</b>	: Slightly irritating to the eyes.
<b>Potential chronic health effects</b>	
<b>Chronic effects</b>	: No known significant effects or critical hazards.
<b>Carcinogenicity</b>	: Not listed as carcinogenic by OSHA, NTP or IARC.
<b>Mutagenicity</b>	: No known significant effects or critical hazards.
<b>Teratogenicity</b>	: No known significant effects or critical hazards.
<b>Developmental effects</b>	: No known significant effects or critical hazards.
<b>Fertility effects</b>	: No known significant effects or critical hazards.
<b>Medical conditions aggravated by over-exposure</b>	: Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation. Repeated skin exposure can produce local skin destruction or dermatitis.

See toxicological information (Section 11)

## 3. Composition/information on ingredients

<u>Name</u>	<u>CAS number</u>	<u>%</u>
Mixture of severely hydrotreated and hydrocracked and/or solvent-refined base oil (petroleum).	Mixture	-

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.

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**TWO CYCLE MOTOR OIL**
**Page Number: 2**
**3. Composition/information on ingredients**

The base oil may be a mixture of the following CAS#s: 8042-47-5, 64741-95-3, 64742-01-4, 64742-46-7, 64742-47-8, 64742-53-6, 64742-54-7, 64742-55-8, 64742-62-7, 72623-83-7, 72623-84-8, 72623-85-9, 72623-86-0, 72623-87-1, 178603-64-0, 178603-65-1, 178603-66-2, 445411-73-4

**4. First-aid measures**

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. 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. Wash skin thoroughly with soap and water or use recognised skin cleanser. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
- 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.
- Notes to physician** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

**5. Fire-fighting measures**

- Flammability of the product** : May be combustible at high temperature.
- Extinguishing media**
- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : 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.
- Products of combustion** : Carbon oxides (CO, CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), sulphur oxides (SO<sub>x</sub>), asphyxiants, smoke and irritating vapours as products of incomplete combustion.
- 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.
- Special remarks on fire hazards** : Low fire hazard. This material must be heated before ignition will occur.
- Special remarks on explosion hazards** : Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

**6. Accidental release measures**

- Personal precautions** : 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 spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- 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**

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**TWO CYCLE MOTOR OIL** **Page Number: 3**

## 6. Accidental release measures

- 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 the 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 spilt product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

## 7. Handling and storage

- 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. Remove contaminated clothing and protective equipment before entering eating areas. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour 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.
- Storage** : 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 unlabelled containers. Use appropriate containment to avoid environmental contamination.

## 8. Exposure controls/personal protection

Ingredient	Exposure limits
Mixture of severely hydrotreated and hydrocracked and/or solvent-refined base oil (petroleum).	<b>ACGIH TLV (United States). Notes: (Mineral oil)</b> TWA: 5 mg/m <sup>3</sup> , (Inhalable fraction) 8 hour(s).

**Consult local authorities for acceptable exposure limits.**

- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
- Engineering measures** : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.
- 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.
- Personal protection**
- Respiratory** : Use a properly fitted, air-purifying or air-fed 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. Recommended: organic vapour filter

**TWO CYCLE MOTOR OIL****Page Number: 4****8 . Exposure controls/personal protection**

- Hands** : 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.  
Recommended: neoprene, nitrile, polyvinyl alcohol (PVA), Viton®.
- Eyes** : 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 or dusts.
- Skin** : 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.
- 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.

**9 . Physical and chemical properties**

- Physical state** : Viscous liquid.
- Flash point** : Open cup: 152°C (305.6°F) [Cleveland.]
- Auto-ignition temperature** : Not available.
- Flammable limits** : Not available.
- Colour** : Blue-green.
- Odour** : Mild petroleum oil like.
- Odour threshold** : Not available.
- pH** : Not available.
- Boiling/condensation point** : Not available.
- Melting/freezing point** : Not available.
- Relative density** : 0.88 kg/L @ 15°C (59°F)
- Vapour pressure** : Not available.
- Vapour density** : Not available.
- Volatility** : Not available.
- Evaporation rate** : Not available.
- Viscosity** : 20.9 cSt @ 40°C (104°F), 4.5 cSt @ 100°C (212°F), VI=132
- Pour point** : -57°C (-71°F)
- Solubility** : Insoluble in water.

**10 . Stability and reactivity**

- Chemical stability** : The product is stable.
- Hazardous polymerisation** : Under normal conditions of storage and use, hazardous polymerisation will not occur.
- Materials to avoid** : Reactive with oxidising agents, reducing agents, alkalis and acids.
- Hazardous decomposition products** : May release COx, NOx, SOx, aldehydes, methacrylate monomers, asphyxiants, smoke and irritating vapours when heated to decomposition.

**11 . Toxicological information**Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
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<b>TWO CYCLE MOTOR OIL</b>	<b>Page Number: 5</b>
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<b>11 . Toxicological information</b>
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Mixture of severely hydrotreated and hydrocracked and/or solvent-refined base oil (petroleum).	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	>5000 mg/kg	-
	LC50 Inhalation	Rat	>5.2 mg/l	4 hours
	Dusts and mists			

**Conclusion/Summary** : Not available.

**Chronic toxicity**

**Conclusion/Summary** : Not available.

**Irritation/Corrosion**

**Conclusion/Summary** : Not available.

**Sensitiser**

**Conclusion/Summary** : Not available.

**Carcinogenicity**

**Conclusion/Summary** : Not available.

**Classification**

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Mixture of severely hydrotreated and hydrocracked and/or solvent-refined base oil (petroleum).	A4	-	-	-	-	-

**Mutagenicity**

**Conclusion/Summary** : Not available.

**Teratogenicity**

**Conclusion/Summary** : Not available.

**Reproductive toxicity**

**Conclusion/Summary** : Not available.

<b>12 . Ecological information</b>
------------------------------------

**Environmental effects** : No known significant effects or critical hazards.

**Aquatic ecotoxicity**

**Conclusion/Summary** : Not available.

**Biodegradability**

**Conclusion/Summary** : Not available.

**Other adverse effects** : No known significant effects or critical hazards.

<b>13 . Disposal considerations</b>
-------------------------------------

**Waste disposal** : The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. 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. 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 spilt material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

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**TWO CYCLE MOTOR OIL** **Page Number: 6**

## 14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
<b>TDG Classification</b>	Not regulated.	-	-	-	-	-
<b>DOT Classification</b>	Not available.	Not available.	Not available.	-	-	-

PG\* : Packing group

## 15 . Regulatory information

### United States

**HCS Classification** : Not regulated.

### Canada

**WHMIS (Canada)** : Not controlled under WHMIS (Canada).

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.

### International regulations

**Canada inventory** : All components are listed or exempted.

**United States inventory (TSCA 8b)** : All components are listed or exempted.

**Europe inventory** : All components are listed or exempted.

**International lists** : **Australia inventory (AICS)**: All components are listed or exempted.  
**China inventory (IECSC)**: All components are listed or exempted.  
**Korea inventory**: All components are listed or exempted.  
**Philippines inventory (PICCS)**: All components are listed or exempted.

## 16 . Other information

**Hazardous Material Information System (U.S.A.)** :

<b>Health</b>	1
<b>Flammability</b>	1
<b>Physical hazards</b>	0
<b>Personal protection</b>	B

**National Fire Protection Association (U.S.A.)** :



### References

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**Date of printing**

: 2/2/2014.

**Date of issue**

: 19 January 2012

**Date of previous issue**

: 10/6/2010.

**Responsible name**

: **Product Safety - RS**

Indicates information that has changed from previously issued version.

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## 16 . Other information

### For Copy of (M)SDS

: The Canadian Controlled Products Regulations (CPR) (Under the Hazardous Products Act, part of the WHMIS legislation) only apply to WHMIS Controlled (i.e., hazardous) products. Therefore, the CPR and the 3-year update rule specified therein do not apply to WHMIS Non-Controlled products. Although this is true, customarily Petro-Canada reviews and updates Non-Controlled product MSDS if a customer requests such an update. These Non-Controlled product updates are given a lower priority than Controlled products but are handled as soon as practicable. If you would like to verify if the MSDS you have is the most current, or you require any further information, please contact:

Internet: [lubricants.petro-canada.ca/msds](http://lubricants.petro-canada.ca/msds)

Lubricants:

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: 1-800-201-6285

For Product Safety Information: (905) 804-4752

### 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.

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# Material Safety Data Sheet



DIESEL FUEL



## 1. Product and company identification

<b>Product name</b>	: DIESEL FUEL
<b>Synonym</b>	: Seasonal Diesel, #1 Diesel, #2 Heating Oil, #1 Heating Oil, D50, D60, P40, P50, 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, Diesel Low Cloud (LC), Marine Gas Oil.
<b>Code</b>	: W104, W293
<b>Material uses</b>	: 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.
<b>Manufacturer</b>	: PETRO-CANADA P.O. Box 2844 150 – 6th Avenue South-West Calgary, Alberta T2P 3E3
<b>In case of emergency</b>	: Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).

## 2. Hazards identification

<b>Physical state</b>	: Bright oily liquid.
<b>Odour</b>	: Mild petroleum oil like.
<b>WHMIS (Canada)</b>	:   Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F). Class D-2A: Material causing other toxic effects (Very toxic). Class D-2B: Material causing other toxic effects (Toxic).
<b>OSHA/HCS status</b>	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
<b>Emergency overview</b>	: WARNING! COMBUSTIBLE LIQUID AND VAPOUR. CAUSES EYE AND SKIN IRRITATION. Combustible liquid. Severely irritating to the skin. Irritating to eyes. Keep away from heat, sparks and flame. Do not get in eyes. Avoid breathing vapour or mist. Avoid contact with skin and clothing. Use only with adequate ventilation. Wash thoroughly after handling.
<b>Routes of entry</b>	: Dermal contact. Eye contact. Inhalation. Ingestion.
<b>Potential acute health effects</b>	
<b>Inhalation</b>	: Inhalation of this product may cause respiratory tract irritation and Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death.
<b>Ingestion</b>	: Ingestion of this product may cause gastro-intestinal irritation. Aspiration of this product may result in severe irritation or burns to the respiratory tract.
<b>Skin</b>	: Severely irritating to the skin.
<b>Eyes</b>	: Irritating to eyes.
<b>Potential chronic health effects</b>	
<b>Chronic effects</b>	: No known significant effects or critical hazards.
<b>Carcinogenicity</b>	: Diesel engine exhaust particulate is probably carcinogenic to humans (IARC Group 2A).
<b>Mutagenicity</b>	: No known significant effects or critical hazards.
<b>Teratogenicity</b>	: No known significant effects or critical hazards.

Date of issue : 6/28/2013.

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**DIESEL FUEL** **Page Number: 2****2. Hazards identification**

- Developmental effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.
- Medical conditions aggravated by over-exposure** : Avoid prolonged or repeated skin contact to diesel fuels which can lead to dermal irritation and may be associated with an increased risk of skin cancer.

See toxicological information (Section 11)

**3. Composition/information on ingredients**

<u>Name</u>	<u>CAS number</u>	<u>%</u>
Hydrotreated Renewable Diesel/ Fuels, diesel/ Fuel Oil No. 1/ Fuel Oil No. 2	64742-81-0/ 68334-30-5/ 8008-20-6/ 68476-30-2	95 - 100
Alkanes, C10 – 20 Branched and Linear (R100)	928771-01-1	10 - 20
Fatty acids methyl esters	61788-61-2 / 67784-80-9 / 73891-99-3	0 - 5

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.

**4. First-aid measures**

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. 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. Wash skin thoroughly with soap and water or use recognised skin cleanser. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
- 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.
- Notes to physician** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

**5. Fire-fighting measures**

- Flammability of the product** : Combustible liquid
- Extinguishing media**
- Suitable** : Use dry chemical, CO<sub>2</sub>, water spray (fog) or foam.
- Not suitable** : Do not use water jet.
- Special exposure hazards** : 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.
- Products of combustion** : Carbon oxides (CO, CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), sulphur oxides (SO<sub>x</sub>), sulphur compounds (H<sub>2</sub>S), smoke and irritating vapours as products of incomplete combustion.
- 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.

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## DIESEL FUEL Page Number: 3

### 5. Fire-fighting measures

**Special remarks on fire hazards** : 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.

**Special remarks on explosion hazards** : Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Runoff to sewer may create fire or explosion hazard.

### 6. Accidental release measures

**Personal precautions** : 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 flames, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

**Environmental precautions** : Avoid dispersal of spill 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

**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. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

**Large spill** : Stop leak if without risk. Move containers from spill area. Approach the 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 spill product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

### 7. Handling and storage

**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. Remove contaminated clothing and protective equipment before entering eating areas. 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 earthing and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

**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 unlabelled containers. Use appropriate containment to avoid environmental contamination. Ensure the storage containers are grounded/bonded.

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<b>DIESEL FUEL</b>		<b>Page Number: 4</b>
<b>8 . Exposure controls/personal protection</b>		
<b>Ingredient</b>	<b>Exposure limits</b>	
Fuels, diesel	<b>ACGIH TLV (United States). Absorbed through skin.</b> TWA: 100 mg/m <sup>3</sup> , (Inhalable fraction and vapour) 8 hour(s).	
Fuel oil No. 2	<b>ACGIH TLV (United States). Absorbed through skin.</b> TWA: 100 mg/m <sup>3</sup> , (Inhalable fraction and vapour) 8 hour(s).	
Hydrotreated Renewable Diesel	<b>ACGIH TLV (United States). Absorbed through skin.</b> TWA: 200 mg/m <sup>3</sup> 8 hour(s).	
Fuel oil No. 1	<b>ACGIH TLV (United States). Absorbed through skin.</b> TWA: 200 mg/m <sup>3</sup> 8 hour(s).	

**Consult local authorities for acceptable exposure limits.**

<b>Recommended monitoring procedures</b>	: If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
<b>Engineering measures</b>	: 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, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
<b>Hygiene measures</b>	: 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.
<b>Personal protection</b>	
<b>Respiratory</b>	: Use a properly fitted, air-purifying or air-fed 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. Recommended: 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.
<b>Hands</b>	: 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. Recommended: nitrile, neoprene, polyvinyl alcohol (PVA), Viton®. 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.
<b>Eyes</b>	: 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 or dusts.
<b>Skin</b>	: 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.
<b>Environmental exposure controls</b>	: 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.

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**9 . Physical and chemical properties**

<b>Physical state</b>	: Bright oily liquid.
<b>Flash point</b>	: Diesel fuel and other distillate fuels: Closed cup: $\geq 40^{\circ}\text{C}$ ( $\geq 104^{\circ}\text{F}$ ) Marine Diesel/MDO/Naval Distillate: Closed Cup: $\geq 60^{\circ}\text{C}$ ( $\geq 140^{\circ}\text{F}$ ) Mining Diesel: Closed Cup: $\geq 52^{\circ}\text{C}$ ( $\geq 126^{\circ}\text{F}$ )
<b>Auto-ignition temperature</b>	: $225^{\circ}\text{C}$ ( $437^{\circ}\text{F}$ )
<b>Flammable limits</b>	: Lower: 0.7% Upper: 6%
<b>Colour</b>	: Clear to yellow (This product may be dyed red for taxation purposes)
<b>Odour</b>	: Mild petroleum oil like.
<b>Odour threshold</b>	: Not available.
<b>pH</b>	: Not available.
<b>Boiling/condensation point</b>	: $150$ to $371^{\circ}\text{C}$ ( $302$ to $699.8^{\circ}\text{F}$ )
<b>Melting/freezing point</b>	: Not available.
<b>Relative density</b>	: $0.80$ to $0.88$ kg/L @ $15^{\circ}\text{C}$ ( $59^{\circ}\text{F}$ )
<b>Vapour pressure</b>	: $1$ kPa ( $7.5$ mm Hg) @ $20^{\circ}\text{C}$ ( $68^{\circ}\text{F}$ ).
<b>Vapour density</b>	: $4.5$ [Air = 1]
<b>Volatility</b>	: Not available.
<b>Evaporation rate</b>	: Not available.
<b>Viscosity</b>	: Diesel fuel: $1.3 - 4.1$ cSt @ $40^{\circ}\text{C}$ ( $104^{\circ}\text{F}$ ) Marine Diesel Fuel: $1.3 - 4.4$ cSt @ $40^{\circ}\text{C}$ ( $104^{\circ}\text{F}$ )
<b>Pour point</b>	: Not available.
<b>Solubility</b>	: Insoluble in cold water, soluble in non-polar hydrocarbon solvents.

**10 . Stability and reactivity**

<b>Chemical stability</b>	: The product is stable.
<b>Hazardous polymerisation</b>	: Under normal conditions of storage and use, hazardous polymerisation will not occur.
<b>Materials to avoid</b>	: Reactive with oxidising agents and acids.
<b>Hazardous decomposition products</b>	: May release COx, NOx, SOx, H <sub>2</sub> S, smoke and irritating vapours when heated to decomposition.

**11 . Toxicological information****Acute toxicity**

Product/ingredient name	Result	Species	Dose	Exposure
Fuels, diesel	LD50 Dermal	Mouse	24500 mg/kg	-
	LD50 Oral	Rat	7500 mg/kg	-
Fuel oil No. 2	LD50 Oral	Rat	12000 mg/kg	-
Fuel oil No. 1	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	>5000 mg/kg	-
	LC50 Inhalation Vapour	Rat	>5000 mg/m <sup>3</sup>	4 hours
Hydrotreated Renewable Diesel	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	>5000 mg/kg	-
	LC50 Inhalation Vapour	Rat	>5200 mg/m <sup>3</sup>	4 hours

**Conclusion/Summary** : Not available.**Chronic toxicity****Conclusion/Summary** : Not available.**Irritation/Corrosion****Conclusion/Summary** : Not available.**Sensitiser**

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**DIESEL FUEL** **Page Number: 6**

## 11. Toxicological information

**Conclusion/Summary** : Not available.

### Carcinogenicity

**Conclusion/Summary** : Diesel engine exhaust particulate is probably carcinogenic to humans (IARC Group 2A).

### Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Fuels, diesel	A3	3	-	-	-	-
Fuel oil No. 1	A3	3	-	-	-	-
Fuel oil No. 2	A3	3	-	-	-	-
Hydrotreated Renewable Diesel	A3	3	-	-	-	-

### Mutagenicity

**Conclusion/Summary** : Not available.

### Teratogenicity

**Conclusion/Summary** : Not available.

### Reproductive toxicity

**Conclusion/Summary** : Not available.

## 12. Ecological information

**Environmental effects** : No known significant effects or critical hazards.

### Aquatic ecotoxicity

**Conclusion/Summary** : Not available.

### Biodegradability

**Conclusion/Summary** : Not available.

## 13. Disposal considerations

**Waste disposal** : The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. 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. 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. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

## 14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG <sup>n</sup>	Label	Additional information
<b>TDG Classification</b>	UN1202	DIESEL FUEL	3	III		-
<b>DOT Classification</b>	Not available.	Not available.	Not available.	-	-	-

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## 14 . Transport information

PG\* - Packing group

## 15 . Regulatory information

### United States

**HCS Classification** : Combustible liquid  
Irritating material

### Canada

**WHMIS (Canada)** : Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).  
Class D-2A: Material causing other toxic effects (Very toxic).  
Class D-2B: Material causing other toxic effects (Toxic).

**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.**

### International regulations

**Canada inventory** : All components are listed or exempted.

**United States inventory (TSCA 8b)** : All components are listed or exempted.

**Europe inventory** : All components are listed or exempted.

## 16 . Other information

**Label requirements** : COMBUSTIBLE LIQUID AND VAPOUR. CAUSES EYE AND SKIN IRRITATION.

**Hazardous Material Information System (U.S.A.)** :

Health	2
Flammability	2
Physical hazards	0
Personal protection	H

**National Fire Protection Association (U.S.A.)** :



**References** : Available upon request.  
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**Date of printing** : 4/14/2014.

**Date of issue** : 28 June 2013

**Date of previous issue** : No previous validation.

**Responsible name** : **Product Safety - DSR**

Indicates information that has changed from previously issued version.

**For Copy of (M)SDS** : Internet: [www.petro-canada.ca/msds](http://www.petro-canada.ca/msds)

Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228

For Product Safety Information: (905) 804-4752

### Notice to reader

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## **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.

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# Material Safety Data Sheet



GASOLINE, UNLEADED



## 1. Product and company identification

<b>Product name</b>	: GASOLINE, UNLEADED
<b>Synonym</b>	: Regular, Unleaded Gasoline (US Grade), Mid-Grade, Plus, Super, WinterGas, SummerGas, Supreme, SuperClean WinterGas, RegularClean, PlusClean, Premium, marked or dyed gasoline, TQRUL, transitional quality regular unleaded, BOB, Blendstock for Oxygenate Blending, Conventional Gasoline.
<b>Code</b>	: W102E, SAP: 102 to 117
<b>Material uses</b>	: 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.
<b>Manufacturer</b>	: PETRO-CANADA P.O. Box 2844 150 – 6th Avenue South-West Calgary, Alberta T2P 3E3
<b>In case of emergency</b>	: Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).

## 2. Hazards identification

<b>Physical state</b>	: Clear liquid.
<b>Odour</b>	: Gasoline
<b>WHMIS (Canada)</b>	:   Class B-2: Flammable liquid Class D-2A: Material causing other toxic effects (Very toxic). Class D-2B: Material causing other toxic effects (Toxic).
<b>OSHA/HCS status</b>	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
<b>Emergency overview</b>	: WARNING! FLAMMABLE LIQUID AND VAPOUR. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER. CONTAINS MATERIAL WHICH MAY CAUSE HERITABLE GENETIC EFFECTS. Flammable liquid. Irritating to eyes, respiratory system and skin. Keep away from heat, sparks and flame. Avoid exposure - obtain special instructions before use. Do not breathe vapour or mist. Avoid contact with eyes, skin and clothing. Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure. Contains material which may cause heritable genetic effects. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
<b>Routes of entry</b>	: Dermal contact. Eye contact. Inhalation. Ingestion.
<b>Potential acute health effects</b>	
<b>Inhalation</b>	: Inhalation of this product may cause respiratory tract irritation. Inhalation of this product may cause respiratory tract irritation and Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death.
<b>Ingestion</b>	: Ingestion of this product may cause gastro-intestinal irritation. Aspiration of this product may result in severe irritation or burns to the respiratory tract. Ingestion of this product may cause Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death.

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**GASOLINE, UNLEADED****Page Number: 2****2. Hazards identification****Skin** : Irritating to skin.**Eyes** : Irritating to eyes.**Potential chronic health effects****Chronic effects** : This product contains an ingredient or ingredients, which have been shown to cause chronic toxic effects. Repeated or prolonged exposure to the substance can produce blood disorders.**Carcinogenicity** : Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.**Mutagenicity** : Contains material which may cause heritable genetic effects.**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.**Medical conditions aggravated by over-exposure** : Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation. Repeated skin exposure can produce local skin destruction or dermatitis.

See toxicological information (Section 11)

**3. Composition/information on ingredients**

<b>Name</b>	<b>CAS number</b>	<b>%</b>
Gasoline	86290-81-5	85-100
Toluene	108-88-3	15-40*
Benzene	71-43-2	0.5-1.5
Ethanol	64-17-5	0.1-0.3

\*Montreal: may vary from 3-40%

\*Edmonton: may vary from 1-5%

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.

**4. First-aid measures****Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. 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. Wash skin thoroughly with soap and water or use recognised skin cleanser. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.**Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.**Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.**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.**Notes to physician** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

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**GASOLINE, UNLEADED**
**Page Number: 3**
**5. Fire-fighting measures**

<b>Flammability of the product</b>	: Flammable liquid (NFPA).
<b>Extinguishing media</b>	
<b>Suitable</b>	: Use dry chemical, CO <sub>2</sub> , water spray (fog) or foam.
<b>Not suitable</b>	: Do not use water jet.
<b>Special exposure hazards</b>	: 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.
<b>Products of combustion</b>	: Carbon oxides (CO, CO <sub>2</sub> ), nitrogen oxides (NOx), polynuclear aromatic hydrocarbons, phenols, aldehydes, ketones, smoke and irritating vapours as products of incomplete combustion.
<b>Special protective equipment for fire-fighters</b>	: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
<b>Special remarks on fire hazards</b>	: 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.
<b>Special remarks on explosion hazards</b>	: 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.

**6. Accidental release measures**

<b>Personal precautions</b>	: 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 spilt material. Shut off all ignition sources. No flames, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
<b>Environmental precautions</b>	: 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).
<b>Methods for cleaning up</b>	
<b>Small spill</b>	: 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. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.
<b>Large spill</b>	: Stop leak if without risk. Move containers from spill area. Approach the 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 spilt product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

**7. Handling and storage**

<b>Handling</b>	: 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. Remove contaminated clothing and protective equipment before entering eating areas. Avoid exposure - obtain special instructions before use. Do not get in eyes or on skin or clothing. Do not ingest. 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
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**GASOLINE, UNLEADED****Page Number: 4****7. Handling and storage**

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 earthing and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

**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 unlabelled containers. Use appropriate containment to avoid environmental contamination. Ensure the storage containers are grounded/bonded.

**8. Exposure controls/personal protection**

<b>Ingredient</b>	<b>Exposure limits</b>
Gasoline	<b>ACGIH TLV (United States).</b> TWA: 300 ppm 8 hour(s). STEL: 500 ppm 15 minute(s).
Toluene	<b>ACGIH TLV (United States).</b> TWA: 20 ppm 8 hour(s).
Benzene	<b>ACGIH TLV (United States). Absorbed through skin.</b> TWA: 0.5 ppm 8 hour(s). STEL: 2.5 ppm 15 minute(s).
Ethanol	<b>ACGIH TLV (United States).</b> STEL: 1000 ppm 15 minute(s).

**Consult local authorities for acceptable exposure limits.****Recommended monitoring procedures**

- : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

**Engineering measures**

- : 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, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

**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.

**Personal protection****Respiratory**

- : Use a properly fitted, air-purifying or air-fed 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. Recommended: 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.

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**GASOLINE, UNLEADED****Page Number: 5****8 . Exposure controls/personal protection**

- Hands** : 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.  
Recommended: polyvinyl alcohol (PVA), Viton®. 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.
- Eyes** : 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 or dusts.
- Skin** : 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.
- 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.

**9 . Physical and chemical properties**

- Physical state** : Clear liquid.
- Flash point** : Closed cup: -50 to -38°C (-58 to -36.4°F) [Tagliabue.]
- Auto-ignition temperature** : 257°C (494.6°F) (NFPA)
- Flammable limits** : Lower: 1.3% (NFPA)  
Upper: 7.6% (NFPA)
- Colour** : Clear to slightly yellow or green, undyed liquid. May be dyed red for taxation purposes.
- Odour** : Gasoline
- Odour threshold** : Not available.
- pH** : Not available.
- Boiling/condensation point** : 25 to 220°C (77 to 428°F) (ASTM D86)
- Melting/freezing point** : Not available.
- Relative density** : 0.685 to 0.8 kg/L @ 15°C (59°F)
- Vapour pressure** : <107 kPa (<802.5 mm Hg) @ 37.8°C (100°F)
- Vapour density** : 3 to 4 [Air = 1] (NFPA)
- Volatility** : Not available.
- Evaporation rate** : Not available.
- Viscosity** : Not available.
- Pour point** : Not available.
- Solubility** : Hydrocarbon components virtually insoluble in water. Soluble in alcohol, ether, chloroform and benzene. Dissolves fats, oils and natural resins.

**10 . Stability and reactivity**

- Chemical stability** : The product is stable.
- Hazardous polymerisation** : Under normal conditions of storage and use, hazardous polymerisation will not occur.
- Materials to avoid** : Reactive with oxidising agents, acids and interhalogens.
- Hazardous decomposition products** : May release CO<sub>x</sub>, NO<sub>x</sub>, phenols, polycyclic aromatic hydrocarbons, aldehydes, ketones, smoke and irritating vapours when heated to decomposition.

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**GASOLINE, UNLEADED****Page Number: 6****11 . Toxicological information****Acute toxicity**

<b>Product/ingredient name</b>	<b>Result</b>	<b>Species</b>	<b>Dose</b>	<b>Exposure</b>
Gasoline	LD50 Dermal	Rabbit	>5000 mg/kg	-
	LD50 Oral	Rat	13600 mg/kg	-
Toluene	LD50 Dermal	Rabbit	12125 mg/kg	-
	LD50 Oral	Rat	636 mg/kg	-
	LC50 Inhalation Vapour	Rat	7585 ppm	4 hours
Benzene	LD50 Dermal	Rabbit	>8240 mg/kg	-
	LD50 Oral	Rat	930 mg/kg	-
	LC50 Inhalation Vapour	Rat	13700 ppm	4 hours
Ethanol	LD50 Oral	Rat	7060 mg/kg	-
	LC50 Inhalation Vapour	Rat	>32380 ppm	4 hours

**Conclusion/Summary** : Not available.**Chronic toxicity****Conclusion/Summary** : Not available.**Irritation/Corrosion****Conclusion/Summary** : Not available.**Sensitiser****Conclusion/Summary** : Not available.**Carcinogenicity****Conclusion/Summary** : Not available.**Classification**

<b>Product/ingredient name</b>	<b>ACGIH</b>	<b>IARC</b>	<b>EPA</b>	<b>NIOSH</b>	<b>NTP</b>	<b>OSHA</b>
Gasoline	A3	2B	-	-	-	-
Toluene	A4	3	D	-	-	-
Benzene	A1	1	A	+	Proven.	+
Ethanol	A3	-	-	-	-	-

**Mutagenicity****Conclusion/Summary** : Not available.**Teratogenicity****Conclusion/Summary** : There is a wealth of information about the teratogenic hazards of Toluene in the literature; however, based upon professional judgement regarding the body of evidence, WHMIS classification as a teratogen is not warranted.**Reproductive toxicity****Conclusion/Summary** : Not available.**12 . Ecological information****Environmental effects** : No known significant effects or critical hazards.**Aquatic ecotoxicity****Conclusion/Summary** : Not available.**Biodegradability****Conclusion/Summary** : Not available.

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**GASOLINE, UNLEADED****Page Number: 7****13 . Disposal considerations****Waste disposal**

: The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. 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. 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. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spill material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

**14 . Transport information**

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
<b>TDG Classification</b>	UN1203	GASOLINE	3	II		-
<b>DOT Classification</b>	Not available.	Not available.	Not available.	-		-

PG\* : Packing group

**15 . Regulatory information****United States****HCS Classification**

: Flammable liquid  
Irritating material  
Carcinogen

**Canada****WHMIS (Canada)**

: Class B-2: Flammable liquid  
Class D-2A: Material causing other toxic effects (Very toxic).  
Class D-2B: Material causing other toxic effects (Toxic).

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.

**International regulations****Canada inventory**

: All components are listed or exempted.

**United States inventory (TSCA 8b)**

: All components are listed or exempted.

**Europe inventory**

: All components are listed or exempted.

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**GASOLINE, UNLEADED****Page Number: 8****16 . Other information**

**Label requirements** : FLAMMABLE LIQUID AND VAPOUR. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER. CONTAINS MATERIAL WHICH MAY CAUSE HERITABLE GENETIC EFFECTS.

**Hazardous Material Information System (U.S.A.)** :

Health	*	2
Flammability		3
Physical hazards		0
Personal protection		H

**National Fire Protection Association (U.S.A.)** :

**References**

: Available upon request.  
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**Date of printing**

: 10/10/2012.

**Date of issue**

: 10 October 2012

**Date of previous issue**

: 4/9/2010.

**Responsible name**: **Product Safety - DSR**

Indicates information that has changed from previously issued version.

**For Copy of (M)SDS**: Internet: [www.petro-canada.ca/msds](http://www.petro-canada.ca/msds)

Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228

For Product Safety Information: (905) 804-4752

**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.

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# Material Safety Data Sheet



JET A/A-1 AVIATION TURBINE FUEL



## 1. Product and company identification

<b>Product name</b>	: JET A/A-1 AVIATION TURBINE FUEL
<b>Synonym</b>	: Jet A-1; Jet A-1-DI; Aviation Turbine Kerosene (ATK); JP-8; NATO F-34; Jet F-34; Turbine Fuel, Aviation, Kerosene Type (CAN/CGSB-3.32)
<b>Code</b>	: W213, SAP: 149
<b>Material uses</b>	: 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.
<b>Manufacturer</b>	: PETRO-CANADA P.O. Box 2844 150 – 6th Avenue South-West Calgary, Alberta T2P 3E3
<b>In case of emergency</b>	: Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).

## 2. Hazards identification

<b>Physical state</b>	: Clear liquid.
<b>Odour</b>	: Kerosene-like.
<b>WHMIS (Canada)</b>	:   Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F). Class D-2A: Material causing other toxic effects (Very toxic).  <b>The WHMIS classification of Jet A/A-1 is B3.</b> <b>The WHMIS classification of Jet A/A-1-DI, JP-8, Jet F-34 and NATO F-34, which all contain FSII (Diethylene Glycol Monomethyl Ether), is B3, D2A.</b>
<b>OSHA/HCS status</b>	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
<b>Emergency overview</b>	: CAUTION! COMBUSTIBLE LIQUID AND VAPOUR. MAY CAUSE EYE AND SKIN IRRITATION. POSSIBLE BIRTH DEFECT HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE BIRTH DEFECTS, BASED ON ANIMAL DATA. Combustible liquid. Slightly irritating to the eyes and skin. Keep away from heat, sparks and flame. Avoid exposure - obtain special instructions before use. Do not breathe vapour or mist. Avoid contact with eyes, skin and clothing. Contains material which may cause birth defects, based on animal data. Avoid exposure during pregnancy. Use only with adequate ventilation. Wash thoroughly after handling.
<b>Routes of entry</b>	: Dermal contact. Eye contact. Inhalation. Ingestion.
<b>Potential acute health effects</b>	
<b>Inhalation</b>	: Inhalation of this product may cause respiratory tract irritation and Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death.
<b>Ingestion</b>	: Ingestion of this product may cause gastro-intestinal irritation. Aspiration of this product may result in severe irritation or burns to the respiratory tract.
<b>Skin</b>	: Slightly irritating to the skin.
<b>Eyes</b>	: Slightly irritating to the eyes.
<b>Potential chronic health effects</b>	
<b>Chronic effects</b>	: No known significant effects or critical hazards.

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**JET A/A-1 AVIATION TURBINE FUEL****Page Number: 2****2. Hazards identification**

<b>Carcinogenicity</b>	: No known significant effects or critical hazards.
<b>Mutagenicity</b>	: No known significant effects or critical hazards.
<b>Teratogenicity</b>	: Contains material which may cause birth defects, based on animal data.
<b>Developmental effects</b>	: No known significant effects or critical hazards.
<b>Fertility effects</b>	: No known significant effects or critical hazards.
<b>Medical conditions aggravated by over-exposure</b>	: Repeated skin exposure can produce local skin destruction or dermatitis.

See toxicological information (Section 11)

**3. Composition/information on ingredients**

<u>Name</u>	<u>CAS number</u>	<u>%</u>
Complex mixture of petroleum hydrocarbons (C9-C16)*(Kerosene)	8008-20-6	99.9
Fuel System Icing Inhibitor (FSII) (if added**): (Diethylene Glycol Monomethyl Ether)	111-77-3	0.1 - 0.15
Anti-static, antioxidant and metal deactivator additives	Not applicable	<0.1

\*Aromatic content is 25% maximum (benzene: nil).

\*\*Please note that Jet A-1-DI, JP-8, Jet F-34 and NATO F-34 all contain Fuel System Icing Inhibitor.

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.

**4. First-aid measures**

<b>Eye contact</b>	: Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
<b>Skin contact</b>	: 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 recognised skin cleanser. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
<b>Inhalation</b>	: Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
<b>Ingestion</b>	: Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
<b>Protection of first-aiders</b>	: 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.
<b>Notes to physician</b>	: No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

**5. Fire-fighting measures**

<b>Flammability of the product</b>	: Class II - combustible liquid (NFPA).
<b>Extinguishing media</b>	
<b>Suitable</b>	: Use dry chemical, CO <sub>2</sub> , water spray (fog) or foam.
<b>Not suitable</b>	: Do not use water jet.
<b>Special exposure hazards</b>	: 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.

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**JET A/A-1 AVIATION TURBINE FUEL** **Page Number: 3**

## 5. Fire-fighting measures

- Products of combustion** : Carbon oxides (CO, CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), sulphur oxides (SO<sub>x</sub>), smoke and irritating vapours as products of incomplete combustion.
- 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.
- Special remarks on fire hazards** : 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.
- Special remarks on explosion hazards** : 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.

## 6. Accidental release measures

- Personal precautions** : 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 spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- 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**
- 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. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach the 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 spilt product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

## 7. Handling and storage

- 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. Remove contaminated clothing and protective equipment before entering eating areas. Avoid exposure during pregnancy. Do not get in eyes or on skin or clothing. Do not ingest. 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 earthing and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

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**JET A/A-1 AVIATION TURBINE FUEL****Page Number: 4****7. Handling and storage****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 unlabelled containers. Use appropriate containment to avoid environmental contamination. Ensure the storage containers are grounded/bonded.

**8. Exposure controls/personal protection**

<b>Ingredient</b>	<b>Exposure limits</b>
Kerosene	<b>ACGIH TLV (United States). Absorbed through skin.</b> TWA: 200 mg/m <sup>3</sup> 8 hour(s).

**Consult local authorities for acceptable exposure limits.****Recommended monitoring procedures**

- : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

**Engineering measures**

- : 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, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

**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.

**Personal protection****Respiratory**

- : Use a properly fitted, air-purifying or air-fed 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. Recommended: 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.

**Hands**

- : 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. Recommended: polyvinyl alcohol (PVA), Viton®. 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.

**Eyes**

- : 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 or dusts.

**Skin**

- : 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.

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**JET A/A-1 AVIATION TURBINE FUEL**

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**8 . Exposure controls/personal protection**

**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.

**9 . Physical and chemical properties**

**Physical state** : Clear liquid.  
**Flash point** : Closed cup:  $\geq 38^{\circ}\text{C}$  ( $\geq 100.4^{\circ}\text{F}$ ) [Tag. Closed Cup]  
**Auto-ignition temperature** :  $210^{\circ}\text{C}$  ( $410^{\circ}\text{F}$ )  
**Flammable limits** : Lower: 0.7%  
Upper: 5%  
**Colour** : Clear and colourless.  
**Odour** : Kerosene-like.  
**Odour threshold** : Not available.  
**pH** : Not available.  
**Boiling/condensation point** :  $140$  to  $300^{\circ}\text{C}$  ( $284$  to  $572^{\circ}\text{F}$ )  
**Melting/freezing point** : Not available.  
**Relative density** : 0.775 to 0.84 (Water=1)  
**Vapour pressure** : 0.7 kPa (5.25 mm Hg) @  $20^{\circ}\text{C}$  ( $68^{\circ}\text{F}$ ).  
**Vapour density** : 4.5 [Air = 1]  
**Volatility** : Volatile.  
**Evaporation rate** : Not available.  
**Viscosity** : 1.0 - 1.9 cSt @  $40^{\circ}\text{C}$  ( $104^{\circ}\text{F}$ )  
**Pour point** :  $< -51^{\circ}\text{C}$  ( $< -60^{\circ}\text{F}$ )  
**Solubility** : Insoluble in water. Partially miscible in some alcohols. Miscible with other petroleum solvents.

**10 . Stability and reactivity**

**Chemical stability** : The product is stable.  
**Hazardous polymerisation** : Under normal conditions of storage and use, hazardous polymerisation will not occur.  
**Materials to avoid** : 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.

**11 . Toxicological information**Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Kerosene	LD50 Dermal	Rabbit	$> 2000$ mg/kg	-
	LD50 Oral	Rat	$> 5000$ mg/kg	-
	LC50 Inhalation Vapour	Rat	$> 5000$ mg/m <sup>3</sup>	4 hours

**Conclusion/Summary** : Not available.

Chronic toxicity

**Conclusion/Summary** : Not available.

Irritation/Corrosion

**Conclusion/Summary** : Not available.

Sensitiser

**Conclusion/Summary** : Not available.

Carcinogenicity

Date of issue : 5/24/2012.

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**JET A/A-1 AVIATION TURBINE FUEL**

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**11 . Toxicological information****Conclusion/Summary** : Not available.**Classification**

<b>Product/ingredient name</b>	<b>ACGIH</b>	<b>IARC</b>	<b>EPA</b>	<b>NIOSH</b>	<b>NTP</b>	<b>OSHA</b>
Kerosene	A3	3	-	-	-	-

**Mutagenicity****Conclusion/Summary** : Not available.**Teratogenicity****Conclusion/Summary** : Not available.**Reproductive toxicity****Conclusion/Summary** : Not available.**12 . Ecological information****Environmental effects** : No known significant effects or critical hazards.**Aquatic ecotoxicity****Conclusion/Summary** : Not available.**Biodegradability****Conclusion/Summary** : Not available.**13 . Disposal considerations**

**Waste disposal** : The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. 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. 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. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

**14 . Transport information**

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
<b>TDG Classification</b>	UN1863	FUEL, AVIATION, TURBINE ENGINE	3	III		-
<b>DOT Classification</b>	Not available.	Not available.	Not available.	-	-	-

PG\* : Packing group

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JET A/A-1 AVIATION TURBINE FUEL

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**15 . Regulatory information**United States

HCS Classification : Combustible liquid

Canada

WHMIS (Canada) : Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).  
Class D-2A: Material causing other toxic effects (Very toxic).

The WHMIS classification of Jet A/A-1 is B3.

The WHMIS classification of Jet A/A-1-DI, JP-8, Jet F-34 and NATO F-34, which all contain FSII (Diethylene Glycol Monomethyl Ether), is B3, D2A.

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.

International regulations

Canada inventory : All components are listed or exempted.

United States inventory (TSCA 8b) : All components are listed or exempted.

Europe inventory : All components are listed or exempted.

**16 . Other information**

Label requirements : COMBUSTIBLE LIQUID AND VAPOUR. MAY CAUSE EYE AND SKIN IRRITATION. POSSIBLE BIRTH DEFECT HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE BIRTH DEFECTS, BASED ON ANIMAL DATA.

Hazardous Material Information System (U.S.A.) :

Health	2
Flammability	2
Physical hazards	0
Personal protection	H

National Fire Protection Association (U.S.A.) :

References

: Available upon request.  
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Date of printing : 5/24/2012.

Date of issue : 24 May 2012

Date of previous issue : 5/24/2012.

Responsible name : Product Safety - DSR

Indicates information that has changed from previously issued version.

For Copy of (M)SDS : Internet: [www.petro-canada.ca/msds](http://www.petro-canada.ca/msds)

Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228

For Product Safety Information: (905) 804-4752

Notice to reader

Date of issue : 5/24/2012.

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**JET A/A-1 AVIATION TURBINE FUEL**

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## **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.

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# Material Safety Data Sheet

PROPANE



## 1. Product and company identification

<b>Product name</b>	: PROPANE
<b>Synonym</b>	: Propane HD-5, Propane commercial, Liquified Petroleum Gas (LPG), C3H8, CGSB Propane Grade 1, CGSB Propane Grade 2, odourized propane, stench propane, automotive propane.
<b>Code</b>	: W222
<b>Material uses</b>	: Propane is used as a fuel gas, refrigerant and as a raw material for organic synthesis. It is also used as a laboratory gas. The grade determines the propane content. It is supplied as pressurized liquid in tanks.
<b>Manufacturer</b>	: PETRO-CANADA P.O. Box 2844 150 – 6th Avenue South-West Calgary, Alberta T2P 3E3
<b><u>In case of emergency</u></b>	: Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).

## 2. Hazards identification

<b>Physical state</b>	: Gas at room temperature; liquid when stored under pressure.
<b>Odour</b>	: Propane is an odourless gas. Odourized propane will contain up to 28 g Ethyl Mercaptan per 1000 L of propane.
<b>WHMIS (Canada)</b>	: Class A: Compressed gas. Class B-1: Flammable gas.
<b>OSHA/HCS status</b>	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
<b>Emergency overview</b>	: CAUTION! EXTREMELY FLAMMABLE GAS. MAY CAUSE FLASH FIRE. HIGH PRESSURE GAS. Contains gas under pressure. Extremely flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst or explode. Keep away from heat, sparks and flame. Do not puncture or incinerate container. Avoid breathing gas. Avoid contact with skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. At high concentrations, this product can displace oxygen and cause asphyxiation therefore a minimum requirement of 19.5 % oxygen at sea level is recommended.
<b>Routes of entry</b>	: Dermal contact. Eye contact. Inhalation.
<b><u>Potential acute health effects</u></b>	
<b>Inhalation</b>	: Inhalation of this product may cause respiratory tract irritation and Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death.
<b>Ingestion</b>	: As this product is a gas, refer to the inhalation section.
<b>Skin</b>	: Contact with rapidly expanding gas may cause burns or frostbite.
<b>Eyes</b>	: Contact with rapidly expanding gas may cause burns or frostbite.
<b><u>Potential chronic health effects</u></b>	
<b>Chronic effects</b>	: No known significant effects or critical hazards.
<b>Carcinogenicity</b>	: Not listed as carcinogenic by OSHA, NTP or IARC.
<b>Mutagenicity</b>	: No known significant effects or critical hazards.
<b>Teratogenicity</b>	: No known significant effects or critical hazards.

Date of issue : 3/30/2012.

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**2. Hazards identification**

- Developmental effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.
- Medical conditions aggravated by over-exposure** : Overexposure may lead to cardiac sensitization.

See toxicological information (Section 11)

**3. Composition/information on ingredients**

<u>Name</u>	<u>CAS number</u>	<u>%</u>
Propane	74-98-6	90 - 100
Propene	115-07-1	1 - 5
Butane	106-97-8	1 - 5
Ethane	74-84-0	1 - 2.5

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.

**4. First-aid measures**

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. 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. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : As this product is a gas, refer to the inhalation section.
- 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.
- Notes to physician** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

**5. Fire-fighting measures**

- Flammability of the product** : Class I - flammable gas (NFPA).
- Extinguishing media**
- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : 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.
- Products of combustion** : Carbon oxides (CO, CO<sub>2</sub>), smoke and irritating vapours as products of incomplete combustion.
- 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.

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5 . Fire-fighting measures

Special remarks on fire hazards

Extremely 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. Rapid escape of vapour may generate static charge causing ignition. May accumulate in confined spaces.

Special remarks on explosion hazards

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. Vapour explosion hazard indoors, outdoors or in sewers. Propane may form explosive mixtures with air.

6 . Accidental release measures

Personal precautions

Accidental releases pose a serious fire or explosion hazard. Immediately contact 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 (see Section 8).

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 for 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.

7 . Handling and storage

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. Remove contaminated clothing and protective equipment before entering eating areas. Contains gas under pressure. Avoid contact with eyes, skin and 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. 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. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container. Ensure all equipment is grounded/bonded.

SPECIAL PRECAUTIONS: Sludges and tank scale from petroleum storage tanks, trucks, rail cars, and filters/screens may contain naturally occurring radioactive material ("NORM") in the form of radon 226 and it's progeny including lead 210. Similarly, equipment used for the transfer of petroleum product such as pipelines, pumps and compressors, may have detectable levels of radioactive lead on inner surfaces. Workers involved in cleaning, descaling, repair or other maintenance on inner surfaces of such equipment should avoid breathing and ingesting of dust generated from such activities. Similarly, gas freeing of pipelines, pumps, vessels and compressors may put workers at risk of inhalation of radon gas. Suitable codes of practice should be developed for these activities, detailing appropriate occupational hygiene, personal protective equipment and disposal practices.

Storage

Store in accordance with local regulations. Store in a segregated and approved area. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Eliminate all ignition sources. Keep container tightly closed and sealed until ready for use. Ensure the storage containers are grounded/bonded.

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## 8 . Exposure controls/personal protection

Ingredient	Exposure limits
Propane	<b>ACGIH TLV (United States).</b> TWA: 1000 ppm 8 hour(s).
Propene	<b>ACGIH TLV (United States).</b> TWA: 500 ppm 8 hour(s).
Butane	<b>ACGIH TLV (United States).</b> TWA: 1000 ppm 8 hour(s).
Ethane	<b>ACGIH TLV (United States).</b> TWA: 1000 ppm 8 hour(s).

**Consult local authorities for acceptable exposure limits.**

**Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

**Engineering measures** : 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, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

**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.

### Personal protection

#### **Respiratory**

: Use a properly fitted, air-purifying or air-fed 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. Recommended: NIOSH-approved self-contained breathing apparatus.

#### **Hands**

: 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.  
Recommended: Wear insulated gloves to prevent frostbite.

#### **Eyes**

: 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 or dusts.

#### **Skin**

: 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.

#### **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.

## 9 . Physical and chemical properties

<b>Physical state</b>	: Gas at room temperature; liquid when stored under pressure.
<b>Flash point</b>	: Closed cup: -104°C (-155.2°F)
<b>Auto-ignition temperature</b>	: 450°C (842°F) (NFPA)
<b>Flammable limits</b>	: Lower: 2.1% (NFPA) Upper: 9.5% (NFPA)
<b>Colour</b>	: Colourless.
<b>Odour</b>	: Propane is an odourless gas. Odourized propane will contain up to 28 g Ethyl Mercaptan per 1000 L of propane.
<b>Odour threshold</b>	: Not available.

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## 9 . Physical and chemical properties

<b>pH</b>	: Not available.
<b>Boiling/condensation point</b>	: -42°C (-43.6°F)
<b>Melting/freezing point</b>	: Not available.
<b>Relative density</b>	: Not available.
<b>Vapour pressure</b>	: 1434.9 kPa (10763 mm Hg) @ 38°C (100°F)
<b>Vapour density</b>	: 1.56 [Air = 1]
<b>Volatility</b>	: Volatile.
<b>Evaporation rate</b>	: Not available.
<b>Viscosity</b>	: Not available.
<b>Pour point</b>	: Not available.
<b>Solubility</b>	: Not available.

## 10 . Stability and reactivity

<b>Chemical stability</b>	: The product is stable.
<b>Hazardous polymerisation</b>	: Under normal conditions of storage and use, hazardous polymerisation will not occur.
<b>Materials to avoid</b>	: Reactive with oxidising agents and halogenated compounds.
<b>Hazardous decomposition products</b>	: May release COx, smoke and irritating vapours when heated to decomposition.

## 11 . Toxicological information

### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Butane	LC50 Inhalation Gas.	Rat	658000 mg/m <sup>3</sup>	4 hours

**Conclusion/Summary** : Not available.

### Chronic toxicity

**Conclusion/Summary** : Not available.

### Irritation/Corrosion

**Conclusion/Summary** : Not available.

### Sensitiser

**Conclusion/Summary** : Not available.

### Carcinogenicity

**Conclusion/Summary** : Not available.

### Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Propene	A4	3	-	-	-	-

### Mutagenicity

**Conclusion/Summary** : Not available.

### Teratogenicity

**Conclusion/Summary** : Not available.

### Reproductive toxicity

**Conclusion/Summary** : Not available.

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**12 . Ecological information****Environmental effects** : No known significant effects or critical hazards.**Aquatic ecotoxicity****Conclusion/Summary** : Not available.**Biodegradability****Conclusion/Summary** : Not available.**13 . Disposal considerations**

**Waste disposal** : The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. 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. Empty pressure vessels should be returned to the supplier. 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.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

**14 . Transport information**

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
<b>TDG Classification</b>	UN1978	PROPANE	2.1	-		-
<b>DOT Classification</b>	Not available.	Not available.	Not available.	-		-

PG\* : Packing group

**15 . Regulatory information****United States**

**HCS Classification** : Compressed gas  
Flammable gas

**Canada**

**WHMIS (Canada)** : Class A: Compressed gas.  
Class B-1: Flammable gas.

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.

**International regulations**

**Canada inventory** : All components are listed or exempted.

**United States inventory (TSCA 8b)** : All components are listed or exempted.

**Europe inventory** : All components are listed or exempted.

Date of issue : 3/30/2012.

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**16 . Other information****Label requirements** : EXTREMELY FLAMMABLE GAS. MAY CAUSE FLASH FIRE. HIGH PRESSURE GAS.**Hazardous Material  
Information System (U.S.A.)** :

Health	2
Flammability	4
Physical hazards	2
Personal protection	K

**National Fire Protection  
Association (U.S.A.)** :**References** :Available upon request.  
™ Trademark of Suncor Energy Inc. Used under licence.**Date of printing** :

10/24/2013.

**Date of issue** :

30 March 2012

**Date of previous issue** :

3/31/2009.

**Responsible name** :

Product Safety - DSR

✔ Indicates information that has changed from previously issued version.

**For Copy of (M)SDS** :Internet: [www.petro-canada.ca/msds](http://www.petro-canada.ca/msds)

Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228

For Product Safety Information: (905) 804-4752

**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.

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Product Name: MOBILUX EP 2  
Revision Date: 22 Jan 2015  
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## MATERIAL SAFETY DATA SHEET

### SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

#### PRODUCT

Product Name: MOBILUX EP 2  
Product Description: Base Oil and Additives  
MSDS Number: 6482  
Product Code: 2015A0208050  
Intended Use: Grease

#### COMPANY IDENTIFICATION

Supplier: Imperial Oil Downstream  
240 4th Avenue  
Calgary, ALBERTA: T2P 3M9 Canada  
24 Hour Environmental / Health Emergency: 1-866-232-9563  
Telephone:  
Transportation Emergency Phone Number: 1-866-232-9563  
Product Technical Information: 1-800-268-3183  
Supplier General Contact: 1-800-567-3776

### SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

No Reportable Hazardous Substance(s) or Complex Substance(s).

### SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines see Section 15.

#### HEALTH EFFECTS

Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

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.



Product Name: MOBILUX EP 2  
Revision Date: 22 Jan 2015  
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#### 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 (CO<sub>2</sub>) 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, Oxides of carbon, Smoke, Fume, Sulphur oxides, Incomplete combustion products

#### FLAMMABILITY PROPERTIES

**Flash Point [Method]:** >204°C (400°F) [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.

#### 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.



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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:** Allow spilled material to solidify and shovel it up 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 so without risk. Confine the spill immediately with booms. Warn other shipping. 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

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.





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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/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:** Solid  
**Form:** Semi-fluid  
**Colour:** Brown  
**Odour:** Characteristic  
**Odour Threshold:** N/D

#### IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

**Relative Density (at 15 °C):** 0.92  
**Flash Point [Method]:** >204°C (400°F) [EST. FOR OIL, ASTM D-92 (COO)]



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**Flammable Limits (Approximate volume % in air):** LEL: N/D UEL: N/D  
**Autoignition Temperature:** N/D  
**Boiling Point / Range:** > 316°C (600°F)  
**Vapour Density (Air = 1):** N/D  
**Vapour 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:** 150 cSt (150 mm<sup>2</sup>/sec) at 40°C  
**Oxidizing Properties:** See Hazards Identification Section

#### OTHER INFORMATION

**Freezing Point:** N/D  
**Melting Point:** N/D  
**DMSO Extract (mineral oil only), IP-346:** < 3 %wt  
**Decomposition Temperature:** 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
<b>Inhalation</b>	
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.
<b>Ingestion</b>	
Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
<b>Skin</b>	
Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
<b>Eye</b>	
Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.



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#### CHRONIC/OTHER EFFECTS

##### 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:

Chemical Name	CAS Number	List Citations
SOLVENT DEWAXED RESIDUAL OIL (PETROLEUM)	647 42-62-7	1, 6

1 = IARC 1  
2 = IARC 2A

#### REGULATORY LISTS SEARCHED

3 = IARC 2B  
4 = ACGIH ALL

5 = ACGIH A1  
6 = ACGIH A2

#### 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.





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#### 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

**AIR (IATA):** Not Regulated for Air Transport

#### SECTION 15 REGULATORY INFORMATION

**WHMIS Classification:** Not controlled

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

**CEPA:** All components of this material are either on the Canadian Domestic Substances List (DSL), exempt, or have been notified under CEPA.

**Listed or exempt from listing/notification on the following chemical inventories:** DSL, IECSC, KECI, PICCS, TSCA

#### Special Cases:

Inventory	Status
AICS	Restrictions Apply

The Following Ingredients are Cited on the Lists Below:

Chemical Name	CAS Number	List Citations
ZINC DITHIOPHOSPHATE	68649-42-3	6



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--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

### THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Revision Changes:  
Section 06: Protective Measures information was modified.  
Section 11: Tox Table - Header information was modified.  
Section 06: Accidental Release - Protective Measures - Header information was added.  
Section 11: Chemical Name - Header information was added.  
Section 11: CAS Number - Header information was added.  
Section 11: List Citation - Header information was added.  
Section 11: Tox List Cited Table information was added.

WHMIS Classification: Not controlled

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Prepared by: Imperial Oil Limited, IH and Product Safety



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## MATERIAL SAFETY DATA SHEET

### SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

#### PRODUCT

Product Name: Z-50 PIPE DOPE  
Product Description: Base Oil and Additives  
MSDS Number: 8503  
Product Code: 2015A020X010  
Intended Use: Sealant

#### COMPANY IDENTIFICATION

Supplier: Imperial Oil Products Division  
240 4th Avenue  
Calgary, ALBERTA: T2P 3M9 Canada  
24 Hour Environmental / Health Emergency: 1-866-232-9563  
Telephone:  
Transportation Emergency Phone Number: 1-866-232-9563  
Product Technical Information: 1-800-268-3183  
Supplier General Contact: 1-800-567-3776

### SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

No Reportable Hazardous Substance(s) or Complex Substance(s).

### SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines see Section 15.

#### 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.

<b>NFPA Hazard ID:</b>	Health: 1	Flammability: 1	Reactivity: 1
<b>HMIS Hazard ID:</b>	Health: 1	Flammability: 1	Reactivity: 1

**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.





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#### 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 (CO<sub>2</sub>) 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:** Smoke, Fume, Aldehydes, Sulphur oxides, Incomplete combustion products, Oxides of carbon, Metal Oxides

#### FLAMMABILITY PROPERTIES

**Flash Point [Method]:** >221°C (430°F) [ASTM D-92]

**Flammable Limits (Approximate volume % in air):** LEL: 0.9 UEL: 7.0

**Autoignition Temperature:** >260°C (500°F)

### 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.



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## SPILL MANAGEMENT

**Land Spill:** Scrape up spilled material with shovels into a suitable container for recycle or disposal.

**Water Spill:** Stop leak if you can do so without risk. Warn other shipping. Material will sink. Consult an expert. No immediate action required.

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

Substance Name	Form	Limit/Standard			Note	Source
MICA	Respirable fraction.	TWA	3 mg/m3			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:



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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/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:** Solid  
**Form:** Semi-fluid  
**Colour:** Grey  
**Odour:** Characteristic  
**Odour Threshold:** N/D

#### IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

**Relative Density (at 15 °C):** 1.59  
**Flash Point [Method]:** >221°C (430°F) [ASTM D-92]  
**Flammable Limits (Approximate volume % in air):** LEL: 0.9 UEL: 7.0  
**Autoignition Temperature:** >260°C (500°F)  
**Boiling Point / Range:** < 316°C (601°F) [Estimated]  
**Vapour Density (Air = 1):** N/D  
**Vapour Pressure:** < 0.013 kPa (0.1 mm Hg) at 20°C [Estimated]  
**Evaporation Rate (n-butyl acetate = 1):** < 0.01  
**pH:** N/D





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**Log Pow (n-Octanol/Water Partition Coefficient):** N/A  
**Solubility in Water:** Negligible  
**Viscosity:** [N/D at 40°C]  
**Oxidizing Properties:** See Hazards Identification Section.

#### OTHER INFORMATION

**Freezing Point:** N/D  
**Melting Point:** 196°C (385°F)  
**Decomposition Temperature:** 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
<b>Inhalation</b>	
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. Based on assessment of the components.
<b>Ingestion</b>	
Toxicity (Rat): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
<b>Skin</b>	
Toxicity (Rabbit): LD50 > 5000 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.
<b>Eye</b>	
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.

#### CHRONIC/OTHER EFFECTS

##### 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



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animals.

Additional information is available by request.

CMR Status: None.

Chemical Name	CAS Number	List Citations
MICA	12001-26-2	4

1 = IARC 1  
2 = IARC 2A

--REGULATORY LISTS SEARCHED--

3 = IARC 2B  
4 = ACGIH ALL

5 = ACGIH A1  
6 = ACGIH A2

## 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.

### REGULATORY DISPOSAL INFORMATION

**Empty Container Warning** Empty Container Warning (where applicable): Empty containers may contain



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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

**AIR (IATA):** Not Regulated for Air Transport

#### SECTION 15 REGULATORY INFORMATION

**WHMIS Classification:** Not controlled

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

**CEPA:** All components of this material are either on the Canadian Domestic Substances List (DSL), exempt, or have been notified under CEPA.

**Complies with the following national/regional chemical inventory requirements:** AICS, DSL, IECSC, KECI, PICCS

The Following Ingredients are Cited on the Lists Below:

Chemical Name	CAS Number	List Citations
ZINC	7440-66-6	6

--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





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**THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:**

Revision Changes:

Section 06: Notification Procedures - Header was modified.  
Section 10: Materials To Avoid - Header was modified.  
Section 11: Acute Toxicity Table Header was modified.  
Section 09: Phys/Chem Properties Note was modified.  
Section 09: Colour was modified.  
Section 11: Ingestion Acute Lethality - Header was modified.  
Section 11: Inhalation - Header was modified.  
Section 09: Boiling Point C(F) was modified.  
Section 09: Evaporation Rate - Header was modified.  
Section 08: Personal Protection - Header was modified.  
Section 08: Comply with applicable regulations phrase was modified.  
Section 09: Vapour Pressure - Header was modified.  
Section 09: Vapour Pressure was modified.  
Section 11: Inhalation Lethality Test Data was modified.  
Section 11: Inhalation Irritation Test Data was modified.  
Section 05: Hazardous Combustion Products 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 14: Sea (IMDG) - Header was modified.  
Section 14: Air (IATA) - Header was modified.  
Section 14: LAND (TDG) - Header was modified.  
Section 14: LAND (DOT) - Header was modified.  
Section 14: LAND (DOT) - Default was modified.  
Section 14: LAND (TDG) Default was modified.  
Section 14: Sea (IMDG) - Default was modified.  
Section 14: Air (IATA) - Default was modified.  
Section 15: National Chemical Inventory Listing - Header was modified.  
Section 15: National Chemical Inventory Listing was modified.  
Hazard Identification: Hazards Note was modified.  
Section 16: CA Prepared by - Header was modified.  
Section 09: Section 9 Footnotes was modified.  
Section 09: Oxidizing Properties was modified.  
Section 15: Canadian List Citations Table was modified.  
Section 01: Company Contact Methods Sorted by Priority was modified.  
Section 06: Protective Measures was added.  
Section 06: Accidental Release - Protective Measures - Header was added.  
Section 09: Form - Header was added.  
Section 09: Physical State was added.  
Section 09: Decomposition Temperature was added.  
Section 09: Decomposition Temp - Header was added.  
Section 09: Vapour Pressure was added.  
Section 01: Product Code was added.  
Section 01: Product Code - Header was added.  
Section 09: Form - Header was deleted.  
Section 09: Physical State was deleted.

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WHMIS Classification: Not controlled



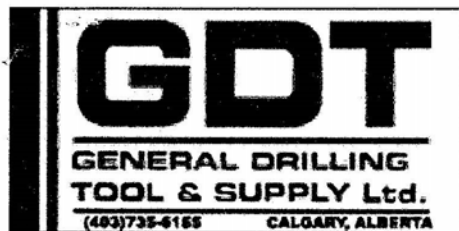
Product Name: Z-50 PIPE DOPE  
Revision Date: 20 Sep 2012  
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DGN: 5007465 (1015931)

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Prepared by: Imperial Oil Limited, IH and Product Safety



**WESTWAY FEED PRODUCTS, INC.**  
**3315 2<sup>nd</sup> AVE. N**  
**LETHBRIDGE, AB**  
**(800)563-6371**

## MATERIAL SAFETY DATA SHEET

REVISED JUNE 28, 2007

### SECTION I: PRODUCT IDENTIFICATION

DESCRIPTION: CSB (CONCENTRATED SEPARATOR BY-PRODUCT)

USE: ANIMAL FEED

MANUFACTURER: WESTWAY FEED PRODUCTS, INC.  
 3315 2<sup>nd</sup> AVE. N.  
 LETHBRIDGE, AB, CANADA  
 T1H 0C7

EMERGENCY CONTACT: WESTWAY FEED PRODUCTS, INC.  
 TECHNICAL SERVICES  
 DON MANN (403)660-4416

### SECTION II: HAZARDOUS MATERIAL IDENTIFICATION

HAZARD DESCRIPTION: 1. STICKY SYRUP  
 2. CAN REACT EXOTHERMALLY IF STORED AT HIGH TEMPERATURES.

#### COMPONENT 1 COMPONENT 2 COMPONENT 3

CHEMICAL NAME:	SUCROSE	PLANT NON-SUCROSES	WATER
CHEMICAL FORMULA:	C H O	N.A.	H O
PERCENT OF PRODUCT:	12%	68%	20%

### SECTION III: PHYSICAL AND CHEMICAL DATA

DESCRIPTION: DARK BROWN SYRUP

DECOMPOSITION: SLOW DECOMPOSITION ABOVE 186 C

VOLATILITY: NIL

SPECIFIC GRAVITY: 1.41

SOLUBILITY: SOLUBLE IN WARM WATER IN ALL PROPORTIONS

pH: 8-9 IN WATER SOLUTION

REACTIVITY: NIL AT NORMAL TEMPERATURE AND USE. CAN REACT EXOTHERMALLY UNDER PROPER CONDITIONS OF INVERT, AMINO ACIDS, AND TEMPERATURES.

PAGE 1 OF 2



**SPECIAL PROTECTION INFORMATION:**

PROTECTIVE GLOVES:	N/A
EYE PROTECTION:	N/A
RESPIRATORY PROTECTION:	BREATHING APPARATUS MUST BE USED WHEN ENTERING STORAGE TANKS UNLESS THOROUGHLY VENTILLATED.
LOCAL EXHAUST:	STORAGE TANKS SHOULD BE VENTILATED BEFORE ENTRY.
OTHER EQUIPMENT:	LIFE LINE SHOULD BE WORN WHEN ENTERING TANKS.

**REACTIVITY DATA:**

INCOMPATIBLE MATERIALS:	N/A
STABILITY:	STABLE WHEN STORED AT LESS THAN 140 F
HAZARDOUS POLYMERIZATION:	N/A
HAZARDOUS DECOMPOSTION:	N/A

**SPILL OR LEAK PROCEDURES:**

WASH WITH WATER OR PICK UP WITH ABSORBENT MATERIALS. PREVENT ENTRY TO WATER WAYS WHERE BOD IS A CONCERN.

**SPECIAL INFORMATION: NONE**

THE INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN ARE BASED ON DATA BELIEVED TO BE CORRECT. NO WARRANTY IS EXPRESSED OR IMPLIED.



## 550RD 550X POLYMER

### DESCRIPTION

**550RD/550X** is a highly dispersible, slightly anionic, dry synthetic polymer that minimizes fisheyes when mixing allowing for more consistent yields and less waste in minimal shear environments. Requires minimal shearing to yield very consistently and quickly compared to semi synthetic or natural polymers.

### PRIMARY FUNCTIONS

- High viscosity for cuttings transport with minimal product usage
- Nontoxic for use in environmentally sensitive applications

### SECONDARY FUNCTIONS

These functions serve as supplemental benefits of this products use when mixed accordingly.

- Reduced torque and tubular wear compared to straight water applications
- Increased rate of penetration in directional and horizontal wells
- Reduction in storage on site, volume of supplies and transport costs over liquid product
- Shale and clay encapsulation that reduces swelling and increases well bore stability

### MIXING

**550RD 550X** can be mixed readily in fresh water. Sprinkle slowly onto agitated, turbulent water. Hydration is almost immediate. 1-1.5 kg/m<sup>3</sup> is generally sufficient for normal vertical drilling applications. In unconsolidated or broken formations that are prone to sloughing or in water reactive clay or shale the concentration should be increased to 1.5-2.5kg/m<sup>3</sup>. This product is sensitive to high salinity, if mixing in salt water contact Di-Corp rep for specialized instruction.

### ENVIRONMENT

**Dangerous components:** None

**Potentially dangerous impurities:** None

**Physical properties:** White solid at 20 Degrees C

**Measures to be taken after leakage or accidental spilling:** Wash abundantly with water and bleach

**Inflammability or danger of explosion:** None

**Poisonous properties:** Non-toxic, slightly basic

**First Aid measures:** Wash with water

### PACKAGING

20 kg. High impact plastic pail with handle.

	Surrey • Saskatoon • North Bay • Whitehorse • Smithers Tel: 1.800.665.6645 Web: www.di-corp.com	 DOWN TO EARTH BUSINESS
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**SECTION I: IDENTIFICATION OF PRODUCT**

COMPANY: **Diversity Technologies Corp.** DATE: **Nov. 22, 2011**  
**8750 – 53<sup>rd</sup> Ave.** PHONE: **780-440-4923**  
**Edmonton, AB T6E 5G2** FAX: **780-469-1899**

PRODUCT NAME: **BIG BEAR ROD GREASE**

PRODUCT USE: Anti-seize compound  
 CHEMICAL FAMILY: Mixture CAS #: Mixture

**WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)**

WHMIS CLASSIFICATION: Not WHMIS regulated.  
 WORKPLACE HAZARD: Not hazardous under normal conditions of use.

**TRANSPORTATION OF DANGEROUS GOODS (TDG)**

PROPER SHIPPING NAME: Not TDG regulated.  
 TDG CLASSIFICATION: Not applicable.  
 UN NUMBER (PIN): Not applicable.  
 PACKING GROUP: Not applicable.

**SECTION II: HAZARDOUS INGREDIENTS**

INGREDIENT	% (w/w)	CAS NUMBER	LD <sub>50</sub> Oral-Rat	LC <sub>50</sub> Inhal-Rat	ACGIH-TLV
Mineral oil	70-80	64742-52-5	Not available	Not available	Not available
Barium soap	20-30	68201-19-4	Not available	Not available	Not available

**SECTION III: HEALTH HAZARDS**

ROUTE OF ENTRY: [XX] EYE CONTACT [XX] SKIN [ ] INHALATION [XX] INGESTION  
 EYE CONTACT: May cause slight transient irritation.  
 SKIN CONTACT: May cause slight transient irritation.  
 INGESTION: No effects known.  
 INHALATION: Not a likely source of contact during normal use.  
 CARCINOGENICITY: None of the ingredients in the compound are listed by NTP, IARC or OSHA as being carcinogenic.  
 TERATOGENICITY: No information available.  
 REPRODUCTIVE TOXICITY: No information available.  
 MUTAGENICITY: No ingredients listed as mutagenic.  
 SYNERGISTIC PRODUCTS: No information available.

**BIG BEAR ROD GREASE****1**





## + MATERIAL SAFETY DATA SHEET +

### BIG BEAR ROD GREASE

#### SECTION IV: FIRST AID MEASURES

SKIN CONTACT:	Remove by wiping, or with a waterless hand cleaner. Wash with soap and water. Remove and launder contaminated clothing before re-use.
EYE CONTACT:	Immediately flush with gently flowing warm water until all residual material is removed. Remove contact lenses if present. Hold eyelids open to ensure thorough flushing. If irritation persists, obtain medical attention.
INGESTION:	Do not induce vomiting. Rinse mouth. Obtain immediate medical attention. Never give anything by mouth to an unconscious or convulsing victim.
INHALATION:	Move to fresh air. Apply oxygen or artificial respiration as required. If breathing difficulties or distress continues, obtain medical attention.

#### SECTION V: PHYSICAL DATA

APPEARANCE AND ODOUR:	Brown paste; bland odour	
SPECIFIC GRAVITY:	0.90 @ 16°C	
BOILING POINT (°C):	371	
MELTING POINT (°C):	204	
SOLUBILITY IN WATER:	Insoluble	pH: Not available
PERCENT VOLATILE BY VOLUME:	Not available	
EVAPORATION RATE:	Not available	
VAPOUR PRESSURE :	Not available	
VAPOUR DENSITY (air = 1):	Not available	
BULK DENSITY:	Not applicable	

#### SECTION VI: FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:	188°C (D-92)
FLAMMABLE LIMITS:	Not available
EXTINGUISHING MEDIA:	Dry chemical, CO <sub>2</sub> , foam or water spray.
SPECIAL FIRE FIGHTING PROCEDURES:	Self-contained breathing apparatus required for fire-fighting personnel. Remove containers from fire area, or cool with water spray, if possible.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	This product may burn under fire conditions.

#### SECTION VII: REACTIVITY DATA

STABILITY:	STABLE [XX]	UNSTABLE [ ]
INCOMPATIBILITY (CONDITIONS TO AVOID):	Strong oxidizers. Avoid heat, sparks and open flames.	
CONDITIONS OF REACTIVITY:	Contact with incompatibles or ignition sources.	



HAZARDOUS DECOMPOSITION PRODUCTS: May release CO<sub>x</sub>, smoke and irritating vapours when heated to decomposition.  
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR [XX] MAY OCCUR [ ]

## SECTION VIII: PREVENTATIVE MEASURES

### SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Not required under normal conditions of use.  
VENTILATION: Not required under normal conditions of use.  
PROTECTIVE GLOVES: Suggest neoprene or viton.  
EYE PROTECTION: Safety glasses with side-shields if required.  
OTHER PROTECTIVE EQUIPMENT (Specify): Protective clothing as required to prevent contact.  
Ensure eyewash station and emergency shower are available.

### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid contact with skin and eyes. Avoid ingestion. Wash thoroughly before eating, drinking or smoking. Store in cool, dry area away from incompatibles and sources of ignition. Use caution when opening unvented containers. Use in well-ventilated area. Store unused material in original container.

### STEPS TO BE TAKEN IN CASE THE MATERIAL IS SPILLED OR RELEASED

Use appropriate safety equipment. Eliminate ignition sources. Scoop up excess, then wipe down the affected area and pick up residual with diatomaceous earth to prevent slipping hazard. Place contaminated material and clean up materials in approved containers for disposal.

### WASTE DISPOSAL METHOD

Dispose/incinerate 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. Dispose of, or recycle, empty containers in accordance with local regulations.

## SECTION IX: PREPARATION

The information contained herein is given in good faith, but no warranty, expressed or implied, is made.

DATE ISSUED: Nov. 22, 2011  
SUPERSEDES: Dec. 9, 2008  
BY: Regulatory Affairs  
PHONE: 780-440-4923



### SECTION I: IDENTIFICATION OF PRODUCT

COMPANY: **Diversity Technologies Corp.** DATE: **November 22, 2011**  
**8750 – 53<sup>rd</sup> Ave.** PHONE: **780-440-4923**  
**Edmonton, AB T6E 5G2** FAX: **780-469-1899**

PRODUCT NAME: **LINSEED SOAP**

PRODUCT USE: **Lubricant.**  
CHEMICAL FAMILY: **Fatty acids.**

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	PERCENT	CAS NUMBER	LD <sub>50</sub> Oral-Rat	LC <sub>50</sub> Inhal-Mouse	ACGIH-TLV
No hazardous ingredients available.					

### SECTION III: HEALTH HAZARDS

ROUTE OF ENTRY: ☐ EYE CONTACT ☐ SKIN ☐ INHALATION ☐ INGESTION  
EYE CONTACT: **May cause slight irritation.**  
SKIN 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.**

LINSEED SOAP





## + MATERIAL SAFETY DATA SHEET +

### LINSEED SOAP

#### SECTION IV: FIRST AID MEASURES

SKIN CONTACT:	Wipe away excess. Remove contaminated clothing and wash affected area thoroughly with soap and water. If irritation develops or persists, obtain medical attention.
EYE CONTACT:	Immediately flush with gently flowing warm water until material is removed and irritation ceases. 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 paste; slight soapy odour
SPECIFIC GRAVITY:	Not applicable
BOILING POINT (°C):	100
MELTING POINT (°C):	0
SOLUBILITY IN WATER:	Soluble pH: 9.5 – 11.5
PERCENT VOLATILE BY VOLUME:	Not applicable
EVAPORATION RATE:	Not applicable
VAPOUR PRESSURE (mmHg):	Not applicable
VAPOUR DENSITY (air = 1):	Not applicable
BULK DENSITY	Not applicable

#### SECTION VI: FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:	Not flammable
FLAMMABLE LIMITS:	Not applicable
EXTINGUISHING MEDIA:	Use media suitable for packaging and surrounding materials.
SPECIAL FIRE FIGHTING PROCEDURES:	Self-contained breathing apparatus required for fire fighting personnel.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	None known.

#### SECTION VII: REACTIVITY DATA

STABILITY:	STABLE [XX]	UNSTABLE [ ]
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INCOMPATIBILITY (CONDITIONS TO AVOID):	None known.	
CONDITIONS OF REACTIVITY:	None known.	
HAZARDOUS DECOMPOSITION PRODUCTS:	Not determined.	
HAZARDOUS POLYMERIZATION:	WILL NOT OCCUR [XX]	MAY OCCUR [ ]

## SECTION VIII: PREVENTATIVE MEASURES

### SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:	Not applicable.
VENTILATION:	Not applicable.
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. No specific storage requirements.

### 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.

### WASTE DISPOSAL METHOD

Dispose in accordance with federal, provincial and local regulations. This material can be landfilled in most areas; 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 contained herein is given in good faith, but no warranty, expressed or implied, is made.

DATE ISSUED:	Nov. 22, 2011
SUPERSEDES:	Dec. 9, 2008
BY:	780-440-4923
PHONE:	Regulatory Affairs

## MATERIAL SAFETY DATA SHEET

### SECTION I: IDENTIFICATION OF PRODUCT

COMPANY: **Diversity Technologies Corp.** DATE: Jan. 3, 2006  
**8750 – 53<sup>rd</sup> Ave.** PHONE: 604-940-6050  
**Edmonton, AB T6E 5G2** FAX: 604-940-6080

PRODUCT NAME: **G-STOP**

PRODUCT USE: Drilling mud additive.  
CHEMICAL FAMILY: Polyacrylamide CAS#: Not available

### WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

WHMIS CLASSIFICATION: Not a controlled product under WHMIS  
WORKPLACE HAZARD: Treat as a nuisance dust.

### 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

<u>INGREDIENT</u>	<u>PERCENT</u>	<u>CAS NUMBER</u>	<u>LD<sub>50</sub> Oral-Rat</u>	<u>LC<sub>50</sub> Inhal-Rat</u>	<u>ACGIH-TLV</u>
Contains no WHMIS controlled ingredients.					

### SECTION III: HEALTH HAZARDS

ROUTE OF ENTRY: [ ] EYE CONTACT [ ] SKIN [ ] INHALATION [ ] INGESTION  
EYE CONTACT: May cause slight irritation and/or redness.  
SKIN CONTACT: May cause slight irritation some cases.  
INGESTION: Low acute oral toxicity. May cause nausea and vomiting.  
INHALATION: May cause irritation of the respiratory tract, including sneezing and coughing.  
CARCINOGENICITY: No information available.  
TERATOGENICITY: No information available.  
REPRODUCTIVE TOXICITY: No information available.

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G-Stop

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MUTAGENICITY: No information available.  
 SYNERGISTIC PRODUCTS: No information available.

#### SECTION IV: FIRST AID MEASURES

SKIN CONTACT: Wash thoroughly with soap and water. If irritation develops or persists, obtain medical attention. Wash contaminated clothing prior to re-use.  
 EYE CONTACT: Flush with gently flowing warm water until irritation subsides. If irritation persists, obtain medical attention.  
 INGESTION: Do not induce vomiting. Give 2-3 glasses of water. If symptoms occur, 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 as required. If breathing difficulties or distress continues obtain medical attention.

#### SECTION V: PHYSICAL DATA

APPEARANCE AND ODOUR: White granular powder; no odour  
 SPECIFIC GRAVITY: 0.8  
 BOILING POINT (°C): Not available  
 MELTING POINT (°C): Not available  
 SOLUBILITY IN WATER: Insoluble pH: Not applicable  
 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 applicable  
 FLAMMABLE LIMITS: Not applicable  
 EXTINGUISHING MEDIA: Carbon dioxide, dry chemical, foam, in preference to a water spray.  
 SPECIAL FIRE FIGHTING PROCEDURES: Self contained breathing apparatus required for fire fighting personnel. Move containers from fire area if possible.  
 UNUSUAL FIRE AND EXPLOSION HAZARDS: As with most organic powders, flammable dust clouds may be formed in air. Avoid creating dust. Avoid sources of ignition.

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G-Stop

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#### SECTION VII: REACTIVITY DATA

STABILITY:	STABLE [XX]	UNSTABLE [ ]
INCOMPATIBILITY (CONDITIONS TO AVOID):	Avoid contact with strong oxidizers. Avoid wet, damp or humid conditions, extremes of temperature, and ignition sources.	
HAZARDOUS DECOMPOSITION PRODUCTS:	Oxides of carbon and nitrogen, various hydrocarbons, and/or hydrogen cyanide upon combustion	
HAZARDOUS POLYMERIZATION:	WILL NOT OCCUR [XX] MAY OCCUR [ ]	

#### SECTION VIII: PREVENTATIVE MEASURES

##### SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:	Use approved dust mask in absence of adequate ventilation. Use approved respirators with dust cartridges if TLV is exceeded.
VENTILATION:	Use in well-ventilated area, or use local exhaust ventilation, process enclosure or other engineering controls to maintain dust level below TLV.
PROTECTIVE GLOVES:	Use gloves, if needed, to avoid prolonged or repeated skin contact.
EYE PROTECTION:	Use safety glasses or goggles.
OTHER PROTECTIVE EQUIPMENT (Specify):	As necessary to prevent contact. Ensure eyewash station and emergency shower are available.

#### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid prolonged or repeated breathing of dust and contact with skin. Remove contaminated clothing; launder or dry-clean before reuse. Cleanse skin thoroughly after contact, before breaks and meals and at end of work period. Product is readily removed from skin by washing thoroughly with soap and water. Store in a cool, dry location away from incompatibles. Store in original container.

#### STEPS TO BE TAKEN IN CASE THE MATERIAL IS SPILLED OR RELEASED

Use appropriate safety equipment. Avoid creating dust clouds. Remove ignition sources. Sweep up or vacuum dry material and flush spill area with water. Collect uncontaminated material for repackaging. Collect contaminated material in approved containers for disposal. This product or its solutions should not be allowed to enter waterways without treatment.

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G-Stop

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#### **WASTE DISPOSAL METHOD**

Dispose 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. It may be possible to dispose of spills of non-hazardous materials in a landfill; check with local operator.

#### **SECTION IX: PREPARATION**

THE INFORMATION CONTAINED HEREIN IS GIVEN IN GOOD FAITH,  
BUT NO WARRANTY, EXPRESSED OR IMPLIED, IS MADE.

DATE ISSUED:	January 3, 2006	BY:	Product safety committee
SUPERSEDES:	March 31, 2003	PHONE:	780-440-4923

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**Diversity Technologies Corp. is the parent company of  
Canamara-United Supply, Hollimex Products, The Drilling Depot and  
Westcoast Drilling Supplies**





# Gulf Harmony AW Hydraulic 22

## Material Safety Data Sheet

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

#### Product Identification

Product Name: Gulf Harmony AW Hydraulic 22  
 Product Number: 334225  
 Synonyms: Antiwear Hydraulic Fluid, Petroleum Based Lubricant  
 Chemical Name: Hydrotreated heavy paraffinic distillate  
 Chemical Family: Petroleum Distillate  
 CAS Number: Blend

#### Company Identification

Gulf Oil LP/Nu-Tier Brands, Inc.  
 Tulsa, OK  
 TECHNICAL CONTACT NUMBER: 918-550-8026, Ext. 507  
 CHEMTREC: EMERGENCY CONTACT 1-800-424-9300

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

#### COMPONENT LISTING:

Chemical Name	Amount	CAS Number
HYDROTREATED PARAFFINIC DISTILLATE, DEWAXED	> 98.0 %	64742-65-0
ADDITIVES	< 2.0 %	Blend

(See Section 8 for exposure guidelines)

(See Section 15 for regulatory information)

#### HAZARDS DISCLOSURE

This product contains no known hazardous materials as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200.

As defined under Sara 311 and 312, this product contains no known hazardous materials.

### 3. HAZARDS IDENTIFICATION

\*\*\*\*\* EMERGENCY OVERVIEW \*\*\*\*\*  
 \*  
 \* Not expected to cause a severe emergency hazard.  
 \*  
 \*\*\*\*\*



## Gulf Harmony AW Hydraulic 22

### Material Safety Data Sheet

HMIS Rating -           Health: 1  
                              Flammability: 1  
                              Reactivity: 0

NFPA Rating -           Health: 1  
                              Flammability: 1  
                              Reactivity: 0  
                              Special Hazard: N/A

#### POTENTIAL HEALTH EFFECTS

**EYE:**  
Contact may cause eye irritation and redness.

**SKIN:**  
Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

**INHALATION:**  
Inhalation of vapors or mist may be mildly irritating to the nose, throat, and respiratory tract.

**INGESTION:**  
Small amounts swallowed during normal handling operations are not likely to cause injury.

**CHRONIC EFFECTS:**  
No adverse effects have been documented in humans as a result of chronic exposure.

**CARCINOGENICITY INFORMATION:**  
Based on OSHA 1910.1200 and IARC study requirements, this product does not require labeling.

#### 4. FIRST AID MEASURES

**EYE CONTACT FIRST AID:**  
Flush eye with water for 15 minutes.

Get medical attention if irritation develops or persists.

**SKIN CONTACT FIRST AID:**  
Wash skin with soap and water.

Thoroughly wash (or discard) clothing and shoes before reuse.



## Gulf Harmony AW Hydraulic 22

### Material Safety Data Sheet

INHALATION FIRST AID:  
Remove to fresh air.

If not breathing, give artificial respiration.

INGESTION FIRST AID:  
If vomiting should occur spontaneously, keep airway clear.

NOTES TO PHYSICIAN:  
Treat symptomatically.

#### 5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES  
COC Flash Point: 210° C (410.0° F)  
Autoignition Temperature: > 315.6° C (> 600.1° F)

FLAMMABLE LIMITS IN AIR  
LEL: N/A  
UEL: N/A

EXTINGUISHING MEDIA:  
Carbon dioxide, foam, or dry powder. Water may be used to cool below flash point.

FIRE FIGHTING INSTRUCTIONS:  
As in any fire, wear self-contained breathing apparatus pressure-demand MSHA/NIOSH (approved or equivalent) and full protective gear.

COMBUSTION PRODUCTS:  
Fumes, smoke and carbon monoxide.

#### 6. ACCIDENTAL RELEASE MEASURES

SAFEGUARDS (PERSONNEL):  
Wear appropriate personal protective equipment.

INITIAL CONTAINMENT:  
Absorb spills with inert material.

LARGE SPILLS PROCEDURE:  
Contain spilled material.

Large spillage should be dammed-off and pumped into containers.

Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.





## Gulf Harmony AW Hydraulic 22

### Material Safety Data Sheet

**SMALL SPILLS PROCEDURE:**

Clean up area by absorbent material.

Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

#### 7. HANDLING AND STORAGE

**HANDLING (PERSONNEL):**

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.

Wash hands thoroughly after handling.

**HANDLING (PHYSICAL ASPECTS):**

Store in a cool dry area.

Keep container closed to avoid contamination.

**STORAGE PRECAUTIONS:**

Keep container closed when not in use.

#### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**ENGINEERING CONTROLS:**

Not required under normal conditions of use. However, if unusual operating conditions exist, then provide sufficient mechanical ventilation to maintain exposure below PEL/TLV (s).

**EYE / FACE PROTECTION REQUIREMENTS:**

Where contact with this material is likely, eye protection is recommended.

**SKIN PROTECTION REQUIREMENTS:**

When prolonged or frequently repeated contact could occur, use protective clothing impervious to this material.

**RESPIRATORY PROTECTION REQUIREMENTS:**

When there is potential for airborne exposures in excess of applicable limits, wear NIOSH/MSHA approved respiratory protection.

**EXPOSURE GUIDELINES:**

No Information Available.



## Gulf Harmony AW Hydraulic 22

### Material Safety Data Sheet

#### 9. PHYSICAL AND CHEMICAL PROPERTIES

FORM .....: Liquid  
COLOR .....: Amber  
ODOR .....: Characteristic  
BOILING POINT .....: >425° F  
VAPOR PRESSURE .....: Nil mm Hg  
VAPOR DENSITY .....: >1 (Air = 1)  
SOLUBILITY IN WATER .....: Nil  
SPECIFIC GRAVITY .....: Not Determined (Water = 1)  
MELTING/FREEZING POINT ....: N/A °F  
% VOLATILES .....: Nil %  
VISCOSITY .....: 22 cSt at 40 Deg C

#### 10. STABILITY AND REACTIVITY

STABILITY:  
Stable.

POLYMERIZATION:  
Hazardous polymerization will not occur.

INCOMPATIBILITY WITH OTHER MATERIALS:  
Avoid contact with strong oxidizing agents.

DECOMPOSITION:  
In the case of a fire, oxides of carbon, hydrocarbons, fumes, and smoke may be produced.

#### 11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:  
Minimal irritation on contact.

SKIN EFFECTS:  
Practically non-toxic if absorbed. May cause mild irritation with prolonged and repeated exposure.

ACUTE ORAL EFFECTS:  
Tests on similar materials indicate low order of acute oral toxicity.

ACUTE INHALATION EFFECTS:  
Low acute toxicity expected on inhalation.

MISCELLANEOUS:  
Please contact supplier for additional toxicological information.

#### 12. ECOLOGICAL INFORMATION

ENVIRONMENTAL HAZARDS:  
Ecotoxicological Information: No specific aquatic data available for this product.



## Gulf Harmony AW Hydraulic 22

### Material Safety Data Sheet

#### 13. DISPOSAL CONSIDERATIONS

**WASTE DISPOSAL:**

Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

Do not flush to surface water or sanitary sewer system.

**CONTAINER DISPOSAL:**

Empty drums should be completely drained, properly bunged and promptly shipped to the supplier or a drum reconditioner.

All other containers should be disposed of in an environmentally safe manner.

#### 14. TRANSPORTATION INFORMATION

PRODUCT LABEL .....: Gulf Harmony AW Hydraulic 22

D.O.T. SHIPPING NAME ...: Not regulated by DOT

#### 15. REGULATORY INFORMATION

**MISCELLANEOUS INFORMATION:**

This material or all of its components are listed on the Inventory of Existing Chemical Substances under the Toxic Substance Control Act (TSCA).

#### 16. OTHER INFORMATION

REASON FOR ISSUE ...: NEW

APPROVAL DATE .....: May 9, 2011

SUPERCEDES DATE ....:

RTN NUMBER .....:

**ADDITIONAL INFORMATION:**

The data in this Material Safety Data Sheet relates only to the specific material designated herein.

\*\*\*\*\*  
This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Gulf Oil LP. The data on this sheet are related only to the specific material designated herein. Gulf Oil LP assumes no legal responsibility for use or reliance upon these data.  
\*\*\*\*\*  
END OF MSDS  
\*\*\*\*\*





# Gulf Harmony AW Hydraulic 32

## Material Safety Data Sheet

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

#### Product Identification

Product Name: Gulf Harmony AW Hydraulic 32  
 Product Number: 334227  
 Synonyms: Antiwear Hydraulic Fluid, Petroleum Based Lubricant  
 Chemical Name: Hydrotreated heavy paraffinic distillate  
 Chemical Family: Petroleum Distillate  
 CAS Number: Blend

#### Company Identification

Gulf Oil LP/Nu-Tier Brands, Inc.  
 Tulsa, OK  
 TECHNICAL CONTACT NUMBER: 918-550-8026, Ext. 507  
 CHEMTREC: EMERGENCY CONTACT 1-800-424-9300

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

#### COMPONENT LISTING:

Chemical Name	Amount	CAS Number
HYDROTREATED PARAFFINIC DISTILLATE, DEWAXED	> 98.0 %	64742-65-0
ADDITIVES	< 2.0 %	Blend

(See Section 8 for exposure guidelines)

(See Section 15 for regulatory information)

#### HAZARDS DISCLOSURE

This product contains no known hazardous materials as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200.

As defined under Sara 311 and 312, this product contains no known hazardous materials.

### 3. HAZARDS IDENTIFICATION

\*\*\*\*\* EMERGENCY OVERVIEW \*\*\*\*\*  
 \*  
 \* Not expected to cause a severe emergency hazard.  
 \*  
 \*\*\*\*\*



## Gulf Harmony AW Hydraulic 32

### Material Safety Data Sheet

HMIS Rating -                      Health: 1  
    Flammability: 1  
    Reactivity: 0

NFPA Rating -                      Health: 1  
    Flammability: 1  
    Reactivity: 0  
    Special Hazard: N/A

#### POTENTIAL HEALTH EFFECTS

**EYE:**  
Contact may cause eye irritation and redness.

**SKIN:**  
Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

**INHALATION:**  
Inhalation of vapors or mist may be mildly irritating to the nose, throat, and respiratory tract.

**INGESTION:**  
Small amounts swallowed during normal handling operations are not likely to cause injury.

**CHRONIC EFFECTS:**  
No adverse effects have been documented in humans as a result of chronic exposure.

**CARCINOGENICITY INFORMATION:**  
Based on OSHA 1910.1200 and IARC study requirements, this product does not require labeling.

#### 4. FIRST AID MEASURES

**EYE CONTACT FIRST AID:**  
Flush eye with water for 15 minutes.

Get medical attention if irritation develops or persists.

**SKIN CONTACT FIRST AID:**  
Wash skin with soap and water.

Thoroughly wash (or discard) clothing and shoes before reuse.



## Gulf Harmony AW Hydraulic 32

### Material Safety Data Sheet

INHALATION FIRST AID:  
Remove to fresh air.

If not breathing, give artificial respiration.

INGESTION FIRST AID:  
If vomiting should occur spontaneously, keep airway clear.

NOTES TO PHYSICIAN:  
Treat symptomatically.

#### 5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES  
COC Flash Point: 215.8° C (420.5° F)  
Autoignition Temperature: > 315.6° C (> 600.1° F)

FLAMMABLE LIMITS IN AIR  
LEL: N/A  
UEL: N/A

EXTINGUISHING MEDIA:  
Carbon dioxide, foam, or dry powder. Water may be used to cool below flash point.

FIRE FIGHTING INSTRUCTIONS:  
As in any fire, wear self-contained breathing apparatus pressure-demand MSHA/NIOSH (approved or equivalent) and full protective gear.

COMBUSTION PRODUCTS:  
Fumes, smoke and carbon monoxide.

#### 6. ACCIDENTAL RELEASE MEASURES

SAFEGUARDS (PERSONNEL):  
Wear appropriate personal protective equipment.

INITIAL CONTAINMENT:  
Absorb spills with inert material.

LARGE SPILLS PROCEDURE:  
Contain spilled material.

Large spillage should be dammed-off and pumped into containers.

Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.





## Gulf Harmony AW Hydraulic 32

### Material Safety Data Sheet

**SMALL SPILLS PROCEDURE:**

Clean up area by absorbent material.

Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

#### 7. HANDLING AND STORAGE

**HANDLING (PERSONNEL):**

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.

Wash hands thoroughly after handling.

**HANDLING (PHYSICAL ASPECTS):**

Store in a cool dry area.

Keep container closed to avoid contamination.

**STORAGE PRECAUTIONS:**

Keep container closed when not in use.

#### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**ENGINEERING CONTROLS:**

Not required under normal conditions of use. However, if unusual operating conditions exist, then provide sufficient mechanical ventilation to maintain exposure below PEL/TLV (s).

**EYE / FACE PROTECTION REQUIREMENTS:**

Where contact with this material is likely, eye protection is recommended.

**SKIN PROTECTION REQUIREMENTS:**

When prolonged or frequently repeated contact could occur, use protective clothing impervious to this material.

**RESPIRATORY PROTECTION REQUIREMENTS:**

When there is potential for airborne exposures in excess of applicable limits, wear NIOSH/MSHA approved respiratory protection.

**EXPOSURE GUIDELINES:**

No Information Available.



## Gulf Harmony AW Hydraulic 32

### Material Safety Data Sheet

#### 9. PHYSICAL AND CHEMICAL PROPERTIES

FORM .....: Liquid  
COLOR .....: Amber  
ODOR .....: Characteristic  
BOILING POINT .....: >425 F  
VAPOR PRESSURE .....: Nil mm Hg  
VAPOR DENSITY .....: >1 (Air = 1)  
SOLUBILITY IN WATER .....: Nil  
SPECIFIC GRAVITY .....: 0.861 at 60 deg F (Water = 1)  
BULK DENSITY .....: 7.17 Pounds per Gallon at 60 Deg F  
MELTING/FREEZING POINT ...: N/A F  
% VOLATILES .....: Nil %  
VISCOSITY .....: 32 cSt at 40 Deg C

#### 10. STABILITY AND REACTIVITY

STABILITY:  
Stable.

POLYMERIZATION:  
Hazardous polymerization will not occur.

INCOMPATIBILITY WITH OTHER MATERIALS:  
Avoid contact with strong oxidizing agents.

DECOMPOSITION:  
In the case of a fire, oxides of carbon, hydrocarbons, fumes, and smoke may be produced.

#### 11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:  
Minimal irritation on contact.

SKIN EFFECTS:  
Practically non-toxic if absorbed. May cause mild irritation with prolonged and repeated exposure.

ACUTE ORAL EFFECTS:  
Tests on similar materials indicate low order of acute oral toxicity.

ACUTE INHALATION EFFECTS:  
Low acute toxicity expected on inhalation.

MISCELLANEOUS:  
Please contact supplier for additional toxicological information.



## Gulf Harmony AW Hydraulic 32

### Material Safety Data Sheet

**12. ECOLOGICAL INFORMATION**

**ENVIRONMENTAL HAZARDS:**

Ecotoxicological Information: No specific aquatic data available for this product.

**13. DISPOSAL CONSIDERATIONS**

**WASTE DISPOSAL:**

Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

Do not flush to surface water or sanitary sewer system.

**CONTAINER DISPOSAL:**

Empty drums should be completely drained, properly bunged and promptly shipped to the supplier or a drum reconditioner.

All other containers should be disposed of in an environmentally safe manner.

**14. TRANSPORTATION INFORMATION**

PRODUCT LABEL .....: Gulf Harmony AW Hydraulic 32

D.O.T. SHIPPING NAME ...: Not regulated by DOT

**15. REGULATORY INFORMATION**

**MISCELLANEOUS INFORMATION:**

This material or all of its components are listed on the Inventory of Existing Chemical Substances under the Toxic Substance Control Act (TSCA).

**16. OTHER INFORMATION**

REASON FOR ISSUE ...: NEW

APPROVAL DATE .....: May 9, 2011

SUPERCEDES DATE ....:

RTN NUMBER .....:

**ADDITIONAL INFORMATION:**

The data in this Material Safety Data Sheet relates only to the specific material designated herein.

\*\*\*\*\*  
This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Gulf Oil LP. The data on this sheet are related only to the specific material designated herein. Gulf Oil LP assumes no legal responsibility for use or reliance upon these data.

\*\*\*\*\*  
END OF MSDS  
\*\*\*\*\*





# Gulf Harmony AW Hydraulic 46

## Material Safety Data Sheet

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

#### Product Identification

Product Name: Gulf Harmony AW Hydraulic 46  
 Product Number: 334229  
 Synonyms: Antiwear Hydraulic Fluid, Petroleum Based Lubricant  
 Chemical Name: Hydrotreated heavy paraffinic distillate  
 Chemical Family: Petroleum Distillate  
 CAS Number: Blend

#### Company Identification

Gulf Oil LP/Nu-Tier Brands, Inc.  
 Tulsa, OK  
 TECHNICAL CONTACT NUMBER: 918-550-8026, Ext. 507  
 CHEMTREC: EMERGENCY CONTACT 1-800-424-9300

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

#### COMPONENT LISTING:

Chemical Name	Amount	CAS Number
HYDROTREATED PARAFFINIC DISTILLATE, DEWAXED	> 98.0 %	64742-65-0
ADDITIVES	< 2.0 %	Blend

(See Section 8 for exposure guidelines)

(See Section 15 for regulatory information)

#### HAZARDS DISCLOSURE

This product contains no known hazardous materials as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200.

As defined under Sara 311 and 312, this product contains no known hazardous materials.

### 3. HAZARDS IDENTIFICATION

\*\*\*\*\* EMERGENCY OVERVIEW \*\*\*\*\*  
 \*  
 \* Not expected to cause a severe emergency hazard. \*  
 \*  
 \*\*\*\*\*



## Gulf Harmony AW Hydraulic 46

### Material Safety Data Sheet

HMIS Rating -           Health: 1  
                              Flammability: 1  
                              Reactivity: 0

NFPA Rating -           Health: 1  
                              Flammability: 1  
                              Reactivity: 0  
                              Special Hazard: N/A

#### POTENTIAL HEALTH EFFECTS

**EYE:**  
Contact may cause eye irritation and redness.

**SKIN:**  
Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

**INHALATION:**  
Inhalation of vapors or mist may be mildly irritating to the nose, throat, and respiratory tract.

**INGESTION:**  
Small amounts swallowed during normal handling operations are not likely to cause injury.

**CHRONIC EFFECTS:**  
No adverse effects have been documented in humans as a result of chronic exposure.

**CARCINOGENICITY INFORMATION:**  
Based on OSHA 1910.1200 and IARC study requirements, this product does not require labeling.

#### 4. FIRST AID MEASURES

**EYE CONTACT FIRST AID:**  
Flush eye with water for 15 minutes.

Get medical attention if irritation develops or persists.

**SKIN CONTACT FIRST AID:**  
Wash skin with soap and water.

Thoroughly wash (or discard) clothing and shoes before reuse.



## Gulf Harmony AW Hydraulic 46

### Material Safety Data Sheet

INHALATION FIRST AID:  
Remove to fresh air.

If not breathing, give artificial respiration.

INGESTION FIRST AID:  
If vomiting should occur spontaneously, keep airway clear.

NOTES TO PHYSICIAN:  
Treat symptomatically.

#### 5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES  
COC Flash Point: 221° C (430° F)  
Autoignition Temperature: > 315.6° C (> 600.1° F)

FLAMMABLE LIMITS IN AIR  
LEL: N/A  
UEL: N/A

EXTINGUISHING MEDIA:  
Carbon dioxide, foam, or dry powder. Water may be used to cool below flash point.

FIRE FIGHTING INSTRUCTIONS:  
As in any fire, wear self-contained breathing apparatus pressure-demand MSHA/NIOSH (approved or equivalent) and full protective gear.

COMBUSTION PRODUCTS:  
Fumes, smoke and carbon monoxide.

#### 6. ACCIDENTAL RELEASE MEASURES

SAFEGUARDS (PERSONNEL):  
Wear appropriate personal protective equipment.

INITIAL CONTAINMENT:  
Absorb spills with inert material.

LARGE SPILLS PROCEDURE:  
Contain spilled material.

Large spillage should be dammed-off and pumped into containers.

Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.





## Gulf Harmony AW Hydraulic 46

### Material Safety Data Sheet

**SMALL SPILLS PROCEDURE:**

Clean up area by absorbent material.

Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

#### 7. HANDLING AND STORAGE

**HANDLING (PERSONNEL):**

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.

Wash hands thoroughly after handling.

**HANDLING (PHYSICAL ASPECTS):**

Store in a cool dry area.

Keep container closed to avoid contamination.

**STORAGE PRECAUTIONS:**

Keep container closed when not in use.

#### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**ENGINEERING CONTROLS:**

Not required under normal conditions of use. However, if unusual operating conditions exist, then provide sufficient mechanical ventilation to maintain exposure below PEL/TLV (s).

**EYE / FACE PROTECTION REQUIREMENTS:**

Where contact with this material is likely, eye protection is recommended.

**SKIN PROTECTION REQUIREMENTS:**

When prolonged or frequently repeated contact could occur, use protective clothing impervious to this material.

**RESPIRATORY PROTECTION REQUIREMENTS:**

When there is potential for airborne exposures in excess of applicable limits, wear NIOSH/MSHA approved respiratory protection.

**EXPOSURE GUIDELINES:**

No Information Available.



## Gulf Harmony AW Hydraulic 46

### Material Safety Data Sheet

#### 9. PHYSICAL AND CHEMICAL PROPERTIES

FORM .....: Liquid  
COLOR .....: Amber  
ODOR .....: Characteristic  
BOILING POINT .....: >425° F  
VAPOR PRESSURE .....: Nil mm Hg  
VAPOR DENSITY .....: >1 (Air = 1)  
SOLUBILITY IN WATER .....: Nil  
SPECIFIC GRAVITY .....: Not Determined (Water = 1)  
MELTING/FREEZING POINT ...: N/A °F  
% VOLATILES .....: Nil %  
VISCOSITY .....: 46 cSt at 40 Deg C

#### 10. STABILITY AND REACTIVITY

STABILITY:  
Stable.

POLYMERIZATION:  
Hazardous polymerization will not occur.

INCOMPATIBILITY WITH OTHER MATERIALS:  
Avoid contact with strong oxidizing agents.

DECOMPOSITION:  
In the case of a fire, oxides of carbon, hydrocarbons, fumes, and smoke may be produced.

#### 11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:  
Minimal irritation on contact.

SKIN EFFECTS:  
Practically non-toxic if absorbed. May cause mild irritation with prolonged and repeated exposure.

ACUTE ORAL EFFECTS:  
Tests on similar materials indicate low order of acute oral toxicity.

ACUTE INHALATION EFFECTS:  
Low acute toxicity expected on inhalation.

MISCELLANEOUS:  
Please contact supplier for additional toxicological information.



## Gulf Harmony AW Hydraulic 46

### Material Safety Data Sheet

**12. ECOLOGICAL INFORMATION**

ENVIRONMENTAL HAZARDS:

Ecotoxicological Information: No specific aquatic data available for this product.

**13. DISPOSAL CONSIDERATIONS**

WASTE DISPOSAL:

Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

Do not flush to surface water or sanitary sewer system.

CONTAINER DISPOSAL:

Empty drums should be completely drained, properly bunged and promptly shipped to the supplier or a drum reconditioner.

All other containers should be disposed of in an environmentally safe manner.

**14. TRANSPORTATION INFORMATION**

PRODUCT LABEL .....: Gulf Harmony AW Hydraulic 46  
D.O.T. SHIPPING NAME ...: Not regulated by DOT

**15. REGULATORY INFORMATION**

MISCELLANEOUS INFORMATION:

This material or all of its components are listed on the Inventory of Existing Chemical Substances under the Toxic Substance Control Act (TSCA).

**16. OTHER INFORMATION**

REASON FOR ISSUE ...: NEW  
APPROVAL DATE .....: May 9, 2011  
SUPERCEDES DATE ....:  
RTN NUMBER .....:

ADDITIONAL INFORMATION:

The data in this Material Safety Data Sheet relates only to the specific material designated herein.

\*\*\*\*\*  
This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Gulf Oil LP. The data on this sheet are related only to the specific material designated herein. Gulf Oil LP assumes no legal responsibility for use or reliance upon these data.  
\*\*\*\*\*  
END OF MSDS  
\*\*\*\*\*





# Gulf Harmony AW Hydraulic 68

## Material Safety Data Sheet

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

#### Product Identification

Product Name: Gulf Harmony AW Hydraulic 68  
 Product Number: 334231  
 Synonyms: Antiwear Hydraulic Fluid, Petroleum Based Lubricant  
 Chemical Name: Hydrotreated heavy paraffinic distillate  
 Chemical Family: Petroleum Distillate  
 CAS Number: Blend

#### Company Identification

Gulf Oil LP/Nu-Tier Brands, Inc.  
 Tulsa, OK  
 TECHNICAL CONTACT NUMBER: 918-550-8026, Ext. 507  
 CHEMTREC: EMERGENCY CONTACT 1-800-424-9300

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

#### COMPONENT LISTING:

Chemical Name	Amount	CAS Number
HYDROTREATED PARAFFINIC DISTILLATE, DEWAXED	> 98.0 %	64742-65-0
ADDITIVES	< 2.0 %	Blend

(See Section 8 for exposure guidelines)

(See Section 15 for regulatory information)

#### HAZARDS DISCLOSURE

This product contains no known hazardous materials as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200.

As defined under Sara 311 and 312, this product contains no known hazardous materials.

### 3. HAZARDS IDENTIFICATION

\*\*\*\*\* EMERGENCY OVERVIEW \*\*\*\*\*  
 \*  
 \* Not expected to cause a severe emergency hazard. \*  
 \*  
 \*\*\*\*\*



## Gulf Harmony AW Hydraulic 68

### Material Safety Data Sheet

HMIS Rating -                      Health: 1  
    Flammability: 1  
    Reactivity: 0

NFPA Rating -                      Health: 1  
    Flammability: 1  
    Reactivity: 0  
    Special Hazard: N/A

#### POTENTIAL HEALTH EFFECTS

**EYE:**  
Contact may cause eye irritation and redness.

**SKIN:**  
Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

**INHALATION:**  
Inhalation of vapors or mist may be mildly irritating to the nose, throat, and respiratory tract.

**INGESTION:**  
Small amounts swallowed during normal handling operations are not likely to cause injury.

**CHRONIC EFFECTS:**  
No adverse effects have been documented in humans as a result of chronic exposure.

**CARCINOGENICITY INFORMATION:**  
Based on OSHA 1910.1200 and IARC study requirements, this product does not require labeling.

#### 4. FIRST AID MEASURES

**EYE CONTACT FIRST AID:**  
Flush eye with water for 15 minutes.

Get medical attention if irritation develops or persists.

**SKIN CONTACT FIRST AID:**  
Wash skin with soap and water.

Thoroughly wash (or discard) clothing and shoes before reuse.



## Gulf Harmony AW Hydraulic 68

### Material Safety Data Sheet

INHALATION FIRST AID:  
Remove to fresh air.

If not breathing, give artificial respiration.

INGESTION FIRST AID:  
If vomiting should occur spontaneously, keep airway clear.

NOTES TO PHYSICIAN:  
Treat symptomatically.

#### 5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES  
COC Flash Point: 232° C (450° F)  
Autoignition Temperature: > 315.6° C (> 600.1° F)

FLAMMABLE LIMITS IN AIR  
LEL: N/A  
UEL: N/A

EXTINGUISHING MEDIA:  
Carbon dioxide, foam, or dry powder. Water may be used to cool below flash point.

FIRE FIGHTING INSTRUCTIONS:  
As in any fire, wear self-contained breathing apparatus pressure-demand MSHA/NIOSH (approved or equivalent) and full protective gear.

COMBUSTION PRODUCTS:  
Fumes, smoke and carbon monoxide.

#### 6. ACCIDENTAL RELEASE MEASURES

SAFEGUARDS (PERSONNEL):  
Wear appropriate personal protective equipment.

INITIAL CONTAINMENT:  
Absorb spills with inert material.

LARGE SPILLS PROCEDURE:  
Contain spilled material.

Large spillage should be dammed-off and pumped into containers.

Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.





## Gulf Harmony AW Hydraulic 68

### Material Safety Data Sheet

**SMALL SPILLS PROCEDURE:**

Clean up area by absorbent material.

Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

#### 7. HANDLING AND STORAGE

**HANDLING (PERSONNEL):**

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.

Wash hands thoroughly after handling.

**HANDLING (PHYSICAL ASPECTS):**

Store in a cool dry area.

Keep container closed to avoid contamination.

**STORAGE PRECAUTIONS:**

Keep container closed when not in use.

#### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**ENGINEERING CONTROLS:**

Not required under normal conditions of use. However, if unusual operating conditions exist, then provide sufficient mechanical ventilation to maintain exposure below PEL/TLV (s).

**EYE / FACE PROTECTION REQUIREMENTS:**

Where contact with this material is likely, eye protection is recommended.

**SKIN PROTECTION REQUIREMENTS:**

When prolonged or frequently repeated contact could occur, use protective clothing impervious to this material.

**RESPIRATORY PROTECTION REQUIREMENTS:**

When there is potential for airborne exposures in excess of applicable limits, wear NIOSH/MSHA approved respiratory protection.

**EXPOSURE GUIDELINES:**

No Information Available.



## Gulf Harmony AW Hydraulic 68

### Material Safety Data Sheet

#### 9. PHYSICAL AND CHEMICAL PROPERTIES

FORM .....: Liquid  
COLOR .....: Amber  
ODOR .....: Characteristic  
BOILING POINT .....: >425° F  
VAPOR PRESSURE .....: Nil mm Hg  
VAPOR DENSITY .....: >1 (Air = 1)  
SOLUBILITY IN WATER .....: Nil  
SPECIFIC GRAVITY .....: Not Determined (Water = 1)  
MELTING/FREEZING POINT ...: N/A °F  
% VOLATILES .....: Nil %  
VISCOSITY .....: 68 cSt at 40 Deg C

#### 10. STABILITY AND REACTIVITY

STABILITY:  
Stable.

POLYMERIZATION:  
Hazardous polymerization will not occur.

INCOMPATIBILITY WITH OTHER MATERIALS:  
Avoid contact with strong oxidizing agents.

DECOMPOSITION:  
In the case of a fire, oxides of carbon, hydrocarbons, fumes, and smoke may be produced.

#### 11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:  
Minimal irritation on contact.

SKIN EFFECTS:  
Practically non-toxic if absorbed. May cause mild irritation with prolonged and repeated exposure.

ACUTE ORAL EFFECTS:  
Tests on similar materials indicate low order of acute oral toxicity.

ACUTE INHALATION EFFECTS:  
Low acute toxicity expected on inhalation.

MISCELLANEOUS:  
Please contact supplier for additional toxicological information.



## Gulf Harmony AW Hydraulic 68

### Material Safety Data Sheet

**12. ECOLOGICAL INFORMATION**

ENVIRONMENTAL HAZARDS:

Ecotoxicological Information: No specific aquatic data available for this product.

**13. DISPOSAL CONSIDERATIONS**

WASTE DISPOSAL:

Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

Do not flush to surface water or sanitary sewer system.

CONTAINER DISPOSAL:

Empty drums should be completely drained, properly bunged and promptly shipped to the supplier or a drum reconditioner.

All other containers should be disposed of in an environmentally safe manner.

**14. TRANSPORTATION INFORMATION**

PRODUCT LABEL .....: Gulf Harmony AW Hydraulic 68

D.O.T. SHIPPING NAME ...: Not regulated by DOT

**15. REGULATORY INFORMATION**

MISCELLANEOUS INFORMATION:

This material or all of its components are listed on the Inventory of Existing Chemical Substances under the Toxic Substance Control Act (TSCA).

**16. OTHER INFORMATION**

REASON FOR ISSUE ...: NEW

APPROVAL DATE .....: May 9, 2011

SUPERCEDES DATE ....:

RTN NUMBER .....:

ADDITIONAL INFORMATION:

The data in this Material Safety Data Sheet relates only to the specific material designated herein.

\*\*\*\*\*  
This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Gulf Oil LP. The data on this sheet are related only to the specific material designated herein. Gulf Oil LP assumes no legal responsibility for use or reliance upon these data.

\*\*\*\*\*

END OF MSDS

\*\*\*\*\*



**USED OIL**

**MATERIAL SAFETY DATA SHEET**



**SECTION 1: PRODUCT AND COMPANY IDENTIFICATION**

**PRODUCT NAME:** USED OIL

**SYNONYMS:** Waste oil; Used lubricating oil; Oil and water mixture

**PRODUCT PART  
NUMBER(S):** Not applicable.

**PRODUCT USE:** Oil or water mixture for re-refining or reprocessing.  
If this product is used in combination with other products, refer to the  
Material Safety Data Sheets for those products.

**24-HOUR EMERGENCY PHONE NUMBERS  
MEDICAL AND TRANSPORTATION (SPILL):**

These numbers are for  
emergency use only. If  
you desire non-emergency  
product information,  
please call a phone  
number listed below.

**1-800-468-1760**

**MANUFACTURER/ SUPPLIER:** Safety-Kleen Systems, Inc.  
5400 Legacy Drive  
Cluster II, Building 3  
Plano, Texas 75024  
USA  
**1-800-669-5740**  
**www.Safety-Kleen.com**

**TECHNICAL INFORMATION:** 1-800-669-5740 Press 1 then 1 then Extension 7500

**MSDS FORM NUMBER:** 81451

**ISSUE:** September 20, 2007

**ORIGINAL ISSUE:** January 15, 1990

**SUPERSEDES:** June 11, 2007

**PREPARED BY:** Product MSDS Coordinator

**APPROVED BY:** MSDS Task Force

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## USED OIL MATERIAL SAFETY DATA SHEET

### SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

WT%	NAME	SYNONYM	CAS NO.	OSHA PEL		ACGIH TLV®		LD <sup>a</sup>	LC <sup>b</sup>
				TWA	STEL	TWA	STEL		
80 to 100	Lubricating oils, used	Used oil	70514-12-4	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.
0 to 20*	Water/solids	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.
0 to 10*	Hydrocarbon solvents. May include gasoline, diesel fuel, jet fuel, mineral spirits, etc.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.
0 to 1.5*	Metals. May include lead, iron, zinc, copper, chromium, arsenic, nickel, and others: each below 1.0 WT%.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.
0 to 1.0*	Polynuclear aromatics. May include naphthalene, fluoranthene, phenanthrene, pyrene, and others: each below 0.3 WT%.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.
0 to 0.5*	Chlorinated solvents.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.

N.Av. = Not Available

<sup>a</sup>Even though the concentration range does not fall under the ranges prescribed by WHMIS, this is the actual range which varies with each batch of the product.

<sup>a</sup>Oral-Rat LD<sub>50</sub> (mg/kg)

<sup>b</sup>Inhalation-Rat LC<sub>50</sub>

### SECTION 3: HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

##### APPEARANCE

Liquid, black and viscous (thick), petroleum odor.

##### WARNING!

##### PHYSICAL HAZARDS

Combustible liquid.

##### HEALTH HAZARDS

May be harmful if inhaled.

May be harmful if absorbed through skin.

May be harmful or fatal if swallowed.

May irritate the respiratory tract (nose, throat, and lungs), eyes, and skin.

Suspect cancer hazard. Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.

Contains material which can cause birth defects.

Contains material which can cause central nervous system damage.

##### ENVIRONMENTAL HAZARDS

Product may be toxic to fish, plants, wildlife, and/or domestic animals.

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## USED OIL MATERIAL SAFETY DATA SHEET

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### POTENTIAL HEALTH EFFECTS

Effects may vary depending on material composition. Typical effects may include:

**INHALATION (BREATHING):** High concentrations of vapor or mist may be harmful if inhaled. High concentrations of vapor or mist may irritate the respiratory tract (nose, throat, and lungs). High concentrations of vapor or mist may cause nausea, vomiting, headaches, dizziness, loss of coordination, numbness, and other central nervous system effects. Massive acute overexposure may cause rapid central nervous system depression, sudden collapse, coma, and/or death.

**EYES:** May cause irritation.

**SKIN:** May cause irritation. Product may be absorbed through the skin and cause harm as noted under **INHALATION (BREATHING)**.

**INGESTION (SWALLOWING):** May be harmful or fatal if swallowed. May cause throat irritation, nausea, vomiting, and central nervous system effects as noted under **INHALATION (BREATHING)**. Breathing product into the lungs during ingestion or vomiting may cause lung injury and possible death.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Individuals with pre-existing cardiovascular, liver, kidney, respiratory tract (nose, throat, and lungs), central nervous system, eye, and/or skin disorders may have increased susceptibility to the effects of exposure.

**CHRONIC:** Prolonged or repeated inhalation may cause oil pneumonia, lung tissue inflammation, fibrous tissue formation, and/or toxic effects as noted under **INHALATION (BREATHING)**. Prolonged or repeated eye contact may cause inflammation of the membrane lining the eyelids and covering the eyeball (conjunctivitis). Prolonged or repeated skin contact may cause drying, cracking, redness, itching, and/or swelling (dermatitis).

**CANCER INFORMATION:** This product contains mineral oils, untreated or mildly treated, which can cause cancer. This product may contain hydrocarbon and chlorinated solvents; metals, and polynuclear aromatics which can cause cancer. Risk of cancer depends on duration and level of exposure. For more information, see **SECTION 11: CARCINOGENICITY**.

### POTENTIAL ENVIRONMENTAL EFFECTS

Product may be toxic to fish, plants, wildlife, and/or domestic animals.

Also see **SECTION 12: ECOLOGICAL INFORMATION**.

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**USED OIL  
MATERIAL SAFETY DATA SHEET**

**SECTION 4: FIRST AID MEASURES**

**INHALATION:  
(BREATHING)** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Oxygen should only be administered by qualified personnel. Someone should stay with victim. Get medical attention if breathing difficulty persists.

**EYES:** If irritation or redness from exposure to vapor develops, move away from exposure into fresh air. Upon contact, immediately flush eyes with plenty of lukewarm water, holding eyelids apart, for 15 minutes. Get medical attention.

**SKIN:** Remove affected clothing and shoes. Wash skin thoroughly with soap and water. Get medical attention if irritation or pain develops or persists.

**INGESTION:  
(SWALLOWING)** Do NOT induce vomiting. Immediately get medical attention. Call 1-800-468-1760 for additional information.  
If spontaneous vomiting occurs, keep head below hips to avoid breathing the product into the lungs. Never give anything to an unconscious person by mouth.

**NOTE TO  
PHYSICIANS:** Treat symptomatically and supportively. Treatment may vary with condition of victim and specifics of incident. Call 1-800-468-1760 for additional information.

**SECTION 5: FIRE FIGHTING MEASURES**

**FLASH POINT:** >200°F (93°C) (minimum) Pensky-Martens Closed Cup

**FLAMMABLE LIMITS IN AIR:** Not available.

**AUTOIGNITION  
TEMPERATURE:** Not available.

**HAZARDOUS COMBUSTION  
PRODUCTS:** Decomposition and combustion materials may be toxic. Burning may produce phosgene gas, nitrogen oxides, carbon monoxide, and unidentified organic compounds.

**CONDITIONS OF  
FLAMMABILITY:** Heat, sparks, or flame. Product may burn but does not ignite readily.

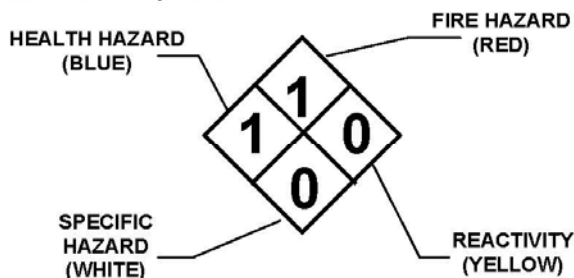
**EXTINGUISHING MEDIA:** Use carbon dioxide, regular foam, dry chemical, water spray, or water fog.

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## USED OIL MATERIAL SAFETY DATA SHEET

### NFPA 704 HAZARD IDENTIFICATION:

This information is intended solely for the use by individuals trained in this system.



### FIRE FIGHTING INSTRUCTIONS:

Keep storage containers cool with water spray. A positive-pressure, self-contained breathing apparatus (SCBA) and full-body protective equipment are required for fire emergencies.

### FIRE AND EXPLOSION HAZARDS:

Heated containers may rupture. "Empty" containers may retain residue and can be dangerous. Product is not sensitive to mechanical impact. Product may be sensitive to static discharge, which could result in fire or explosion.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

Remove all ignition sources. Do not touch or walk through spilled product. Stop leak if you can do it without risk. Wear protective equipment and provide engineering controls as specified in **SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Ventilate area and avoid breathing vapor or mist. A vapor suppressing foam may be used to reduce vapors. Contain spill away from surface waters and sewers. Contain spill as a liquid for possible recovery, or sorb with compatible sorbent material and shovel with a clean, sparkproof tool into a sealable container for disposal.

Additionally, for large spills: Water spray may reduce vapor, but may not prevent ignition in closed spaces. Dike far ahead of liquid spill for collection and later disposal.

There may be specific federal regulatory reporting requirements associated with spills, leaks, or releases of this product. Also see **SECTION 15: REGULATORY INFORMATION**.

**USED OIL  
MATERIAL SAFETY DATA SHEET**

<b>SECTION 7: HANDLING AND STORAGE</b>
--

**HANDLING:** Keep away from heat, sparks, or flame. Where flammable mixtures may be present, equipment safe for such locations should be used. Use clean, sparkproof tools and explosion-proof equipment. When transferring product, storage tanks, tanker trucks, and rail tank cars should be grounded and bonded. Do not breathe vapor or mist. Use in a well ventilated area. Avoid contact with eyes, skin, clothing, and shoes. Do not smoke while using this product.

**SHIPPING AND STORING:** Keep container tightly closed when not in use and during transport. Do not pressurize, cut, weld, braze, solder, drill, or grind containers. Keep containers away from heat, flame, sparks, static electricity, or other sources of ignition. Empty product containers may retain product residue and can be dangerous. See **SECTION 14: TRANSPORT INFORMATION** for Packing Group information.

<b>SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION</b>
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**ENGINEERING CONTROLS:** Use general ventilation, process enclosures, local exhaust ventilation, or other engineering controls to control air-borne levels. Where explosive mixtures may be present, equipment safe for such locations should be used.

**PERSONAL PROTECTIVE EQUIPMENT**

**RESPIRATORY PROTECTION:** A respiratory protection program which meets USA's OSHA General Industry Standard 29 CFR 1910.134 or Canada's CSA Standard Z94.4-M1982 requirements must be followed whenever workplace conditions warrant a respirator's use. Consult a qualified Industrial Hygienist or Safety Professional for respirator selection guidance.

**EYE PROTECTION:** Wearing chemical goggles is recommended. Contact lens may be worn with eye protection.

**SKIN PROTECTION:** Where prolonged or repeated skin contact is likely, wear neoprene, nitrile (4 mil minimum), PVC (polyvinyl chloride), or equivalent protective gloves; wearing natural rubber or equivalent gloves is not recommended.

When product is heated and skin contact is likely, wear heat-insulating gloves, boots, and other protective clothing.

To avoid prolonged or repeated contact with product where spills and splashes are likely, wear appropriate chemical-resistant faceshield, boots, apron, whole body suits, or other protective clothing.

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## USED OIL MATERIAL SAFETY DATA SHEET

**PERSONAL HYGIENE:** Wash thoroughly with soap and water after handling product and before eating, drinking, or using tobacco products. Clean affected clothing, shoes, and protective equipment before reuse. Discard affected clothing, shoes, and/or protective equipment if they cannot be thoroughly cleaned. Discard leather articles, such as shoes, saturated with the product.

**OTHER PROTECTIVE EQUIPMENT:** Where spills and splashes are likely, facilities storing or using this product should be equipped with an emergency eyewash and shower, both equipped with clean water, in the immediate work area.

### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

**PHYSICAL STATE, APPEARANCE, AND ODOR:** Liquid, black and viscous (thick), petroleum odor.

**ODOR THRESHOLD:** Not available.

**MOLECULAR WEIGHT:** Not applicable.

**SPECIFIC GRAVITY:** 0.8 to 1.0 at 60°F (15.6°C) (water = 1)

**DENSITY:** 6.7 to 8.3 LB/US gal (800 to 1000 g/l) (approximately)

**VAPOR DENSITY:** greater than 1 (air = 1) (based on kerosene)

**VAPOR PRESSURE:** Not available.

**BOILING POINT:** Not available.

**FREEZING/MELTING POINT:** Not available.

**pH:** Not applicable.

**EVAPORATION RATE:** less than 1 (butyl acetate = 1)

**SOLUBILITY IN WATER:** Slight.

**FLASH POINT:** >200°F (93°C) (minimum) Pensky-Martens Closed Cup

**FLAMMABLE LIMITS IN AIR:** Not available.

**AUTOIGNITION TEMPERATURE:** Not available.

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**USED OIL  
MATERIAL SAFETY DATA SHEET**

**SECTION 10: STABILITY AND REACTIVITY**

- STABILITY:** Stable under normal temperatures and pressures. Avoid heat, sparks, or flame.
- INCOMPATIBILITY:** Avoid acids, alkalis, oxidizing agents, reducing agents, reactive halogens, or reactive metals.
- REACTIVITY:** Polymerization is not known to occur under normal temperatures and pressures. Not reactive with water.
- HAZARDOUS DECOMPOSITION PRODUCTS:** None under normal temperatures and pressures. Also see **SECTION 5: HAZARDOUS COMBUSTION PRODUCTS.**

**SECTION 11: TOXICOLOGICAL INFORMATION**

- SENSITIZATION:** Based on best current information, there may be known human sensitization associated with this product.
- MUTAGENICITY:** Based on best current information, there may be mutagenicity associated with this product.
- CARCINOGENICITY:** Mineral oils, untreated or mildly treated are listed by IARC as a known carcinogen. Mineral oils, untreated or mildly treated are classified by NTP as having limited evidence of carcinogenicity in humans or sufficient evidence of carcinogenicity in experimental animals.

There may be hydrocarbon and chlorinated solvents; metals, and polynuclear aromatics present in this product which are listed by OSHA as known carcinogens. There may be hydrocarbon and chlorinated solvents; metals, and polynuclear aromatics present in this product which are listed by IARC as known, probable, or possible carcinogens. There may be hydrocarbon and chlorinated solvents; metals, and polynuclear aromatics present in this product which are classified by NTP as known carcinogens or as having limited evidence of carcinogenicity in humans or sufficient evidence of carcinogenicity in experimental animals. There may be hydrocarbon and chlorinated solvents; metals, and polynuclear aromatics present in this product which are recognized by ACGIH as confirmed or suspected human carcinogens.

Also see **SECTION 3: CANCER INFORMATION.**

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## USED OIL MATERIAL SAFETY DATA SHEET

**REPRODUCTIVE TOXICITY:** Based on best current information, there may be reproductive toxicity associated with this product.

**TERATOGENICITY:** Based on best current information, there may be teratogenicity associated with this product.

**TOXICOLOGICALLY SYNERGISTIC PRODUCT(S):** Based on best current information, there may be toxicologically synergistic products associated with this product.

### SECTION 12: ECOLOGICAL INFORMATION

**ECOTOXICITY:** Not available.

**OCTANOL/WATER PARTITION COEFFICIENT:** Not available.

**VOLATILE ORGANIC COMPOUNDS:** Not available.  
As per 40 CFR Part 51.100(s).

### SECTION 13: DISPOSAL CONSIDERATIONS

Dispose in accordance with federal, state, provincial, and local regulations. Regulations may also apply to empty containers. The responsibility for proper waste disposal lies with the owner of the waste. Contact Safety-Kleen regarding proper recycling or disposal.

### SECTION 14: TRANSPORT INFORMATION

**DOT:** Not regulated.

**TDG:** Not regulated.

**EMERGENCY RESPONSE GUIDE NUMBER:** Not applicable.  
Reference *North American Emergency Response Guidebook*

### SECTION 15: REGULATORY INFORMATION

**USA REGULATIONS SARA SECTIONS 302 AND 304:** Based on the ingredient(s) listed in **SECTION 2**, this product does not contain any "extremely hazardous substances" listed pursuant to Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) Section 302 or Section 304 as identified in 40 CFR Part 355, Appendix A and B.

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**USED OIL  
MATERIAL SAFETY DATA SHEET**

<b>SARA SECTIONS 311 AND 312:</b>	This product poses the following physical and health hazards as defined in 40 CFR Part 370 and is subject to the requirements of sections 311 and 312 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA): Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard
<b>SARA SECTION 313:</b>	This product may contain "toxic" chemicals subject to the requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40 CFR Part 372.
<b>CERCLA:</b>	This product may contain "hazardous substances" listed pursuant to Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) in 40 CFR Part 302, Table 302.4.
<b>TSCA:</b>	Not available.
<b>CALIFORNIA:</b>	This product is not for sale or use in the State of California.
<b>CANADIAN REGULATIONS WHMIS:</b>	Not regulated
<b>CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA):</b>	Not available.

<b>SECTION 16: OTHER INFORMATION</b>
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**REVISION INFORMATION:** Change from MSIS to MSDS.

**LABEL/OTHER INFORMATION:** Not available.

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User assumes all risks incident to the use of this product. To the best of our knowledge, the information contained herein is accurate. However, Safety-Kleen assumes no liability whatsoever for the accuracy or completeness of the information contained herein. No representations or warranties, either express or implied, or merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to information or the product to which information refers. The data contained on this sheet apply to the product as supplied to the user.



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## Appendix 2: NT-NU Spill Report Form

### Instructions for Completing the NT-NU Spill Report Form

This form can be filled out electronically and e-mailed as an attachment to [spills@gov.nt.ca](mailto:spills@gov.nt.ca). Until further notice, please verify receipt of e-mail transmissions with a follow-up telephone call to the spill line. Forms can also be printed and faxed to the spill line at 867-873-6924. Spills can still be phoned in by calling collect at 867-920-8130.

<b>A. Report Date/Time</b>	The actual date and time that the spill was reported to the spill line. If the spill is phoned in, the Spill Line will fill this out. <b>Please do not fill in the Report Number:</b> the spill line will assign a number after the spill is reported.
<b>B. Occurrence Date/Time</b>	Indicate, to the best of your knowledge, the exact date and time that the spill occurred. Not to be confused with the report date and time (see above).
<b>C. Land Use Permit Number /Water Licence Number</b>	This only needs to be filled in if the activity has been licenced by the Nunavut Water Board and/or if a Land Use Permit has been issued. Applies primarily to mines and mineral exploration sites.
<b>D. Geographic Place Name</b>	In most cases, this will be the name of the city or town in which the spill occurred. For remote locations – outside of human habitations – identify the most prominent geographic feature, such as a lake or mountain and/or the distance and direction from the nearest population center. <b>You must include the geographic coordinates</b> (Refer to Section E).
<b>E. Geographic Coordinates</b>	This only needs to be filled out if the spill occurred outside of an established community such as a mine site. Please note that the location should be stated in degrees, minutes and seconds of Latitude and Longitude.
<b>F. Responsible Party Or Vessel Name</b>	This is the person who was in management/control/ownership of the substance at the time that it was spilled. In the case of a spill from a ship/vessel, include the name of the ship/vessel. Please include full address, telephone number and e-mail. Use box K if there is insufficient space. <b>Please note that, the owner of the spilled substance is ultimately responsible for any spills of that substance, regardless of who may have actually caused the spill.</b>
<b>G. Contractor involved?</b>	Were there any other parties/contractors involved? An example would be a construction company who is undertaking work on behalf of the owner of the spilled substance and who may have contributed to, or directly caused the spill and/or is responding to the spill.
<b>H. Product Spilled</b>	Identify the product spilled; most commonly, it is gasoline, diesel fuel or sewage. For other substances, avoid trade names. Wherever possible, use the chemical name of the substance and further, identify the product using the four digit UN number (eg: UN1203 for gasoline; UN1202 for diesel fuel; UN1863 for Jet A & B)
<b>I. Spill Source</b>	Identify the source of the spill: truck, ship, home heating fuel tank and, if known, the cause (eg: fuel tank overfill, leaking tank; ship ran aground; traffic accident, vandalism, storm, etc.). Provide an estimate of the extent of the contaminated/impacted area (eg: 10 m <sup>2</sup> )
<b>J. Factors Affecting Spill</b>	Any factors which might make it difficult to clean up the spill: rough terrain, bad weather, remote location, lack of equipment. Do you require advice and/or assistance with the cleanup operation? Identify any hazards to persons, property or environment: for example, a gasoline spill beside a daycare centre would pose a safety hazard to children. Use box K if there is insufficient space.
<b>K. Additional Information</b>	Provide any additional, pertinent details about the spill, such as any peculiar/unique hazards associated with the spilled material. State what action is being taken towards cleaning up the spill; disposal of spilled material; notification of affected parties. If necessary, append additional sheets to the spill report. Number the pages in the same format found in the lower right hand corner of the spill form: eg. "Page 1 of 2", "Page 2 of 2" etc. <b>Please number the pages to ensure that recipients can be certain that they received all pertinent documents.</b> If only the spill report form was filled out, number the form as "Page 1 of 1".
<b>L. Reported to Spill Line by</b>	Include your full name, employer, contact number and the location from which you are reporting the spill. Use box K if there is insufficient space.
<b>M. Alternate Contact</b>	Identify any alternate contacts. This information assists regulatory agencies to obtain additional information if they cannot reach the individual who reported the spill.
<b>N. Report Line Use Only</b>	<b>Leave Blank.</b> This box is for the <b>Spill Line's use only.</b>



Canada

# NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130

FAX: (867) 873-6924

EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH - DAY - YEAR		REPORT TIME		<input type="checkbox"/> ORIGINAL SPILL REPORT, OR <input type="checkbox"/> UPDATE # TO THE ORIGINAL SPILL REPORT	REPORT NUMBER
	OCCURRENCE DATE: MONTH - DAY - YEAR		OCCURRENCE TIME			
C	LAND USE PERMIT NUMBER (IF APPLICABLE)			WATER LICENCE NUMBER (IF APPLICABLE)		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION				REGION <input type="checkbox"/> NWT <input type="checkbox"/> NUNAVUT <input type="checkbox"/> 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		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES		U.N. NUMBER	
	SECOND PRODUCT SPILLED (IF APPLICABLE)		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 STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130	
LEAD AGENCY <input type="checkbox"/> EC <input type="checkbox"/> CCG <input type="checkbox"/> GNWT <input type="checkbox"/> GN <input type="checkbox"/> ILA <input type="checkbox"/> INAC <input type="checkbox"/> NEB <input type="checkbox"/> TC			SIGNIFICANCE <input type="checkbox"/> MINOR <input type="checkbox"/> MAJOR <input type="checkbox"/> UNKNOWN		FILE STATUS <input type="checkbox"/> OPEN <input type="checkbox"/> CLOSED	
AGENCY		CONTACT NAME	CONTACT TIME	REMARKS		
LEAD AGENCY						
FIRST SUPPORT AGENCY						
SECOND SUPPORT AGENCY						
THIRD SUPPORT AGENCY						

PAGE 1 OF \_\_\_\_