



STARFIELD RESOURCES INC.

Ferguson Lake Exploration Spill Contingency Plan



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1. INTRODUCTION

1. Introduction

Starfield Resources mineral exploration program on their Ferguson Lake Cu-Ni-Co-PGE Project covers portions of NTS map sheets 65I/9 through 16. This program includes regional and detailed geological mapping and prospecting, airborne and ground based geophysical surveys and a drilling program. The Starfield property is a remote location with the nearest community being Baker Lake at approximately 166 km to the north-east (Figure 1-1).

The program is currently permitted under a Commercial Lease, KVCL305H27 and an exploration Land Use Licence KVL399C150, both held with the Kivalliq Inuit Association (KIA). There is also a Water License 2BE-FER0712 and Right of Way Permits with Indian and Northern Affairs Canada (INAC) and the KIA for the overland transport of supplies during the winter/spring months.

Starfield Resources corporate office is located in Toronto, Canada:

André J. Douchane, President/CEO
Suite 2210 – 130 Adelaide Street West,
Toronto, Ontario, M5H 3P5
Phone: (416) 860-0400

Starfield Resources is aware that planning for an emergency situation is not an option but an obligatory activity. This Contingency Plan will be posted in the office, living quarters, and Drill Shack(s) and will be distributed to supervisory personnel for distribution to staff and the drilling contractor. Every person arriving at the site will undergo an orientation which includes a review of the spill response and reporting.

The purpose of this report is to provide a Spill and Contingency Plan for Starfield's present permits and licences and is required under Part II item C of Water Licence 2BE-FER0712.



2. PERMITS AND AUTHORIZATIONS

2. Permits and Authorizations

The following are the current permits and licences which cover the Ferguson Lake Project:

KVCL305H27	Expires	July 23, 2012
KVL399C150	Expires	September 18, 2008
2BE-FER0712	Expires	July 1, 2012
KVRW06F09	Expires	March 28, 2009
N2007X0011	Expires	April 18, 2009

3. CAMP FACILITIES

3. Camp Facilities

3.1 Site Description

The camp site and core storage area are situated on a low ridge at an elevation between 120 and 130 m on a point on the southwest shore of Ferguson Lake (Figure 1-1). It is a level area of low bedrock outcrops, sand and gravel. The camp and fuel storage area are located on Inuit Owned Land and is permitted under commercial lease KVCL305H27 with the Kivalliq Inuit Association.

This spill contingency plan has been prepared for the exploration activities on Crown Lands associated with the Type B Land Use Permit Application being submitted to Indian and Northern Affairs Canada. Starfield Resources Inc.'s claims are presented in Figure 3-1. A spill contingency plan also exists for the camp, construction and exploration activities.

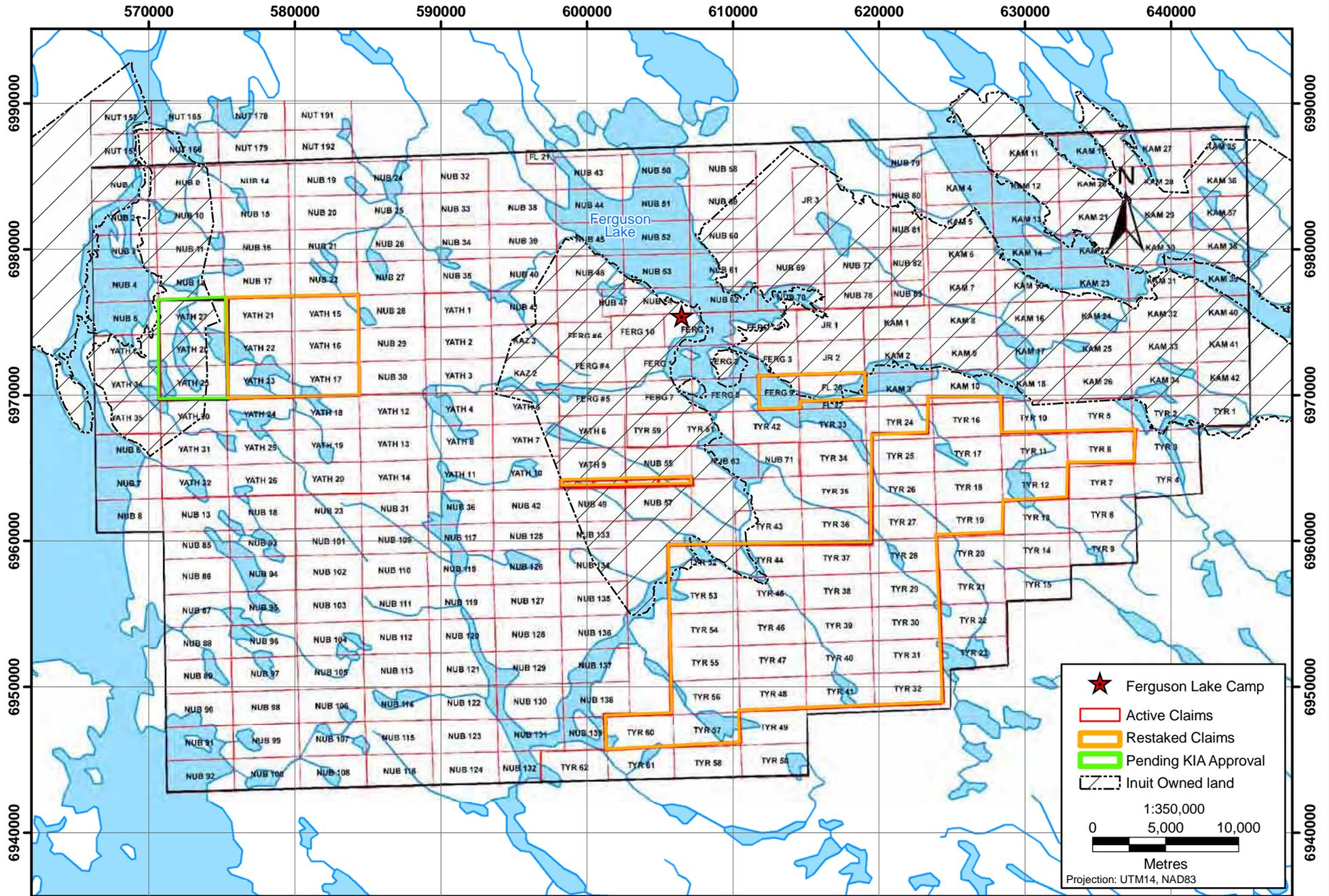
3.2 Personnel Training

The obligations and responsibilities of the Spill Contingency Plan awareness, maintenance and preparedness begin with the arrival of Starfield and Major Drilling employees and contractors. Particularly in the case of new arrivals; supervisors provide an orientation to acquaint worksite staff with Company policies, procedures, and health and safety issues.

This orientation includes, but is not limited to:

- location of all fuels and fuel products
- location of WHMIS and MSDS sheets (Appendix III)
- location of spill kits and fuel spill equipment
- instruction of the use of spill kits
- instruction on the use of spill equipment
- instruction on the clean-up and disposal of fuel products contained in a potential fuel spill.

Staff are required to familiarize themselves with the Spill Contingency Plan and their respective assigned roles. All site personnel are trained in the areas of Environmental awareness, site safety, and basic first-aid CPR. Petroleum handling and spill response personnel are trained in WHMIS and are required to have first-aid and CPR. All drill foremen, drill supervisors and project management personnel are required to hold either Supervisor Level I or Level II certificates from WCB as set out under the NWT-NT WCB Mine Health and Safety regulations.



4. FUEL AND CHEMICAL PRODUCT TRANSPORT AND STORAGE

4. Fuel and Chemical Product Transport and Storage

4.1 Fuel Transportation

Transportation of the fuel will be via aircraft as well as overland via the Right of Way on Challengers to the main camp fuel storage area. The fuel storage area has a lined-bermed facility to hold all fuel transported to site.

4.2 Fuel Storage at the Drills

A small number (less than 10) of fuel drums will be stored at the drill while drilling. The empties will be taken back to camp immediately. No fuel will be left at any drill site once the drill has been demobilised. The fuel will be stored in secondary containment units that will move with the drills. A full-size spill kit will be present at each drill.

4.3 Fuel Types and Quantities

The types of fuel and lubricants that will be stored at the drill site will consist of P-50 diesel, Propane and an assortment of hydraulic oils and motor oils. No more than 10 drums of P-50 diesel, 2 Propane tanks and a minimal amount of oils will be stored at the drills at any time. The P-50 diesel and the oils will be stored in portable secondary containment units.

4.4 Transport and Storage of Waste

Fuel will be transported to the drills via helicopter. All wastes will be removed from the drill sites and taken back to camp, sorted and disposed of appropriately. Empty drums will be removed immediately and taken back to camp for preparation of removal from site.

5. BASIC STEPS – SPILL PROCEDURE

5. Basic Steps – Spill Procedure

Starfield-Major believes that, in the case of a spill or environmental emergency, it is necessary to react in the most immediate, safe and environmentally responsible manner. No spill or incident is so minor that it can be ignored.

Starfield Resources basic steps of a response plan are as follows:

1. Ensure the safety of all persons at all times.
2. Find and identify the spill substance and its source, and, if possible, stop the process or shut off the source.
3. Inform the immediate supervisor or his/her designate at once, so that he/she may take appropriate action. (Appropriate action includes the notification of a government official, if required).
4. Contain the spill or environmental hazard, as per its nature, and as per the advice of the Spill Line and Environmental Advisers, as required.
5. Implement any necessary cleanup or remedial action.

5.1 Basic Steps – Chain of Command

1. Immediately notify the Camp Manager, Scott Goldsborough/Rory Zigarlick (604) 759-2304, Ferguson Lake Office. They will then begin the response.
2. The Camp Manager, or his/her designate, then contacts the 24-Hour Spill Line, if warranted, as follows:

24 HOUR SPILL LINE

Phone: (867) 920-8130

FAX: (867) 873-6924

A "Spill Report Form" (Appendix I) is filled out as completely as possible before or after contacting the 24-Hour Spill Line. This form is to be filled out via computer making sure that the information contained within the form is legible to recipients. The instructions for completing the Nunavut Spill Report Form are also attached in Appendix I.

If the spill is minor (such as dripping of fuel during transfer, which can be absorbed by padding, absorbent crystals, *etc.*), the Camp Manager is notified on site.

(For additional contact information, see Appendix II, for a complete contact list).

6. TAKING ACTION

6. Taking Action

6.1 Before the Fact: Preventive Measures

The following actions illustrate the approach of Starfield Resources and Major Drilling to environmental care. In addition, they minimize the potential for spills during fuel handling, transfer or storage:

1. Fuel transfer hoses with camlock mechanisms are to be used.
2. Carefully monitor fuel content in the receiving vessel during transfer.
3. Clean up drips and minor spills immediately.
4. Inspect drums, tanks and hoses daily for leaks or potential to leak.
5. Plastic Drip pans are to be used at all fuel transfer sites where fuel is transferred.
6. Blue absorbent matting is to be used under any stationary machinery (*e.g.*, generator-sets and drill engines)
7. Train personnel, especially those who will be operators, in proper fuel-handling and spill response procedures.

6.2 After the Fact: Mitigative Measures

1. First steps to take when a spill occurs:
 - a) Ensure your own safety and that of others around you, beginning with those nearest to the scene.
 - b) Control danger to human life, if necessary.
 - c) Identify the source of the spill.
 - d) Notify the Camp Manager, as soon as is practical; he in turn notifies the Response coordinator (if a different individual).
 - e) Assess whether or not the spill readily can be stopped.
 - f) Contain or stop the spill at the source, if possible, by following these actions:
 - i) If filling is in progress, STOP AT ONCE.
 - ii) Close or shut off valves.
 - iii) Place plastic sheeting at the foot of the tank or barrel to prevent seepage into the ground or runoff of fuel.
2. Secondary steps to take:
 - a) Determine status of the spill event.
 - b) If not reported under 1d), report incident and steps taken to the Camp Manager

- c) If necessary, pump fuel from a damaged and/or leaking tank or drum into a refuge container.
- d) Notify the 24-hour Spill Report Line, and receive further instructions from the appropriate contact agencies listed in Appendix II (*e.g.*, disposal of contaminated soil or ice/snow in sealed containers for removal from site, *etc.*).
- e) Complete and FAX a copy of the Spill Report
- f) Notify permitting authorities.
- g) If possible, resume cleanup and containment.

6.3 Fuel Spills on Land

"Land" may be defined as soil, gravel, sand, rock and vegetation. Advice on spill containment and cleanup may be obtained from the 24-Hour Spill Line.

6.3.1 Procedure for Spills on Rock

For hydrocarbon spills on rock outcrops, boulder fields, *etc.*:

1. Response coordinator or his/her designate obtains plastic tarp(s) and absorbent sheeting on-site.
2. A berm of peat, native soil or snow is constructed down slope of the seepage or spill.
3. The tarp is placed in such a way that the fuel can pool for collection and removal (*i.e.*, at the foot of the berm). If there is a large volume of spilled product, pump the liquid into spare empty drums for sealing and disposal later off-site.
4. Absorbent matting is placed on the rock to soak up spilled oil, petrol, *etc.*
5. Saturated matting is disposed of in an empty drum, which is then labelled and sealed. Alternatively, the matting may be wrung out into the empty drum(s).
6. The labeled and sealed drums are backhauled offsite by plane or helicopter to Thompson Manitoba where they are dealt with accordingly.
7. Depending on the nature and volume of the spill, the 24-Hour Spill Line may be contacted after Step 5 or after Step 6.

6.3.2 Procedure for Spills on Land

1. Response Co-coordinator or his/her designate obtains plastic tarp(s), absorbent matting, and any other necessary spill containment equipment, pump, hoses, *etc.*
2. A berm of peat, native soil or snow is constructed down slope of the seepage or spill.
3. The tarp is placed in such a way that the fuel can pool for collection and removal (*e.g.*, at the foot of the berm). If there is a large volume of spilled product, pump the liquid into spare drums, and dispose of product by transporting to a solid-waste disposal facility.
4. Petroleum-product sheening on vegetation may be controlled by applying a thin dusting of Spagh-Zorb or other ultra-dry absorbent to the groundcover.

5. Contact the 24-Hour Spill Line.
6. Depending on the nature and volume of the spill, Response Co-coordinator or his/her designate implements the spill action plan.
7. Place contaminated soil, etc. in empty drums, seal and ship from site to an approved waste disposal facility. Be sure to prepare a waste manifest to accompany this material when shipping.

6.4 Fuel Spills on Water

It is important to limit immediately the extent of spills. The following is the procedure to be implemented when an incident occurs:

1. If the spill is small, deploy hydrophobic (water repellent) absorbent pads (blue matting) on water. Hydrophobic pads readily absorb hydrocarbons. Alternatively, an ultra-dry absorbent designed for use on water-based spills may be deployed.
2. If the spill is larger, prepare several empty drums to act as refuge containers for the spill.
3. Deploy containment booms on the water surface to "fence in" the spill area gradually and to prevent it from spreading. Keep in mind that environmental factors such as high winds and wave action can adversely affect attempts at spill cleanup.
4. Absorbent booms then can be deployed to encircle and then absorb any hydrocarbon spillage that may have escaped the containment boom.
5. Once a boom has been secured, a skimmer may be brought on-scene to aid in capture of the hydrocarbon; once captured, the product should be pumped to the empty fuel drums and held for disposal.
6. As soon as possible either during or after the incident, contact the 24-Hour Spill Line. (This will ensure government agencies are informed).
7. If the spill is sufficiently large, and cannot be contained by rapid action of personnel present, contact the Mobile Environmental Response Unit for assistance. (Weather permitting, this unit can be flown to an emergency spill site within several hours.)

6.5 Fuel Spills on Snow and Ice

By its nature, snow is an absorbent, and fuel spilled on snow is collected with relative ease, *e.g.*, by shovel, in the case of small-range spills.

6.5.1 Spills on Snow

1. Assess the nature of the spill. Necessary equipment might include shovels, plastic tarp(s), and empty drums.
2. Shovel or scrape contaminated snow and deposit in empty refuge drums. If the spill is more extensive, build peat-bale berms or compacted-snow berms with plastic over top, around the affected area.

3. Either during or immediately after the incident, notify the 24-Hour Spill Line.
4. Place contaminated snow in drums, seal and transport off-site to approved waste disposal facilities. Be sure to prepare a waste manifest to accompany this material when shipping.

6.5.2 Spills on Ice

Before work or travel can occur on an ice surface, the ice has to be the required thickness according to safety standards (Table 6-1 and Table 6-2). For any work occurring on the ice; spills are handled in similar fashion as those on snow. However, as ice presents the potential danger of immediate access to water, care must be taken to respond quickly to such spills. Table 6-1 and 6-2 state the thickness. Should fuel seep or flow through cracks or breaks in the ice, despite all precautions, assistance should be sought immediately.

1. Construct a compacted-snow berm around the edge of the spill area.
2. Although hard ice will retard or prevent fuel entry to the receiving waters below, all contaminated snow and ice, as well as objects embedded in the ice (such as gravel) must be scraped from the ice surface and disposed of in an appropriate manner.
3. Contact the 24-Hour Spill Line.
4. Place contaminated ice in drums, seal and transport off-site to approved waste disposal facilities. Be sure to prepare a waste manifest to accompany this material when shipping.
5. Where fuel or oil has escaped to the receiving waters, also contact the 24-hour emergency line of the Mobile Environmental Response Unit.

**Table 6-1
Guide to Required Ice Thickness**

	Weight	Ice Thickness
Ice Strength for Travel		
	242,500 lb. (121 t)	50 inches (127 cm)
	154,000 lb. (77 t)	40 inches (102 cm)
	100,000 lb. (50 t)	32 inches (81 cm)
	55,000 lb. (28 t)	25 inches (64 cm)
	22,000 lb. (11 t)	15 inches (38 cm)
	17,600 lb. (9 t)	14 inches (36 cm)
	7,700 lb. (4 t)	10 inches (25 cm)
Ice Strength for Stationary Loads		
	242,500 lb. (121 t)	90 inches (229 cm)
	154,000 lb. (77 t)	70 inches (178 cm)
	100,000 lb. (50 t)	60 inches (152 cm)
	55,000 lb. (28 t)	43 inches (109 cm)
	22,000 lb. (11 t)	30 inches (76 cm)
	17,600 lb. (9 t)	24 inches (61 cm)
	7,700 lb. (4 t)	18 inches (46 cm)

**Expressed in inches and centimetres
Weights and ice thickness measures rounded to nearest whole number**

Table 6-2 below presents a numerical summary of the Transport Canada (1974) required fresh water ice thickness versus aircraft load from the AK-68-14-001 standard.

**Table 6-2
Required Ice Thickness for Typical Aircraft Weights
AK-68-14-001 Transport Canada Standard**

Weight – lb/kg	Weight - kN	Required Fresh-Water Ice Thickness (m/in)
10,000/4,545	44.5	0.33/13
30,000/13,640	133.5	0.58/23
67,000/30,400	300.0	0.90/35.5
135,000/61,360	600.0	1.27/50
800,000/364,000	3,570.0	3.20/126

(Source: Winter Operations Report 1995/96, Kennecott/Aber, Lac de Gras, by 669107 Alberta Ltd.)

6.6 Procedure for Chemical Spills

1. Assess the hazard of the spilled material. Members of the camp emergency-response team who might be susceptible in certain situations, (such as asthmatics, where fumes or airborne particles are evident), should be replaced with alternates.
2. Assemble the necessary safety equipment before response, (*e.g.*, latex or other protective gloves, goggles or safety glasses, masks or breathers, *etc.*).
3. Apply absorbent matting to soak up liquids.
4. Place plastic sheeting over solid chemicals, such as dusts or powders, to prevent their disbursement by wind, or investigation by birds or other mammals.
5. Neutralize acids or caustics. Place spilled material and contaminated cleanup supplies in an empty refuge drum and seal for disposal to an approved waste disposal facility. Be sure to prepare a waste manifest to accompany this material when shipping.
6. Contact the 24-Hour Spill Line. Receive instructions on disposal methods and designated locations from the appropriate contact agencies listed in Appendix II.

7. GENERAL RESPONSE AND MAINTENANCE INFORMATION

7. General Response and Maintenance Information

7.1 General Equipment and Proximity

Equipment available to aid in spill response and remediation includes:

1. Spill Kits will be located with the drills. Table 7-1 documents the contents of the spill kits and Table 7-2 documents the general response inventory that will be available on site.
2. A helicopter can be dispatched to a drill site from the camp area within minutes.
3. Spill-response equipment is available from Rankin Inlet, 1.5 hours away by air, and or from Thompson, 4 hours away by air. Miscellaneous equipment at the camp area (Table 7-2) will also be made available for spill response and cleanup, including hand tools, shovels (earth and snow), fire extinguishers, fuel transfer pumps, water pumps, miscellaneous hoses and fittings.
4. Personnel including first aid attendant and clean up crews are available for immediate dispatch from the Ferguson Lake Lodge camp site.

**Table 7-1
Contents of Spill Kits – 2008
Drillsite-Campsite – Ferguson Lake**

Drill Shack – Spill Kit Drums – 2



A FRIEND TO THE ENVIRONMENT

M.E.P. ENVIRONMENTAL PRODUCTS LTD.

68 PARAMOUNT ROAD
WINNIPEG MANITOBA R2K 2W3
Phone 204-632-4118
Fax 204-632-5809

514 Major Midwest Drilling Ltd

Emergency After Hours call 204-945-2054

**MAJOR MIDWEST DRILLING
MM-204-50 GAL
OIL SELECT SPILL KIT**

CONTENTS:

- 1 02U0526, Come in a 55 Gal. Poly DOT, approved open head drum with quick lock ring.
- 2 12WOSB510SN, Hydrocarbon select containment boom 5" x 10' ea .
- 1 WE150SM, Roll hydrocarbon select adsorbant blanket 19" x 144' x 3/8".
- 1 Set of instructions.
- 1 List of Contents.

SPILL INSTRUCTIONS AND PROCEDURES

- EMPTY OUT DRUM.
- ENCIRCLE SPILL AREA WITH BOOM.
- RIP ROLL INTO PIECE SIZE AS NEEDED AND TOSS INTO CENTER OF BOOM TO ADSORB FLUID, RETRIEVE WHEN SATURATED AND PLACE IN DRUM. REPEAT IF NECESSARY.
- REMOVE BOOM AND PLACE IN DRUM.
- CONTACT YOUR ENVIRONMENTAL OR SAFETY OFFICER FOR CORRECT DISPOSAL PROCEDURE.

WITHOUT PREJUDICE NO LIABILITY

**Table 7-1
Contents of Spill Kits – 2008
Drillsite-Campsite – Ferguson Lake (completed)**

Fuel Storage Area – Transfer Stations – Movable Spill Kits – 6



A FRIEND TO THE ENVIRONMENT

M.E.P. ENVIRONMENTAL PRODUCTS LTD.

68 PARAMOUNT ROAD
WINNIPEG MANITOBA R2X 2W3
Phone 204-632-4118
Fax 204-632-5800

DK-Major Midwest 30S.wpl

Emergency After Hours call 204-648-2054

ATTN: JOHN NICHOLSON

**MAJOR DRILLING GROUP 30S
OIL SELECT
SPILL KIT**

- 1 02U0510, 30 GAL POLY DOT APPROVED CONTAINER WITH QUICKKLOK RING.
- 1 WB510SN, OIL SELECT WHITE ADSORBANT BOOM 5" X 10'.
- 1 SP19, OIL SELECT WHITE SPLIT ROLL 3/8" X 19" X 144'.
- 10 12SWP100H, OIL SELECT ADSORBENT PADS 17" X 19" X 3/8".
- 2 02TB3648L, DISPOSAL BAGS WITH TIES.
- 1 SET OF SPILL PROCEDURES AND INSTRUCTIONS.
- 1 LIST OF CONTENTS.

SPILL PROCEDURE & INSTRUCTIONS

- Encircle spill with adsorbent boom.
- Toss adsorbent pads onto spill.
- Retrieve pads, wring out into disposal bag and re-use if necessary.
- Place contaminated pads in disposal bag when done with them.
- Remove boom from around spill and place in disposal bag.
- Call your environmental officer for disposal instructions.

(WITHOUT PREJUDICE)
(NO LIABILITY)

**Table 7-2
General Response Inventory – Ferguson Lake Camp**

- Fire extinguishers (valid/recharged) in each structure.
 - Water pump and spare, hoses and fittings
 - Hammers, assorted sizes
 - Shovels and picks assorted sizes
 - Assorted 10L plastic pails
 - Ice auger (gas-powered) c/w extensions
 - Plastic garbage bags (boxes of 100 each)
 - Plastic tarps – assorted sizes
 - Extra bundles of absorbents
 - Fuel-transfer pumps
-

8. RESPONDING TO FAILURES AND SPILLS

8. Responding to Failures and Spills

8.1 Spill Response

Following is a list of personnel trained to respond to spill incidents, and their respective responsibilities:

Scott Goldsborough/Rory Zigarlick
Camp Manager – 2008

Ferguson Lake Worksite and Camp
Starfield Resources phone(604) 759-2304 (camp)

Responsibilities:

- Assume authority over the spill scene and personnel involved.
- Activate the Contingency Plan.
- Report, or direct Response Co-coordinator (if a different individual) to report, the spill to the NWT 24-Hour Spill Report Line (867) 920-8130.

Fred Mason
VP Operations

Starfield Resources phone (604) 759-2304 (camp)
Starfield Resources phone (403) 542-8526 (cell)

**APPENDIX I
NUNAVUT SPILL REPORT FORM AND GUIDELINES TO
COMPLETING THE FORM**





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 _____
	B		OCCURRENCE DATE: MONTH – DAY – YEAR			
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			LONGITUDE		
	DEGREES	MINUTES	SECONDS	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 EQUIPMENT		
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						

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. 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.

A. Report Date/Time	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. Please do not fill in the Report Number: the spill line will assign a number after the spill is reported.
B. Occurrence Date/Time	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).
C. Land Use Permit Number /Water Licence Number	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.
D. Geographic Place Name	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. You must include the geographic coordinates (Refer to Section E).
E. Geographic Coordinates	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.
F. Responsible Party Or Vessel Name	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. 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.
G. Contractor involved?	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.
H. Product Spilled	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)
I. Spill Source	Identify the source of the spill: truck, ship, home heating fuel tank and, if known, the cause (eg: fuel tank overflow, leaking tank; ship ran aground; traffic accident, vandalism, storm, etc.). Provide an estimate of the extent of the contaminated/impacted area (eg: 10 m ²)
J. Factors Affecting Spill	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 equipment: for example, a gasoline spill beside a daycare centre would pose a safety hazard to children. Use box K if there is insufficient space.
K. Additional Information	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. Please number the pages to ensure that recipients can be certain that they received all pertinent documents. If only the spill report form was filled out, number the form as "Page 1 of 1".
L. Reported to Spill Line by	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.
M. Alternate Contact	Identify any alternate contacts. This information assists regulatory agencies to obtain additional information if they cannot reach the individual who reported the spill.
N. Report Line Use Only	Leave Blank. This box is for the Spill Line's use only.

**APPENDIX II
CONTACT LIST**

Appendix II – Contact List

Contact Telephone Numbers:

Emergency Spill Hotline	(867)920-8130 (ph) (867)873-6924 (fax)
INAC Water Resources Officer (Notify Inspector and the KIA if a spill is reported to the emergency spill hotline)	(867)975-4289 (ph)
Starfield Resources Toronto Office:	(416)860-0400 (ph)
Ferguson Camp	(604)759-2304 (ph) (604)759-2300 (fax)
Rankin Inlet Office	(867)645-3289(ph) (867)645-3290 (fax)
Major Drilling Flin Flon Office	(204)687-3483 (ph) (204)687-5739 (fax)
Workers Compensation Board	(867)669-4409 (ph) (867)873-0262 (fax)
RCMP (Rankin Inlet)	(867)645-1111 (ph)
Kivalliq Inuit Association (Rankin Inlet)	(867)645-2810 (ph) (867)645-3855 (fax)
INAC Resource Management-Kivalliq	(867)645-2831 (ph)
Ministry of Environment (Rankin Inlet)	(867)645-8083 (ph) (867)645-8085 (fax)
Environment Canada Iqaluit	(867)-975-4464(ph)
Environment protection 24 hour pager	(867)920-5131(pager)
Department of Fisheries and Oceans	(867)645-2871 (ph)
Nunavut Impact Review Board	(867)983-2593 (ph)

Appendix II – Contact List

Nunavut Water Board (867)360-6338 (ph)
(867)360-6369 (fax)

Rescan Environmental Services Ltd. (604)689-9460 (ph)
(604)687-4277 (fax)

Contact List – Spill Response / Assistance

Ken Borek Air (Rankin Inlet) (867)645-2535 (ph)

Missinnippi Air (Thompson) (204)679-1370 (ph)

M&T Enterprises (Rankin Inlet) (867)645-2778 (ph)
(867)645-2058 (ph)

Baker Lake Contractors (BLCS) (867)793-2831 (ph)
(867)793-2577 (fax)

APPENDIX III
MATERIAL SAFETY DATA SHEETS (MSDS)

**MATERIAL SAFETY DATA SHEET**

Date Prepared: November 06, 2002
Supersedes: November 01, 2002
MSDS Number: 00826

1. PRODUCT INFORMATION

Product Identifier: MIDDLE DISTILLATE

- ESSO MARINE GAS OIL (DYED OR CLEAR)
- ESSO RAILROAD DIESEL (DYED OR CLEAR)
- HEATING OIL (DYED OR CLEAR)
- DIESEL (DYED OR CLEAR)
- DIESEL QUALITY FURNACE FUEL (DYED OR CLEAR)
- DIESEL QUALITY HEATING OIL (DYED OR CLEAR)
- ESSO DIESEL (DYED OR CLEAR)
- ESSO DIESEL QUALITY COMMERCIAL FUEL (DYED OR CLEAR)
- ESSO DIESEL QUALITY FURNACE FUEL
- ESSO DIESEL QUALITY HEATING OIL
- ESSO FURNACE FUEL (DYED OR CLEAR)
- ESSO HEATING OIL (DYED OR CLEAR)
- ESSO MARINE DIESEL FUEL (DYED OR CLEAR)
- ESSO RAILROAD DIESEL FUEL #3 (DYED OR CLEAR)
- ESSO TOBACCO CURING OIL
- FUEL OIL 75
- FUEL OIL 76
- DIESEL MARINE (DYED OR CLEAR)
- DIESEL MARINE GAS OIL (DYED OR CLEAR)
- FURNACE (DYED OR CLEAR)
- DIESEL MARINE - POUR DEPRESSED (DYED OR CLEAR)
- NO.2 FUEL OIL
- NAVAL FUEL OIL 3-GP-11M (DYED)
- ESSO DIESEL FUEL LS
- DIESEL LOW SULFUR (DYED OR CLEAR)
- NO.2 FUEL OIL FOR EXPORT
- DIESEL FOR EXPORT (DYED OR CLEAR)
- FURNACE TOBACCO CURING OIL
- DIESEL NAVAL 3GP-11 (DYED OR CLEAR)
- DIESEL NAVAL 3GP-15 (DYED OR CLEAR)
- DIESEL LOW SULFUR RAIL (DYED OR CLEAR)
- DIESEL LOW SULFUR DYED EP
- DIESEL RAIL (DYED OR CLEAR)
- DIESEL RAIL #3 (DYED OR CLEAR)
- DIESEL RAIL #3 (HD) (DYED OR CLEAR)
- DIESEL LOW SULFUR (032) (DYED OR CLEAR)

FURNACE URBAN (DYED OR CLEAR)
 DIESEL (032) (DYED OR CLEAR)
 DIESEL LOW SULFUR (EXP DYED)
 FURNACE FUEL (032) DYED
 DIESEL LOW SULFUR (EXPORT)
 MARINE GAS OIL
 MDO - MARINE DIESEL OIL 3 CST (CLEAR)

Application and Use:
 Multi-purpose fuel

Product Description:

A complex mixture of aliphatic, olefinic, naphthenic and aromatic hydrocarbons.

REGULATORY CLASSIFICATION

WHMIS:

Class B, Division 3: Combustible Liquids.
 Class D, Division 2, Subdivision B: Toxic Material

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT

All components of this product are either on the Domestic Substances List (DSL) or are exempt.

TDG INFORMATION (RAIL/ROAD):

Shipping Name: FUEL OIL
 Class: 3
 Packing Group: III
 PIN Number: UN1202
 Marine Pollutant:N

Please be aware that other regulations may apply.

TELEPHONE NUMBERS

Emergency 24 hr. (519) 339-2145
 Technical Info. (800) 268-3183

MANUFACTURER/SUPPLIER:

IMPERIAL OIL
 Products Division
 111 St Clair Avenue West
 Toronto, Ontario
 M5W 1K3
 (416) 968-4441

2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a) (i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #
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Fuel Oil No.2

>99.9 V/V 68476-30-2

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: 0.820 to 0.900 at 15.5 deg C
Viscosity: 1.30 cSt at 40 deg C
to 11.00 cSt at 40 deg C
Vapour Density: 4
Boiling Point: 150 to 370 deg C
Evaporation rate: <1 (1= n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: -4 deg C -39 (RANGE)
Odour Threshold: not available
Vapour Pressure: 4 kPa at 38 deg C
Appearance/odour: White or pale yellow liquid, petroleum odour

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
High vapour concentrations are irritating to the eyes, nose, throat and lungs; may cause headaches and dizziness; may be anesthetic and may cause other central nervous system effects.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Low toxicity.
Irritating.

INGESTION:

Low toxicity.
Small amounts of this liquid drawn into the lungs from swallowing or vomiting may cause severe health effects (e.g. bronchopneumonia or pulmonary edema).

CHRONIC:

Lifetime skin painting tests indicate that materials of similar composition have produced skin cancer in experimental animals. The relationship of these results to humans has not been fully established.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products, the acute toxicity of this product is expected to be:

Oral : LD50 > 5000 mg/kg (Rat)
Dermal : LD50 > 2000 mg/kg (Rabbit)
Inhalation : LC50 > 2500 mg/m³ (Rat)

OCCUPATIONAL EXPOSURE LIMIT:

Manufacturer Recommends:
100 ppm based on composition.

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

In emergency situations use proper respiratory protection to immediately remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Immediately flush with large amounts of water. Use soap if available. Remove contaminated clothing, including shoes, after flushing has begun. If irritation persists, seek medical attention.

INGESTION:

DO NOT induce vomiting since it is important that no amount of the material should enter the lungs (aspiration). Keep at rest. Get prompt medical attention.

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.

In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves.

Where only incidental contact is likely, wear safety goggles, long sleeves, and chemical-resistant gloves.



MATERIAL SAFETY DATA SHEET

Date Prepared: July 13, 2004
Supersedes: March 19, 2003
MSDS Number: 08522

1. PRODUCT INFORMATION

Product Identifier: UNLEADED GASOLINE
REGULAR UNLEADED
MIDGRADE UNLEADED
ESSO SUPER PREMIUM UNLEADED
PREMIUM UNLEADED
ESSO REGULAR UNLEADED
ESSO MIDGRADE UNLEADED
ESSO EXTRA MIDGRADE UNLEADED
ESSO PREMIUM UNLEADED
EXXON MIDGRADE UNLEADED
EXXON PREMIUM UNLEADED
INDOLENE GASOLINE
EXXON REGULAR UNLEADED
PREMIUM GASOLINE
ESSO EXTRA MIDGRADE GASOLINE
MIDGRADE GASOLINE
GASOLINE REGULAR UNLEADED
GASOLINE MIDGRADE UNLEADED MUL89 (DYED OR CLEAR)
GASOLINE REGULAR UNLEADED RUL87 (DYED OR CLEAR)
GASOLINE PREMIUM UNLEADED PUL91 (DYED OR CLEAR)
GASOLINE PREMIUM UNLEADED PUL92 (DYED OR CLEAR)
GASOLINE PREMIUM UNLEADED SUL94
SUPERSUPREME 94 PREMIUM UNLEADED GASOLINE-MTBE
GASOLINE MIDGRADE UNLEADED MUL89 (P91/R87)
GASOLINE MIDGRADE UNLEADED MUL89 DCA (P92/R87)
GASOLINE REGULAR UNLEADED RUL87 (NORTH ATL REF)
GASOLINE PREMIUM UNLEADED PUL91 (NORTH ATL REF)

Application and Use:
Motor gasoline fuel, for use in internal combustion engines only

Product Description:
A mixture of aliphatic and aromatic hydrocarbons and additives.

REGULATORY CLASSIFICATION

WHMIS:

Class D, Division 2, Subdivision A: Very Toxic Material.
 Class B, Division 2: Flammable Liquids.

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT

All components of this product are either on the Domestic
 Substances List (DSL) or are exempt.

TDG INFORMATION (RAIL/ROAD):

Shipping Name: Gasoline
 Class: 3
 Packing Group: II
 PIN Number: UN1203
 Marine Pollutant:P

Please be aware that other regulations may apply.

TELEPHONE NUMBERS

Emergency 24 hr. (519) 339-2145
 Technical Info. (800) 268-3183

MANUFACTURER/SUPPLIER:

IMPERIAL OIL
 Products Division
 111 St Clair Avenue West
 Toronto, Ontario
 M5W 1K3
 (416) 968-4441

2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a)
 (i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #	
Gasoline	>99 V/V	86290-81-5	LD50>18ml/kg, orl, rat LD50> 5ml/kg, skn, rbt
Methyl T-Butyl Ether	0-15 V/V	1634-04-4	LD50:3.9g/Kg, ing, rat LD50:>10g/Kg, skn, rbt LC50:142Mg/L, inh, rat

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
 Specific gravity: not available
 Viscosity: 0.80 cSt at 20 deg C
 Vapour Density: 3.2
 Boiling Point: 35 to 210 deg C
 Evaporation rate: >10 (1= n-butylacetate)

Solubility in water: negligible
Freezing/Pour Point: -60 deg C less than
Odour Threshold: not available
Vapour Pressure: 76 kPa to 103 kPa at 38 deg C
Density: 0.73 g/cc at 15 deg C
Appearance/odour: Naturally occurring water white or pale yellow;
may be dyed a variety of colours for tax or other
purposes; petroleum odour.

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

High vapour concentrations are irritating to the eyes, nose, throat and lungs; may cause headaches and dizziness; may be anesthetic and may cause other central nervous system effects.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Low toxicity.
Frequent or prolonged contact may irritate the skin and cause a skin rash (dermatitis).

INGESTION:

Low toxicity.
Small amounts of this liquid drawn into the lungs from swallowing or vomiting may cause severe health effects (e.g. bronchopneumonia or pulmonary edema).

CHRONIC:

The International Agency for Research on Cancer (IARC) has evaluated gasoline and found it to be a possible human carcinogen. Contains benzene. Human health studies (epidemiology) indicate that prolonged and/or repeated overexposures to benzene may cause damage to the blood producing system and serious blood disorders, including leukemia. Animal tests suggest that prolonged and/or repeated overexposures to benzene may damage the embryo/fetus. The relationship of these animal studies to humans has not been fully established. Contains n-hexane. Prolonged and/or repeated exposures may cause damage to the peripheral nervous system (e.g. fingers, feet, arms etc.). Methyl Tertiary Butyl Ether (MTBE) was tested for carcinogenicity, neurotoxicity, chronic, reproductive and developmental toxicity. The NOEL for all endpoints evaluated in three animal species was 400 ppm or greater.

An increase in kidney tumors/damage and liver tumors was observed in animals exposed to high concentrations of MTBE. Some embryo/fetal toxicity and birth defects were observed in the offspring of pregnant mice exposed to maternally toxic doses of MTBE, however the offspring of exposed pregnant rabbits were unaffected. The significance of the animal findings at high exposures are not believed to be directly related to potential human health hazards in the workplace.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products, the acute toxicity of this product is expected to be:

Oral : LD50 > 18 ml/kg (Rat)
Dermal : LD50 > 5 ml/kg (Rabbit)

OCCUPATIONAL EXPOSURE LIMIT:

Manufacturer Recommends:

For gasoline, 300 mg/m³.

For Methyl-tert-Butyl Ether, 25 ppm (90 mg/m³) 8-hour TWA and 75 ppm (270 mg/m³) 15-minute STEL.

ACGIH recommends:

For Gasoline, ACGIH recommends a TWA of 300 ppm (890 mg/m³) and categorizes it as an animal carcinogen.

For n-Hexane (skin), 50 ppm (176 mg/m³).

For Benzene, ACGIH recommends a TWA of 0.5 ppm (1.6 mg/m³), (skin), and categorizes it as a confirmed human carcinogen.

For Methyl-tert-Butyl Ether, ACGIH recommends a TLV of 50 ppm (180 mg/m³) and categorizes it as an animal carcinogen.

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

In emergency situations use proper respiratory protection to immediately remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Flush with large amounts of water. Use soap if available.

Remove severely contaminated clothing (including shoes) and launder before reuse.

If irritation persists, seek medical attention.

INGESTION:

DO NOT induce vomiting since it is important that no amount of the material should enter the lungs (aspiration). Keep at rest. Get prompt medical attention.

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.

In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves.

Where only incidental contact is likely, wear safety glasses with side shields. No other special precautions are necessary provided skin/eye contact is avoided.

Where concentrations in air may exceed the occupational exposure limits given in Section 4 and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

ENGINEERING CONTROLS:

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces. Use explosion-proof ventilation equipment.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care. In keeping with good personal hygiene practices, wash hands thoroughly after handling the material.

Store and load at normal (up to 38 deg C) temperature and at atmospheric pressure.

Material will accumulate static charges which may cause a spark. Static charge build-up could become an ignition source. Use proper relaxation and grounding procedures.

For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere.

Empty containers may contain product residue. Do not pressurize cut, heat, or weld empty containers. Do not reuse empty containers without commercial cleaning or reconditioning.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard.

Vapours or dust may be harmful or fatal. Warn occupants of downwind areas.

Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust.

Recover by pumping (use an explosion proof motor or hand pump), or by using a suitable absorbent.

Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill.

WATER SPILL:

Eliminate all sources of ignition. Vapours or dust may be harmful or fatal. Warn occupants and shipping in downwind areas.

Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: -40 deg C COC D92 less than/moins de

Autoignition: NA Flammable Limits: LEL: 1.4% UEL: 7.6%

GENERAL HAZARDS:

Extremely flammable; material will readily ignite at normal temperatures. Flammable Liquid; may release vapours that form flammable mixtures at or above the flash point.

Toxic gases will form upon combustion.

Static Discharge; material may accumulate static charges which may cause a fire.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel. Shut off fuel to fire if possible to do so without hazard. If a leak or spill has not ignited use water spray to disperse the vapours.

Either allow fire to burn out under controlled conditions or extinguish with foam or dry chemical. Try to cover liquid spills with foam.

Respiratory and eye protection required for fire fighting personnel.

Avoid spraying water directly into storage containers due to danger of boilover.

A self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA may not be required.

HAZARDOUS COMBUSTION PRODUCTS:

Smoke, carbon monoxide, carbon dioxide under thermal decomposition.

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

none

9. NOTES

All components of this product are listed on the U.S. TSCA inventory.

REVISION SUMMARY:

Since March 19, 2003, this MSDS has been revised in Section(s):
1, 2, 4

10. PREPARATION

Date Prepared: July 13, 2004
Prepared by: Lubricants & Specialties
IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(800) 268-3183

CAUTION: " The information contained herein relates only to this product or material and may not be valid when used in combination with any other product or material or in any process. If the product is not to be used for a purpose or under conditions which are normal or reasonably foreseeable, this information cannot be relied upon as complete or applicable. For greater certainty, uses other than those described in Section 1 must be reviewed with the supplier. The information contained herein is based on the information available at the indicated date of preparation. This MSDS is for the use of Imperial Oil customers and their employees and agents only. Any further distribution of this MSDS by Imperial Oil customers is prohibited without the written consent of Imperial Oil."

**MATERIAL SAFETY DATA SHEET**

Date Prepared: November 14, 2003
Supersedes: May 31, 2000
MSDS Number: 08509

1. PRODUCT INFORMATION

Product Identifier: MARVELUBE WR2 GREASE

Application and Use:
Lubricating grease

Product Description:

A grease, a mixture of lubricating oil, soap and additives.

REGULATORY CLASSIFICATION

WHMIS:

Not a controlled product

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT

All components of this product are either on the Domestic Substances List (DSL) or are exempt.

TDG INFORMATION (RAIL/ROAD):

Not Regulated in Canada.

Please be aware that other regulations may apply.

TELEPHONE NUMBERS

Emergency 24 hr. (519) 339-2145
Technical Info. (800) 268-3183

MANUFACTURER/SUPPLIER:

IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(416) 968-4441

2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a) (i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #
Not applicable		

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: >20.00 cSt at 40 deg C
Vapour Density: >5
Boiling Point: not available
Evaporation rate: <1 (1= n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: 182 deg C DROP
Odour Threshold: not available
Vapour Pressure: <1 kPa at 38 deg C
Density: 0.91 g/cc at 15 deg C
Appearance/odour: Black paste, petroleum odour.

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
Elevated temperatures or mechanical action may form vapours, mists or fumes which may be irritating to the eyes, nose, throat and lungs.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Low toxicity.
Frequent or prolonged contact may irritate the skin.
High pressure greasing equipment is capable of injecting grease under the skin which may have severe health consequences.

INGESTION:

Low toxicity.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products, the acute toxicity of this product is expected to be:

Oral : LD50 > 5000 mg/kg (Rat)
Dermal : LD50 > 3160 mg/kg (Rabbit)
Inhalation : LC50 > 5000 mg/m3 (Rat)

OCCUPATIONAL EXPOSURE LIMIT:

ACGIH recommends:

For oil mists, 5 mg/m3.

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

In case of adverse exposure to vapours, mists and/or fumes formed at elevated temperature, or by mechanical action, immediately remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Flush with large amounts of water. Use soap if available. Remove severely contaminated clothing (including shoes) and launder before reuse. If irritation persists, seek medical attention. Consult a physician immediately if the material is injected under the skin from the misuse of high pressure greasing equipment.

INGESTION:

If swallowed, DO NOT induce vomiting. Keep at rest. Get prompt medical attention.

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use. In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves. Where only incidental contact is likely, wear safety glasses with side shields. No other special precautions are necessary provided skin/eye

contact is avoided.

Where concentrations in air may exceed the occupational exposure limits given in Section 4 and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

ENGINEERING CONTROLS:

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care. Store in a cool, well ventilated place away from incompatible materials. In keeping with good personal hygiene practices, wash hands thoroughly after handling the material. Empty containers may contain product residue. Do not pressurize cut, heat, or weld empty containers. Do not reuse empty containers without commercial cleaning or reconditioning.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard. Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth. Allow material to solidify and scrape up. Place material in suitable containers for recycle or disposal. Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill.

WATER SPILL:

Remove from surface by skimming or with suitable absorbents. If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in unconfined waters. Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: 204 deg C COC ASTM D92

Autoignition: 227 deg C Flammable Limits: LEL: NA UEL: NA

GENERAL HAZARDS:

Low Hazard; liquids may burn upon heating to temperatures at or above the flash point.

Toxic gases will form upon combustion.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel. Shut off fuel to fire.

Use foam, dry chemical or water spray to extinguish fire.

Respiratory and eye protection required for fire fighting personnel.

A self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA may not be required.

HAZARDOUS COMBUSTION PRODUCTS:

Smoke, carbon monoxide, carbon dioxide and traces of oxides of sulphur

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

none

9. NOTES

All components of this product are listed on the U.S. TSCA inventory.

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REVISION SUMMARY:

Since 31 May 2000, this MSDS has been revised in Section(s):

3, 7

10. PREPARATION

Date Prepared: November 14, 2003

Prepared by: Lubricants & Specialties

IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
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CAUTION: " The information contained herein relates only to this product or material and may not be valid when used in combination with any other product or material or in any process. If the product is not to be used for a purpose or under conditions which are normal or reasonably foreseeable, this information cannot be relied upon as complete or applicable. For greater certainty, uses other than those described in Section 1 must be reviewed with the supplier. The information contained herein is based on the information available at the indicated date of preparation. This MSDS is for the use of Imperial Oil customers and their employees and agents only. Any further distribution of this MSDS by Imperial Oil customers is prohibited without the written consent of Imperial Oil."

Where concentrations in air may exceed the occupational exposure limits given in Section 4 and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

ENGINEERING CONTROLS:

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care. Store in a cool, well ventilated place away from incompatible materials. In keeping with good personal hygiene practices, wash hands thoroughly after handling the material. Do not handle or store near an open flame, sources of heat, or sources of ignition. Material will accumulate static charges which may cause a spark. Static charge build-up could become an ignition source. Use proper relaxation and grounding procedures. Empty containers may contain product residue. Do not pressurize cut, heat, or weld empty containers. Do not reuse empty containers without commercial cleaning or reconditioning.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard. Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust. Recover by pumping (use an explosion proof motor or hand pump), or by using a suitable absorbent. Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill.

WATER SPILL:

Remove from surface by skimming or with suitable absorbents. If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in unconfined waters. Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: >40 deg C PMCT ASTM D93

Autoignition: NA Flammable Limits: LEL: 0.7% UEL: 6.5%

GENERAL HAZARDS:

Combustible Liquid; may form combustible mixtures at or above the flash point.
Toxic gases will form upon combustion.
Static Discharge; material may accumulate static charges which may cause a fire.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel. Shut off fuel to fire.
Use foam, dry chemical or water spray to extinguish fire.
Respiratory and eye protection required for fire fighting personnel.
Avoid spraying water directly into storage containers due to danger of boilover.
A self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA may not be required.

HAZARDOUS COMBUSTION PRODUCTS:

Smoke, carbon monoxide, carbon dioxide and traces of oxides of sulphur

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

none

9. NOTES

All components of this product are listed on the U.S. TSCA inventory.

REVISED.

10. PREPARATION

Date Prepared: November 06, 2002
Prepared by: Lubricants & Specialties
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Products Division
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**MATERIAL SAFETY DATA SHEET**

Date Prepared: November 14, 2003
Supersedes: April 12, 2001
MSDS Number: 12232

1. PRODUCT INFORMATION

Product Identifier: EPIC EP MOLY GREASE

Application and Use:
Lubricating grease

Product Description:

A grease, a mixture of lubricating oil, soap and additives.

REGULATORY CLASSIFICATION

WHMIS:

Not a controlled product

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT

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

TDG INFORMATION (RAIL/ROAD):

Not Regulated in Canada.

Please be aware that other regulations may apply.

TELEPHONE NUMBERS

Emergency 24 hr. (519) 339-2145
Technical Info. (800) 268-3183

MANUFACTURER/SUPPLIER:

IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(416) 968-4441

2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a) (i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #
Not applicable		

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: 0.930 at 15.6 deg C/15.6 deg C
Viscosity: >20.00 cSt at 40 deg C
Vapour Density: not available
Boiling Point: 249 deg C
Evaporation rate: 0.1 (1= n-butylacetate)
Solubility in water: NEGLIGIBLE
Freezing/Pour Point: 230 deg C DROP
Odour Threshold: not available
Vapour Pressure: <0.01 kPa at 20 deg C
Appearance/odour: Black paste, petroleum odour.

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
Elevated temperatures or mechanical action may form vapours, mists or fumes which may be irritating to the eyes, nose, throat and lungs.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Low toxicity.
Frequent or prolonged contact may irritate the skin.
High pressure greasing equipment is capable of injecting grease under the skin which may have severe health consequences.

INGESTION:

Low toxicity.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products,

the acute toxicity of this product is expected to be:

Oral : LD50 > 5000 mg/kg (Rat)
Dermal : LD50 > 3160 mg/kg (Rabbit)
Inhalation : LC50 > 5000 mg/m3 (Rat)

OCCUPATIONAL EXPOSURE LIMIT:

ACGIH recommends:

For insoluble Molybdenum compounds, 10 mg/m3.
For oil mists, 5 mg/m3.

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

In case of adverse exposure to vapours, mists and/or fumes formed at elevated temperature, or by mechanical action, immediately remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Flush with large amounts of water. Use soap if available. Remove severely contaminated clothing (including shoes) and launder before reuse. If irritation persists, seek medical attention. Consult a physician immediately if the material is injected under the skin from the misuse of high pressure greasing equipment.

INGESTION:

If swallowed, DO NOT induce vomiting. Keep at rest. Get prompt medical attention.

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use. In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves. Where only incidental contact is likely, wear safety glasses with side shields. No other special precautions are necessary provided skin/eye

contact is avoided.

Where concentrations in air may exceed the occupational exposure limits given in Section 4 and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

ENGINEERING CONTROLS:

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care. Store in a cool, well ventilated place away from incompatible materials. In keeping with good personal hygiene practices, wash hands thoroughly after handling the material. Empty containers may contain product residue. Do not pressurize cut, heat, or weld empty containers. Do not reuse empty containers without commercial cleaning or reconditioning.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard. Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth. Allow material to solidify and scrape up. Place material in suitable containers for recycle or disposal. Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill.

WATER SPILL:

Remove from surface by skimming or with suitable absorbents. If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in unconfined waters. Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: 145 deg C COC ASTM D92

Autoignition: NA Flammable Limits: LEL: NA UEL: NA

GENERAL HAZARDS:

Low Hazard; liquids may burn upon heating to temperatures at or above the flash point.

Toxic gases will form upon combustion.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel. Shut off fuel to fire.

Use foam, dry chemical or water spray to extinguish fire.

Respiratory and eye protection required for fire fighting personnel.

Avoid spraying water directly into storage containers due to danger of boilover.

A self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA may not be required.

HAZARDOUS COMBUSTION PRODUCTS:

Fumes, smoke, carbon monoxide, sulfur oxides, nitrogen oxides, phosphorus oxides, aldehydes and other decomposition products, in the case of incomplete combustion

Various metal oxides

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

none

9. NOTES

All components of this product are listed on the U.S. TSCA inventory.

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REVISION SUMMARY:

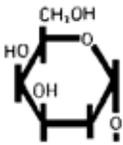
Since 12 April 2001, this MSDS has been revised in Section(s):

1

10. PREPARATION

Date Prepared: November 14, 2003
Prepared by: Lubricants & Specialties
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Products Division
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Poly-Drill Drilling Systems

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MATERIAL SAFETY DATA SHEET/FICHE SIGNALÉTIQUE

1. PRODUCT IDENTIFICATION

PRODUCT TRADE NAME: Poly-Drill 133-X
PRODUCT DESCRIPTION: LIQUID ANIONIC POLYMER
CHEMICAL DESCRIPTION: Polymer, Surfactant(s), Water, Hydrocarbon solvent
UPDATED: March 15, 2004

NFPA704M/HMIS RATING

HEALTH: 0/1 FLAMMABILITY: 1/1 REACTIVITY: 0/0 OTHER:
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

2. COMPOSITION

A liquid polymer: Evaluation of the ingredient(s) has found no ingredient(s) hazardous as per WHMIS regulations. None of the substances in this product are hazardous.

3. PHYSICAL DATA

Flash Point: >100°C (PMCC)
Specific Gravity (@ 25°C.): 1.08
Solubility in Water: Emulsifiable
pH: 8.1 (1.0% solution)
Freeze Point: -10 °C (14 Degrees F)
Density (g/ml): 1.08 at 25 °C
Physical State: Liquid
Appearance: Blue liquid
Odor: Hydrocarbon

Note: These physical properties are typical values for this product.

4. FIRE AND EXPLOSION DATA

INCOMPATIBILITY: Avoid contact with strong oxidizers (eg. Chlorine, peroxides, chromates, nitric acid, perchlorates, concentrated oxygen, permanganates) which can generate heat, fires, explosions and the release of toxic fumes.

THERMAL DECOMPOSITION PRODUCTS: In the event of combustion CO, oxides of carbon (CO_x), oxides of nitrogen (NO_x) may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

5. FIRE FIGHTING MEASURES

FLASH POINT: >100°C (PMCC)

EXTINGUISHING MEDIA: Based on the NFPA guide, use dry chemical, foam, carbon dioxide or other extinguishing agent suitable for Class B fires. Use water to cool containers exposed to fire. For larger fires, use water spray or fog, thoroughly drenching the burning material.

UNSUITABLE EXTINGUISHING MEDIA:
Do not use water unless flooding amounts are available.

UNUSUAL FIRE AND EXPLOSION HAZARD: May evolve oxides of nitrogen (NOx) under fire conditions.

6. HEALTH HAZARD DATA

EMERGENCY OVERVIEW:

CAUTION: May cause irritation to skin and eyes. Avoid contact with skin, eyes and clothing. Do not take internally.

Empty containers may contain residual product. Do not reuse container unless properly reconditioned.

PRIMARY ROUTE(S) OF EXPOSURE: Eye & Skin

EYE CONTACT: Can cause mild to moderate irritation

SKIN CONTACT: Can cause mild, short-lasting irritation

SYMPTOMS OF EXPOSURE: A review of available data does not identify any symptoms from exposure not previously mentioned.

AGGRAVATION OF EXISTING CONDITIONS: A review of available data does not identify any worsening of existing conditions.

7. EMERGENCY AND FIRST AID PROCEDURES

SKIN: Wash exposed area with soap and water. If irritation or abnormalities persist, call a physician.

EYE: Immediately flush eyes with water for 15 minutes, if irritation or abnormalities persist, call a physician.

INHALATION: Remove to fresh air. If breathing becomes difficult, give oxygen and call a physician.

INGESTION: Do not induce vomiting: Call a physician immediately.

CAUTION: If unconscious, having trouble breathing or in convulsions, do not induce vomiting or give water. Call for medical assistance immediately.

8. HANDLING, ACCIDENTAL RELEASE MEASURES & DISPOSAL CONSIDERATIONS

Storage: Keep container tightly closed when not in use.

DISPOSAL:

In Ontario, the waste class under Regulation 347 is: 233L

SMALL SPILLS:

Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area.

LARGE SPILLS:

Contain liquid using absorbent material, by digging trenches or by dyking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Contact approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated.

Dispose of wastes in an approved incinerator or waste treatment/disposal site, in accordance with all applicable regulations. Do not dispose of wastes in local sewer or with normal garbage.

ENVIRONMENTAL PRECAUTIONS

This product should NOT be directly discharged into lakes, ponds, streams, waterways or public water supplies.

As a non-hazardous liquid waste, it should be solidified with stabilizing agents (such as sand, fly ash, or cement) so that no free liquid remains before disposal to an industrial waste landfill. A non-hazardous liquid waste can also be incinerated in accordance with local, state, provincial and federal regulations.

9. INDUSTRIAL HYGIENE CONTROL MEASURES

OCCUPATIONAL EXPOSURE LIMITS:

This product does not contain any substance that has an established exposure limit.

Respiratory Protection: None normally required.

For large spills, entry into large tanks, vessels or enclosed small spaces with inadequate ventilation, a positive pressure, self-contained breathing apparatus is recommended.

Ventilation: General ventilation is recommended.

Eye Protection: Safety glasses, if personally preferred

Gloves: Generally not necessary. Personal preference. Examples of impermeable gloves available on the market are neoprene, nitrile, PVC, natural rubber, viton, and butyl (compatibility studies have not been performed).

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

10. TOXICOLOGICAL PROPERTIES

SENSITIZATION:

This product is not expected to be a sensitizer.

A "LC50-96" Pass/Fail Bioassay test. This test determines the lethality of a fluid on young aquatic organisms. The fluid fails if 50% or more of the animals are dead after 96 hours in the fluid.

96 hour static acute LC50 to Rainbow Trout = Greater than 1,000 mg/L

96 hour no observed effect concentration = 125 mg/L based on no mortality or abnormal effects

96 hour static acute LC50 to Sheepshead Minnow = Greater than 1,000 mg/L

96 hour no observed effect concentration = 1,000 mg/L (highest concentration tested) based on no mortality or abnormal effects.

96 hour static acute LC50 to Mysid Shrimp = 400 mg/L

96 hour no observed effect concentration = 180 mg/L based on no mortality or abnormal effects.

96 hour static acute LC50 to Daphnia Magna - 400 mg/L

96 hour no observed effect concentration = 56 mg/L (lowest concentration tested) based on no mortality or abnormal effects.

Microtoxicity

The Microtox bioassay has been established as the reference test for mud additive toxicity testing.

Test Method: Luminescent Bacteria, IC50@ 15 min

Reference: Appendix 1: Microtox Bioassay Procedure, Drilling Waste Management, Guide G50. 1993. Alberta Energy and Utilities Board, Calgary, AB, Canada.

Sample: Poly Drill 1330, sample #97324-1 for test #970723, 97/05/09 by D. Lintott

Preparation: Sample was diluted to 2 g/L, which formed thick, slightly cloudy liquid. The sample was then centrifuged for 1 hour.

Test Results:

SAMPLE	TREATMENT	%CTL	IC20%	IC50	RESULT
97324-1	None	N/A	14 (9-22)	>91	PASS

The following results are for a 1% aqueous solution of product.

CARCINOGENICITY:

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Government Industrial Hygienists (ACGIH).

HUMAN HAZARD CHARACTERIZATION:

Based on our Hazard Characterization, the potential human hazard is: LOW

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION:

Based on our Hazard Characterization, the potential environmental hazard is: LOW.

11. DEPARTMENT OF TRANSPORTATION INFORMATION

PROPER SHIPPING NAME/HAZARD CLASS MAY VARY BY PACKAGING, PROPERTIES, AND MODE OF TRANSPORTATION. TYPICAL PROPER SHIPPING NAMES FOR THIS PRODUCT ARE:

ALL TRANSPORTATION MODES: PRODUCT IS NOT REGULATED DURING TRANSPORTATION

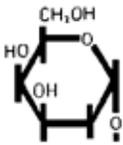
Shipping Name: Liquid Drilling Additive

Hazard Class: Not hazardous

Cautionary Labeling: None required

14. OTHER INFORMATION

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



Poly-Drill Drilling Systems

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poly-drill.com



MATERIAL SAFETY DATA SHEET/FICHE SIGNALÉTIQUE

1. PRODUCT IDENTIFICATION

PRODUCT TRADE NAME(S): Poly Drill O.B.X.
WHMIS CLASSIFICATION: Non-regulated
TDG Classification: Non dangerous goods
DATE: January 17, 2004

A liquid polymer containing guar gum, mineral oil, vegetable oil, acrylamide copolymer and a surfactant: Evaluation of the ingredient(s) has found no ingredient(s) hazardous as per WHMIS regulations.

2. PHYSICAL DATA

Boiling Point: Not available
Specific Gravity: 0.9 g/cm
Solubility in Water: disperses in water(forms viscous, slippery solution).
pH: 3.8 (1% concentration)
Density (g/ml): Not available
Physical State: Liquid
Appearance and Odor: Brown. Odor slight.

3. FIRE AND EXPLOSION DATA

Flash Point (method used): (PMCC) greater than 100 C.
Conditions of flammability: Very low risk.
Hazardous combustion products: None known.
Upper and Lower flammable limits: Not available.
Extinguishing media: Carbon dioxide, dry chemicals, foam, in preference to water spray

4. REACTIVITY

Chemical stability: Stable under normal conditions.
Hazardous Polymerization: Will not occur.
Incompatible substances: Avoid strong oxidants such as liquid chlorine, concentrated oxygen, sodium or calcium hypo chloride.
Hazardous decomposition products: None known

5. HEALTH HAZARD DATA

TOXICITY RATING: Practically non-harmful.

Routes of Exposure and Effects:

SKIN: Slight irritant: prolonged contact may cause skin irritation or dermatitis in some individuals

EYE: No effects of exposure expected with the exception of possible irritation.

INHALATION: Due to low volatility of mineral distillates a small inhalation hazard exists.

INGESTION: can cause nausea, vomiting, cramps, diarrhea
Chronic exposure limits: None
Sensitization of product: Not suspected to be a sensitizer.
Teratogenicity: Not available.
Mutagenicity: Not available.
Carcinogenicity: None of the components of this product are listed as carcinogens by IARC and ACGIH

6. EMERGENCY AND FIRST AID PROCEDURES

SKIN: Wash exposed area with soap and water. Remove contaminated clothing. Launder contaminated clothing before re-use. If irritation or abnormalities persist, call a physician.

EYE: Immediately flush eyes with water for 15 minutes, lifting upper and lower lids occasionally. Get medical attention.

INHALATION: Remove to fresh air. If breathing becomes difficult, give oxygen and call a physician.

INGESTION: Do not induce vomiting: Call a physician immediately or poison control center. Never give anything by mouth to an unconscious person. Seek medical advice.

8. INDUSTRIAL HYGIENE CONTROL MEASURES

Respiratory Protection: None normally required.

Ventilation: If mist and/or vapors are present, use air purifying respirator or self-contained breathing apparatus, but this is rarely required.

Eye Protection: Safety glasses, if personally preferred

Gloves: Generally not necessary. Personal preference.

7. HANDLING AND USE PRECTIONS

Storage requirements: keep container closed when no in use. Store in a cool dry location away from oxidizing and reducing agents.

Waste Disposal: product should be disposed of in accordance with applicable local, Provincial and Federal regulations.

Steps must be taken if product is released or spilled: clean spill areas thoroughly to avoid hazardous slippery conditions.

8. TOXICOLOGICAL PROPERTIES

G50 Microtox Analysis prepared by HydroQual Laboratories, Calgary, AB--97/6/26 Test#970978:

Test Description	EC20	EC50	Pass/Fail
MTX	>91	>91	PASS

9. DEPARTMENT OF TRANSPORTATION INFORMATION

Shipping Name: Liquid Drilling Additive

Hazard Class: Not hazardous

Hazardous Substances: None

Cautionary Labeling: None required



WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
	D-2A, D-2B		

Section 1. Chemical Product and Company Identification	
Product Name ANTIFREEZE	Code W269
Synonym Universal Antifreeze, Radiator Antifreeze, Diesel Antifreeze, Petro-Canada Antifreeze-Coolant, Petro-Canada Heavy Duty Antifreeze-Coolant, Pre-Mix Antifreeze, Petro-Canada Premium Radiator Antifreeze, Diesel Engine Coolant.	Validated on 7/6/2004.
Manufacturer PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3	In case of Emergency Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).
Material Uses Used as an engine antifreeze coolant.	

Section 2. Composition and Information on Ingredients					
			<i>Exposure Limits (ACGIH)</i>		
Name	CAS #	% (W/W)	TLV-TWA(8 h)	STEL	CEILING
Ethylene glycol	107-21-1	≥90	Not established	Not established	100 mg/m ³ (aerosol)
Sodium tetraborate pentahydrate (Diesel Engine Coolant only)	12179-04-3	≤5	1 mg/m ³	Not established	Not established
Manufacturer Recommendation	Not applicable				
Other Exposure Limits	Consult local, state, provincial or territory authorities for acceptable exposure limits.				

Section 3. Hazards Identification.	
Potential Health Effects	Contact with this product may cause eye irritation. Not expected to cause more than slight skin irritation. Inhalation of this product may cause respiratory tract irritation. Ingestion may be extremely hazardous. May cause teratogenicity/embryotoxicity. May cause damage to reproductive organs. For more information refer to Section 11 of this MSDS.

Section 4. First Aid Measures	
Eye Contact	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Seek medical attention.
Inhalation	Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform artificial respiration. Allow the victim to rest in a well ventilated area. Seek medical attention.
Ingestion	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Seek medical attention.
Note to Physician	Not available

Section 5. Fire-fighting Measures	
Flammability	May be combustible at high temperature.
Flash Points	Closed Cup: 116°C (241°F) (Tagliabue) Open Cup: 116°C (241°F) (Cleveland)
Flammable Limits	Lower: 3.2%, Upper: 15.3%
Auto-Ignition Temperature	413°C (775°F)

Fire Hazards in Presence of Various Substances	Low fire hazard. This material must be heated before ignition will occur.	Explosion Hazards in Presence of Various Substances	Do not cut, weld, heat, drill or pressurize empty container.
Products of Combustion	Carbon oxides (CO, CO ₂), smoke and irritating vapours as products of incomplete combustion.		
Fire Fighting Media and Instructions	NAERG96, GUIDE 171, Substances (low to moderate hazard). If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (0.5 mile) in all directions; also, consider initial evacuation for 800 meters (0.5 mile) in all directions. Shut off fuel to fire if it is possible to do so without hazard. If this is impossible, withdraw from area and let fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discolouration of tank due to fire. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. SMALL FIRE: use DRY chemicals, foam, water spray or CO ₂ . LARGE FIRE: use water spray, fog or foam. For small outdoor fires, portable fire extinguishers may be used, and self contained breathing apparatus (SCBA) may not be required. For all indoor fires and any significant outdoor fires, SCBA is required. Respiratory and eye protection are required for fire fighting personnel.		

Section 6. Accidental Release Measures

Material Release or Spill	IN THE EVENT OF A LARGE SPILL CONSIDER THE FOLLOWING CONTROL MEASURES: Consult current National Emergency Response Guide Book (NAERG) for appropriate spill measures if necessary. Extinguish all ignition sources. Stop leak if safe to do so. Dike spilled material. Use appropriate inert absorbent material to absorb spilled product. Collect used absorbent for later disposal. Ventilate area. Ensure clean-up personnel wear appropriate personal protective equipment. Avoid breathing vapours or mists of material. Avoid contact with spilled material. Avoid contaminating sewers, streams, rivers and other water courses with spilled material. Notify appropriate authorities immediately.
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Section 7. Handling and Storage

Handling	Avoid contact with any sources of ignition, flames, heat, and sparks. Avoid confined spaces and areas with poor ventilation. Avoid skin contact. Avoid eye contact. Avoid inhalation of product vapours or mists. Do not ingest this product. Wear proper personal protective equipment (See Section 8). Empty containers may contain product residue. Do not pressurize, cut, heat, or weld empty containers. Do not reuse containers without commercial cleaning and/or reconditioning. Personnel who handle this material should practice good personal hygiene during and after handling to help prevent accidental ingestion of this product. Properly dispose of contaminated leather articles including shoes that cannot be decontaminated.
Storage	Store in dry, cool, well-ventilated area. Store away from heat and sources of ignition. Keep container tightly closed. Store away from incompatible and reactive materials (See section 5 and 10).

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection	- The selection of personal protective equipment varies, depending upon conditions of use.
Eyes	Chemical splash goggles should be worn when handling this material.
Body	If this material may come into contact with the body during handling and use, we recommend wearing appropriate protective clothing to prevent contact with the skin. (Contact your PPE provider for more information).
Respiratory	A minimum of NIOSH-approved air-purifying respirator with a 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	If this material may come in contact with the hands during handling and use, we recommend wearing gloves of the following material(s): Neoprene, Polyvinyl chloride (PVC). Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Clear viscous liquid.	Viscosity	Not available
Colour	Green.	Pour Point	Not available
Odour	Odourless.	Softening Point	Not applicable.
Odour Threshold	Not available	Dropping Point	Not applicable.
Boiling Point	129 to 197°C (264 to 387°F)	Penetration	Not applicable.
Density	1.115 to 1.145 (Water = 1)	Oil / Water Dist. Coefficient	Not available
Vapour Density	2.1 (Air=1).	Ionicity (in water)	Not available
Vapour Pressure	0.06 mmHg @ 20°C (68°F).	Dispersion Properties	Not available
Volatility	0% (w/w)	Solubility	Soluble in water, methanol and diethyl ether.

Section 10. Stability and Reactivity

Corrosivity	Not available		
Stability	The product is stable.	Hazardous Polymerization	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents, acids, alkalis, perchloric acid, phosphorus, silvered copper wires carrying DC current, aliphatic amines, isocyanates, chlorosulfonic acid and oluem.	Decomposition Products	May release CO _x , smoke and irritating vapours when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation and ingestion.		
Acute Lethality	<u>Ethylene glycol (107-21-1):</u> LD50: 4700 mg/kg (oral/rat). LD50: 9530 mg/kg (dermal/rabbit). <u>Sodium tetraborate pentahydrate (12179-04-3):</u> LD50: 3200-3500 mg/kg (oral/rat) (Boric acid). [Sodium tetraborate pentahydrate]		
Chronic or Other Toxic Effects	Dermal Route: Short-term exposure is expected to cause only slight irritation, if any. Inhalation Route: Inhalation of this product may cause respiratory tract irritation. Oral Route: Extremely dangerous in case of ingestion. Eye Irritation/Inflammation: This product contains a component (at >= 1%) that can cause eye irritation. Therefore, this product is considered to be an eye irritant. Immunotoxicity: Not available Skin Sensitization: Contact with this product is not expected to cause skin sensitization, based upon the available data and the known hazards of the components. Respiratory Tract Sensitization: Contact with this product is not expected to cause respiratory tract sensitization, based upon the available data and the known hazards of the components. Mutagenic: This product is not known to contain any components at >= 0.1% that have been shown to cause mutagenicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a mutagen. Reproductive Toxicity: Borates are possible reproductive toxins based upon available animal ingestion studies in several species. These studies usually involved high doses, over prolonged periods of time. A human study following occupational exposure to borate by inhalation concluded that, no adverse effects to reproduction were found in this population, under the conditions of this study. Teratogenicity/Embryotoxicity: This product contains a component(s) at >= 0.1% that has been shown to cause teratogenicity and/or embryotoxicity in laboratory tests. Therefore, this product is considered to be a teratogen/embryotoxin (Ethylene glycol).		

Carcinogenicity (ACGIH):	ACGIH A4: not classifiable as a human carcinogen (Ethylene glycol). This product is not known to contain any chemicals at reportable quantities that are listed as Group A1, A2, or A3 carcinogens by ACGIH.
Carcinogenicity (IARC):	This product is not known to contain any chemicals at reportable quantities that are listed as Group 1, 2A, or 2B carcinogens by IARC.
Carcinogenicity (NTP):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.
Carcinogenicity (IRIS):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by IRIS.
Carcinogenicity (OSHA):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.
Other Considerations	The substance may be toxic to kidneys and liver. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 12. Ecological Information

Environmental Fate	Not available	Persistence/ Bioaccumulation Potential	Not available
BOD5 and COD	Not available	Products of Biodegradation	Not available
Additional Remarks No additional remark.			

Section 13. Disposal Considerations

Waste Disposal	Spent/ used/ waste product may meet the requirements of a hazardous waste. Consult your local or regional authorities. Ensure that waste management processes are in compliance with government requirements and local disposal regulations.
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Section 14. Transport Information

TDG Classification	Not a hazardous material for transport according to the TDG Regulations. (Canada)	Special Provisions for Transport	Not applicable.
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Section 15. Regulatory Information

Other Regulations	All of the components of this product are on the Domestic Substances List (DSL), are considered to be on the DSL, or are exempt from the New Substance Notification (NSN) requirements.																						
	All components of this formulation are listed on the US EPA-TSCA Inventory.																						
	This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.																						
	Please contact Product Safety for more information.																						
DSD/DPD (Europe)	Not evaluated.	HCS (U.S.A.)	CLASS: Target organ effects. CLASS: Irritating substance.																				
ADR (Europe) (Pictograms)	NOT EVALUATED FOR EUROPEAN TRANSPORT NON ÉVALUÉ POUR LE TRANSPORT EUROPÉEN.	DOT (U.S.A) (Pictograms)																					
HMIS (U.S.A.)	<table border="1"> <tr> <td>Health Hazard</td> <td>2*</td> </tr> <tr> <td>Fire Hazard</td> <td>1</td> </tr> <tr> <td>Reactivity</td> <td>0</td> </tr> <tr> <td>Personal Protection</td> <td>H</td> </tr> </table>	Health Hazard	2*	Fire Hazard	1	Reactivity	0	Personal Protection	H	NFPA (U.S.A.)	<table border="1"> <tr> <td>Health</td> <td>2</td> <td>Fire Hazard</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>Reactivity</td> <td>0</td> </tr> <tr> <td></td> <td></td> <td>Specific hazard</td> <td></td> </tr> </table>	Health	2	Fire Hazard	1			Reactivity	0			Specific hazard	
Health Hazard	2*																						
Fire Hazard	1																						
Reactivity	0																						
Personal Protection	H																						
Health	2	Fire Hazard	1																				
		Reactivity	0																				
		Specific hazard																					
		Rating	0 Insignificant 1 Slight 2 Moderate 3 High 4 Extreme																				

Section 16. Other Information

References Available upon request.
* Marque de commerce de Petro-Canada - Trademark

Glossary

ACGIH - American Conference of Governmental Industrial Hygienists	IRIS - Integrated Risk Information System
ADR - Agreement on Dangerous goods by Road (Europe)	LD50/LC50 - Lethal Dose/Concentration kill 50%
ASTM - American Society for Testing and Materials	LDLo/LCLo - Lowest Published Lethal Dose/Concentration
BOD5 - Biological Oxygen Demand in 5 days	NAERG'96 - North American Emergency Response Guide Book (1996)
CAN/CGA B149.2 Propane Installation Code	NFPA - National Fire Prevention Association
CAS - Chemical Abstract Services	NIOSH - National Institute for Occupational Safety & Health
CEPA - Canadian Environmental Protection Act	NPRI - National Pollutant Release Inventory
CERCLA - Comprehensive Environmental Response, Compensation and Liability Act	NSNR - New Substances Notification Regulations (Canada)
CFR - Code of Federal Regulations	NTP - National Toxicology Program
CHIP - Chemicals Hazard Information and Packaging Approved Supply List	OSHA - Occupational Safety & Health Administration
COD5 - Chemical Oxygen Demand in 5 days	PEL - Permissible Exposure Limit
CPR - Controlled Products Regulations	RCRA - Resource Conservation and Recovery Act
DOT - Department of Transport	SARA - Superfund Amendments and Reorganization Act
DSCL - Dangerous Substances Classification and Labeling (Europe)	SD - Single Dose
DSD/DPD - Dangerous Substances or Dangerous Preparations Directives (Europe)	STEL - Short Term Exposure Limit (15 minutes)
DSL - Domestic Substance List	TDG - Transportation Dangerous Goods (Canada)
EEC/EU - European Economic Community/European Union	TDL0/TCL0 - Lowest Published Toxic Dose/Concentration
EINECS - European Inventory of Existing Commercial Chemical Substances	Tlm - Median Tolerance Limit
EPCRA - Emergency Planning and Community Right to Know Act	TLV-TWA - Threshold Limit Value-Time Weighted Average
FDA - Food and Drug Administration	TSCA - Toxic Substances Control Act
FIFRA - Federal Insecticide, Fungicide and Rodenticide Act	USEPA - United States Environmental Protection Agency
HCS - Hazardous Communication System	USP - United States Pharmacopoeia
HMIS - Hazardous Material Information System	WHMIS - Workplace Hazardous Material Information System
IARC - International Agency for Research on Cancer	

For Copy of MSDS

Internet: www.petro-canada.ca/msds

Fuels & Solvents:

Western Canada, Ontario & Central Canada, telephone: 1-800-668-0220; fax: 1-800-837-1228

Quebec & Eastern Canada, telephone: 514-640-8308; fax: 514-640-8385

For Product Safety Information: (905) 804-4752

Prepared by Product Safety - TLM on 7/6/2004.

Data entry by Product Safety - RS.

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.



WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
	Not controlled		

Section 1. Chemical Product and Company Identification			
Product Name	CHAIN OIL (SUMMER, WINTER)	Code	CHAS, 490-431 CHAW, 490-430
Synonym	Not available	Validated on	5/6/2003.
Manufacturer	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3	In case of Emergency	Petro-Canada: 403-296-3000 Canotec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).
Material Uses	These products are designed for lubrication of chain saw chains in both high and low ambient temperatures.		

Section 2. Composition and Information on Ingredients					
			<i>Exposure Limits (ACGIH)</i>		
Name	CAS #	% (V/V)	TLV-TWA(8 h)	STEL	CEILING
1) Mixture of severely hydrotreated and hydrocracked and/or solvent-refined base oil (petroleum) and other proprietary, non-hazardous additives.	Mixture	100	5 mg/m ³ (oil mist)	10 mg/m ³ (oil mist)	Not established
Manufacturer Recommendation	Not applicable				
Other Exposure Limits	Consult local, state, provincial or territory authorities for acceptable exposure limits.				

Section 3. Hazards Identification.	
Potential Health Effects	Non irritating to slight transient irritation to skin and eyes, but no permanent damage. Relatively non-toxic via ingestion. This product has a low vapour pressure and is not expected to present an inhalation exposure at ambient conditions. Upon heating to high temperatures, or mechanical actions which may produce vapours or mists, inhalation of product may cause irritation of the breathing passages. For more information, refer to Section 11.

Section 4. First Aid Measures	
Eye Contact	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Seek medical attention.
Inhalation	Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform artificial respiration. Allow the victim to rest in a well ventilated area. Seek medical attention.
Ingestion	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Seek medical attention.
Note to Physician	Not available

Section 5. Fire-fighting Measures			
Flammability	May be combustible at high temperature.	Flammable Limits	Not available
Flash Points	OPEN CUP: ≥168°C (334.4°F) (Cleveland)	Auto-Ignition Temperature	Not available
Fire Hazards in Presence of Various Substances	Low fire hazard. This material must be heated before ignition will occur.	Explosion Hazards in Presence of Various Substances	Do not cut, weld, heat, drill or pressurize empty container. Containers may explode in heat of fire.
Products of Combustion	Carbon oxides (CO, CO ₂), nitrogen oxides (NO _x), sulphur oxides (SO _x), sulphur compounds (H ₂ S), phosphorus compounds (PO _x), smoke and irritating vapours as products of incomplete combustion.		

Fire Fighting Media and Instructions	NAERG96, GUIDE 171, Substances (low to moderate hazard). If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (0.5 mile) in all directions; also, consider initial evacuation for 800 meters (0.5 mile) in all directions. Shut off fuel to fire if it is possible to do so without hazard. If this is impossible, withdraw from area and let fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discolouration of tank due to fire. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. SMALL FIRE: use DRY chemicals, foam, water spray or CO2. LARGE FIRE: use water spray, fog or foam. For small outdoor fires, portable fire extinguishers may be used, and self contained breathing apparatus (SCBA) may not be required. For all indoor fires and any significant outdoor fires, SCBA is required. Respiratory and eye protection are required for fire fighting personnel.
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Section 6. Accidental Release Measures

Material Release or Spill	Consult current National Emergency Response Guide Book (NAERG) for appropriate spill measures if necessary. Extinguish all ignition sources. Stop leak if safe to do so. Dike spilled material. Use appropriate inert absorbent material to absorb spilled product. Collect used absorbent for later disposal. Avoid contact with spilled material. Avoid contaminating sewers, streams, rivers and other water courses with spilled material. Notify appropriate authorities immediately.
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Section 7. Handling and Storage

Handling	Avoid contact with any sources of ignition, flames, heat, and sparks. Avoid skin contact. Avoid eye contact. Avoid inhalation of product vapours or mists. Empty containers may contain product residue. Do not pressurize, cut, heat, or weld empty containers. Do not reuse containers without commercial cleaning and/or reconditioning. Personnel who handle this material should practice good personal hygiene during and after handling to help prevent accidental ingestion of this product. Properly dispose of contaminated leather articles including shoes that cannot be decontaminated.
Storage	Store in dry, cool, well-ventilated area. Keep container tightly closed. Store away from incompatible and reactive materials (See section 5 and 10).

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection - <i>The selection of personal protective equipment varies, depending upon conditions of use.</i>	
Eyes	Eye protection (i.e., safety glasses, safety goggles and/or face shield) should be determined based on conditions of use. If product is used in an application where splashing may occur, the use of safety goggles and/or a face shield should be considered.
Body	Wear appropriate clothing to prevent skin contact. As a minimum long sleeves and trousers should be worn.
Respiratory	Where concentrations in air may exceed the occupational exposure limits given in Section 2 (and those applicable to your area) and where engineering, work practices or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.
Hands	Wear appropriate chemically protective gloves. When handling hot product ensure gloves are heat resistant and insulated.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Stringy liquid.	Viscosity	CHAS: 155 cSt @ 40°C (104°F), 16.2 cSt @ 100°C (212°F), VI=109 CHAW: 32 @ 40°C (104°F), 6.29 cSt @ 100°C (212°F), VI=151
Colour	Dark red.	Pour Point	CHAS: -21°C (-6°F) CHAW: -42°C (-44°F)
Odour	Slight petroleum oil like.	Softening Point	Not applicable.
Odour Threshold	Not available	Dropping Point	Not applicable.
Boiling Point	Not available	Penetration	Not applicable.
Density	0.831 - 0.88 kg/L @ 15°C (59°F).	Oil / Water Dist. Coefficient	Not available
Vapour Density	Not available	Ionicity (in water)	Not available
Vapour Pressure	Negligible at ambient temperature and pressure.	Dispersion Properties	Not available
Volatility	Non-volatile.	Solubility	Insoluble in water.

Section 10. Stability and Reactivity

Corrosivity	Copper corrosion, 3h, 100°C (ASTM D0130): 1a		
Stability	The product is stable under normal handling and storage conditions.	Hazardous Polymerization	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents, reducing agents and acids.	Decomposition Products	May release CO _x , NO _x , SO _x , H ₂ S, PO _x , smoke and irritating vapours when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation and ingestion.		
Acute Lethality	Not available		
Chronic or Other Toxic Effects			
Dermal Route:	Prolonged or repeated contact may cause skin irritation characterized by dermatitis or oil acne.		
Inhalation Route:	Negligible breathing hazard at normal temperatures (up to 38°C) or recommended blending temperatures. Elevated temperatures or mechanical action may form vapours, mists or fumes. Inhalation of oil mists or vapours from hot oil may cause irritation of the upper respiratory tract.		
Oral Route:	Low toxicity; has laxative effect.		
Eye Irritation/Inflammation:	Repeated or prolonged contact may cause transient irritation, but no permanent damage.		
Immunotoxicity:	Not available		
Skin Sensitization:	This product is not expected to be a skin sensitizer, based on the available data and the known hazards of the components.		
Respiratory Tract Sensitization:	This product is not expected to be a respiratory tract sensitizer, based on the available data and the known hazards of the components.		
Mutagenic:	This product is not expected to be a mutagen, based on the available data and the known hazards of the components.		
Reproductive Toxicity:	This product is not expected to be a reproductive hazard, based on the available data and the known hazards of the components.		
Teratogenicity/Embryotoxicity:	This product is not expected to be a teratogen or an embryotoxin, based on the available data and the known hazards of the components.		
Carcinogenicity (ACGIH):	This product is not known to contain any chemicals at reportable quantities that are listed as A1 or A2 carcinogens by ACGIH.		
Carcinogenicity (IARC):	This product is not known to contain any chemicals at reportable quantities that are listed as group 1, 2A or 2B carcinogens by IARC.		
Carcinogenicity (NTP):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.		
Carcinogenicity (IRIS):	Not available		
Carcinogenicity (OSHA):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.		
Other Considerations	No additional remark		

Section 12. Ecological Information

Environmental Fate	Not available	Persistence/Bioaccumulation Potential	Not available
BOD5 and COD	Not available	Products of Biodegradation	Not available
Additional Remarks	No additional remark.		

Section 13. Disposal Considerations

Waste Disposal	Spent/ used/ waste product may meet the requirements of a hazardous waste. Consult your local or regional authorities. Ensure that waste management processes are in compliance with government requirements and local disposal regulations.		
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Section 14. Transport Information**TDG Classification** Not controlled under TDG (Canada).**Special Provisions for Transport** Not applicable.**Section 15. Regulatory Information****Other Regulations** This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List).

All components of this formulation are listed on the US EPA-TSCA Inventory.

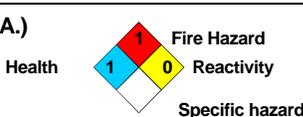
All components of this formulation are listed on EINECS or are exempt.

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

Please contact Product Safety for more information.

DSD/DPD (Europe) Not classified under the Dangerous Substances or Dangerous Preparations Directives.**HCS (U.S.A.)** Not controlled under the HCS (United States).**ADR (Europe) (Pictograms)****DOT (U.S.A) (Pictograms)****HMIS (U.S.A.)**

Health Hazard	1
Fire Hazard	1
Reactivity	0
Personal Protection	B

NFPA (U.S.A.)

Rating	0 Insignificant
	1 Slight
	2 Moderate
	3 High
	4 Extreme

Section 16. Other Information**References** Available upon request.
* Marque de commerce de Petro-Canada - Trademark**Glossary**

ACGIH - American Conference of Governmental Industrial Hygienists
 ADR - Agreement on Dangerous goods by Road (Europe)
 ASTM - American Society for Testing and Materials (
 BOD5 - Biological Oxygen Demand in 5 days
 CAN/CGA B149.2 Propane Installation Code
 CAS - Chemical Abstract Services
 CEPA - Canadian Environmental Protection Act
 CERCLA - Comprehensive Environmental Response, Compensation and Liability Act
 CFR - Code of Federal Regulations
 CHIP - Chemicals Hazard Information and Packaging Approved Supply List
 COD5 - Chemical Oxygen Demand in 5 days
 CPR - Controlled Products Regulations
 DOT - Department of Transport
 DSCL - Dangerous Substances Classification and Labeling (Europe)
 DSD/DPD - Dangerous Substances or Dangerous Preparations Directives (Europe)
 DSL - Domestic Substance List
 EEC/EU - European Economic Community/European Union
 EINECS - European Inventory of Existing Commercial Chemical Substances
 EPCRA - Emergency Planning and Community Right to Know Act
 FDA - Food and Drug Administration
 FIFRA - Federal Insecticide, Fungicide and Rodenticide Act
 HCS - Hazardous Communication System
 HMIS - Hazardous Material Information System
 IARC - International Agency for Research on Cancer

IRIS - Integrated Risk Information System
 LD50/LC50 - Lethal Dose/Concentration kill 50%
 LDLo/LCLo - Lowest Published Lethal Dose/Concentration
 NAERG'96 - North American Emergency Response Guide Book (1996)
 NFPA - National Fire Prevention Association
 NIOSH - National Institute for Occupational Safety & Health
 NPRI - National Pollutant Release Inventory
 NSNR - New Substances Notification Regulations (Canada)
 NTP - National Toxicology Program
 OSHA - Occupational Safety & Health Administration
 PEL - Permissible Exposure Limit
 RCRA - Resource Conservation and Recovery Act
 SARA - Superfund Amendments and Reorganization Act
 SD - Single Dose
 STEL - Short Term Exposure Limit (15 minutes)
 TDG - Transportation Dangerous Goods (Canada)
 TDLo/TCLo - Lowest Published Toxic Dose/Concentration
 TLm - Median Tolerance Limit
 TLV-TWA - Threshold Limit Value-Time Weighted Average
 TSCA - Toxic Substances Control Act
 USEPA - United States Environmental Protection Agency
 USP - United States Pharmacopoeia
 WHMIS - Workplace Hazardous Material Information System

For Copy of MSDSInternet: www.petro-canada.ca**Lubricants:**

Western Canada, telephone: 1-800-661-1199; fax: (780) 464-9564
 Ontario & Central Canada, telephone: 1-800-268-5850 and (905) 822-4222; fax: 1-800-201-6285
 Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 800-201-6285

For Product Safety Information: (905) 804-4752

Prepared by Product Safety - JDW on 5/6/2003.

Data entry by Product Safety - JDW.

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.

Section 5. Fire-fighting Measures

Flammability	Class II - combustible liquid (NFPA).	Flammable Limits	LOWER: 0.7%, UPPER: 6% (NFPA)
Flash Points	Diesel Fuel: Closed Cup: >40°C (>104°F) Marine Diesel Fuel: Closed Cup: >60°C (>140°F) Mining Diesel: Closed Cup: 52°C (126°F)	Auto-Ignition Temperature	225°C (437°F)
Fire Hazards in Presence of Various Substances	Flammable in presence of open flames, sparks, or 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.	Explosion Hazards in Presence of Various Substances	Containers may explode in heat of fire. Do not cut, weld, heat, drill or pressurize empty container. Vapour explosion hazard indoors, outdoors or in sewers. Runoff to sewer may create fire or explosion hazard.
Products of Combustion	Carbon oxides (CO, CO ₂), nitrogen oxides (NO _x), sulphur oxides (SO _x), sulphur compounds (H ₂ S), water vapour (H ₂ O), smoke and irritating vapours as products of incomplete combustion. See Section 11 (Other Considerations) for information regarding the toxicity of the combustion products.		
Fire Fighting Media and Instructions	<p>NAERG96, GUIDE 128, Flammable liquids (Non-polar/Water-immiscible). CAUTION: This product has a moderate flash point above 40°C: Use of water spray when fighting fire may be inefficient.</p> <p>If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions.</p> <p>SMALL FIRES: Dry chemical, CO₂, water spray or regular foam. LARGE FIRES: Water spray, fog or regular foam. Do not use straight streams. Move containers from fire area if you can do it without risk. Fires Involving Tanks or Car/Trailer Loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.</p> <p>Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting devices or any discoloration of tank. ALWAYS stay away from the ends of tanks. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible withdraw from area and let fire burn. Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.</p>		

Section 6. Accidental Release Measures

Material Release or Spill	Consult current National Emergency Response Guide Book (NAERG) for appropriate spill measures if necessary. IN THE EVENT OF A LARGE SPILL CONSIDER THE FOLLOWING CONTROL MEASURES: Extinguish all ignition sources. Stop leak if safe to do so. Ventilate area. Dike spilled material. Use appropriate inert absorbent material to absorb spilled product. Collect used absorbent for later disposal. Avoid contact with spilled material. Avoid breathing vapours or mists of material. Avoid contaminating sewers, streams, rivers and other water courses with spilled material. Evacuate non-essential personnel. Ensure clean-up personnel wear appropriate personal protective equipment. Ground and bond all equipment used to clean up the spilled material, as it may be a static accumulator. Notify appropriate authorities immediately.
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Section 7. Handling and Storage

Handling	COMBUSTIBLE MATERIAL. Handle with care. Avoid contact with any sources of ignition, flames, heat, and sparks. Avoid skin contact. Avoid eye contact. Avoid inhalation of product vapours or mists. Empty containers may contain product residue. Do not pressurize, cut, heat, or weld empty containers. Do not reuse containers without commercial cleaning and/or reconditioning. Personnel who handle this material should practice good personal hygiene during and after handling to help prevent accidental ingestion of this product. Properly dispose of contaminated leather articles including shoes that cannot be decontaminated. Avoid confined spaces and areas with poor ventilation. Ensure all equipment is grounded/bonded. Wear proper personal protective equipment (See Section 8).
Storage	Store away from heat and sources of ignition. Store in dry, cool, well-ventilated area. Store away from incompatible and reactive materials (See section 5 and 10). Ensure the storage containers are grounded/bonded.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection - <i>The selection of personal protective equipment varies, depending upon conditions of use.</i>	
Eyes	Eye protection (i.e., safety glasses, safety goggles and/or face shield) should be determined based on conditions of use. If product is used in an application where splashing may occur, the use of safety goggles and/or a face shield should be considered.
Body	Wear appropriate clothing to prevent skin contact. As a minimum long sleeves and trousers should be worn.
Respiratory	Where concentrations in air may exceed the occupational exposure limits given in Section 2 (and those applicable to your area) and where engineering, work practices or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.
Hands	Wear appropriate chemically protective gloves. When handling hot product ensure gloves are heat resistant and insulated.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Bright oily liquid.	Viscosity	1.3 - 4.1 cSt @ 40°C (104°F)
Colour	Clear to yellow / brown (may be dyed for taxation purposes).	Pour Point	Variable, -50°C to 0°C (-58°F to -32°F)
Odour	Petroleum oil like.	Softening Point	Not applicable.
Odour Threshold	Not available	Dropping Point	Not applicable.
Boiling Point	150 - 371°C (302-700°F)	Penetration	Not applicable.
Density	0.80 - 0.85 kg/L @ 15°C (59°F)	Oil / Water Dist. Coefficient	Not available
Vapour Density	4.5 (Air = 1)	Ionicity (in water)	Not applicable.
Vapour Pressure	Not available	Dispersion Properties	Not available
Volatility	Semivolatile to volatile.	Solubility	Insoluble in cold water, soluble in non-polar hydrocarbon solvents.

Section 10. Stability and Reactivity

Corrosivity	Not available		
Stability	The product is stable under normal handling and storage conditions.	Hazardous Polymerization	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents and acids.	Decomposition Products	May release COx, NOx, SOx, H2S, H2O, smoke and irritating vapours when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation, and ingestion.		
Acute Lethality	Acute oral toxicity (LD50): 7500 mg/kg (rat).		
Chronic or Other Toxic Effects	<p>Dermal Route: This product contains a component (at $\geq 1\%$) that can cause skin irritation. Therefore, this product is considered to be a skin irritant. Prolonged or repeated contact may defat and dry skin, and cause dermatitis. (See Other Considerations)</p> <p>Inhalation Route: Inhalation of this product may cause respiratory tract irritation. Inhalation 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.</p> <p>Oral Route: 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.</p> <p>Eye Irritation/Inflammation: This product contains a component (at $\geq 1\%$) that can cause eye irritation. Therefore, this product is considered to be an eye irritant.</p> <p>Immunotoxicity: Not available</p> <p>Skin Sensitization: Contact with this product is not expected to cause skin sensitization, based upon the available data and the known hazards of the components.</p> <p>Respiratory Tract Sensitization: Contact with this product is not expected to cause respiratory tract sensitization, based upon the available data and the known hazards of the components.</p> <p>Mutagenic: This product is not known to contain any components at $\geq 0.1\%$ that have been shown to cause mutagenicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a mutagen.</p> <p>Reproductive Toxicity: This product is not known to contain any components at $\geq 0.1\%$ that have been shown to cause reproductive toxicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a reproductive toxin.</p> <p>Teratogenicity/Embryotoxicity: This product is not known to contain any components at $\geq 0.1\%$ that have been shown to cause teratogenicity and/or embryotoxicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a teratogen/embryotoxin.</p> <p>Carcinogenicity (ACGIH): ACGIH A3: animal carcinogen. [Diesel oil] (See Other Considerations)</p> <p>Carcinogenicity (IARC): This product is not known to contain any chemicals at reportable quantities that are listed as Group 1, 2A, or 2B carcinogens by IARC.</p> <p>Carcinogenicity (NTP): This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.</p> <p>Carcinogenicity (IRIS): This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by IRIS.</p>		

Carcinogenicity (OSHA):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.
Other Considerations	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. Diesel engine exhaust particulate is probably carcinogenic to humans (IARC Group 2A).

Section 12. Ecological Information

Environmental Fate	Not available	Persistence/Bioaccumulation Potential	Not available
BOD5 and COD	Not available	Products of Biodegradation	Not available
Additional Remarks	No additional remark.		

Section 13. Disposal Considerations

Waste Disposal	Spent/ used/ waste product may meet the requirements of a hazardous waste. Consult your local or regional authorities. Ensure that waste management processes are in compliance with government requirements and local disposal regulations.
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Section 14. Transport Information

TDG Classification	DIESEL FUEL, 3, UN1202, PGIII (CL-TDG)	Special Provisions for Transport	See Transportation of Dangerous Goods Regulations.
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Section 15. Regulatory Information

Other Regulations	This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List). All components of this formulation are listed on the US EPA-TSCA Inventory. All components of this product are on the European Inventory of Existing Commercial Chemical Substances (EINECS). This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR. Please contact Product Safety for more information.																						
DSD/DPD (Europe)	Not evaluated.	HCS (U.S.A.)	CLASS: Irritating substance. CLASS: Target organ effects. CLASS: Combustible liquid having a flash point between 37.8°C (100°F) and 93.3°C (200°F).																				
ADR (Europe) (Pictograms)	NOT EVALUATED FOR EUROPEAN TRANSPORT NON ÉVALUÉ POUR LE TRANSPORT EUROPÉEN.	DOT (U.S.A) (Pictograms)																					
HMIS (U.S.A.)	<table border="1"> <tr> <td>Health Hazard</td> <td>2*</td> </tr> <tr> <td>Fire Hazard</td> <td>2</td> </tr> <tr> <td>Reactivity</td> <td>0</td> </tr> <tr> <td>Personal Protection</td> <td>H</td> </tr> </table>	Health Hazard	2*	Fire Hazard	2	Reactivity	0	Personal Protection	H	NFPA (U.S.A.)	<table border="1"> <tr> <td>Health</td> <td>2</td> <td>Fire Hazard</td> <td>0</td> <td>Reactivity</td> <td>0</td> </tr> <tr> <td colspan="6" style="text-align: center;">Specific hazard</td> </tr> </table>	Health	2	Fire Hazard	0	Reactivity	0	Specific hazard					
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Section 16. Other Information

References	Available upon request. * Marque de commerce de Petro-Canada - Trademark																														
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DSD/DPD - Dangerous Substances or Dangerous Preparations Directives (Europe)	TDG - Transportation Dangerous Goods (Canada)
DSL - Domestic Substance List	TDLo/TCLo - Lowest Published Toxic Dose/Concentration
EEC/EU - European Economic Community/European Union	TLm - Median Tolerance Limit
EINECS - European Inventory of Existing Commercial Chemical Substances	TLV-TWA - Threshold Limit Value-Time Weighted Average
EPCRA - Emergency Planning and Community Right to Know Act	TSCA - Toxic Substances Control Act
FDA - Food and Drug Administration	USEPA - United States Environmental Protection Agency
FIFRA - Federal Insecticide, Fungicide and Rodenticide Act	USP - United States Pharmacopoeia
HCS - Hazardous Communication System	WHMIS - Workplace Hazardous Material Information System
HMIS - Hazardous Material Information System	
IARC - International Agency for Research on Cancer	

For Copy of MSDSInternet: www.petro-canada.ca/msds

Western Canada, Ontario & Central Canada, telephone: 1-800-668-0220; fax: 1-800-837-1228

Quebec & Eastern Canada, telephone: 514-640-8308; fax: 514-640-8385

For Product Safety Information: (905) 804-4752

Prepared by Product Safety - JDW on 2/6/2004.

Data entry by Product Safety - JDW.

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.



WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
	B-2, D-2A, D-2B		

Section 1. Chemical Product and Company Identification	
Product Name FUEL SYSTEM TREATMENT	Code FST
Synonym Not available	Validated on 5/12/2004.
Manufacturer PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3	In case of Emergency Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).
Material Uses A fuel system treatment that cleans fuel systems to improve performance in gasoline engines.	

Section 2. Composition and Information on Ingredients					
			<i>Exposure Limits (ACGIH)</i>		
Name	CAS #	% (W/W)	TLV-TWA(8 h)	STEL	CEILING
1) Stoddard Solvent	8052-41-3	30-60%	100ppm	Not established	Not established
2) Isopropanol	67-63-0	30-60%	200ppm	400ppm	Not established
3) 1, 2, 4-Trimethylbenzene	95-63-6	0.01-0.1%	Not established	Not established	Not established
4) Xylene (mixed isomers)	1330-20-7	0.01-0.1%	100ppm	150ppm	Not established
Manufacturer Recommendation	Not applicable				
Other Exposure Limits	Consult local, state, provincial or territory authorities for acceptable exposure limits.				

Section 3. Hazards Identification.	
Potential Health Effects	Flammable liquid. Exercise caution when handling this material. Contact with this product may cause skin 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. May cause teratogenicity/embryotoxicity. For more information refer to Section 11 of this MSDS.

Section 4. First Aid Measures	
Eye Contact	Quickly and gently blot or brush away chemical. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 5 minutes or until the chemical is removed, while holding the eyelid(s) open. Obtain medical attention immediately.
Skin Contact	Quickly and gently, blot or brush away excess chemical. Wash gently and thoroughly with warm water and non-abrasive soap for 5 minutes or until the chemical is removed. Remove contaminated clothing, shoes, and leather goods (e.g. watchbands, belts, etc.). If breathing is stopped, trained personnel should begin artificial respiration (AR) or, if the heart has stopped, cardiopulmonary resuscitation (CPR) immediately. Immediately transport victim to an emergency care facility.
Inhalation	If breathing is stopped, trained personnel should begin artificial respiration (AR) or, if the heart has stopped, cardiopulmonary resuscitation (CPR) immediately. Immediately transport victim to an emergency care facility.
Ingestion	NEVER give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 240 to 300 mL (8 to 10 oz.) of water to dilute material in stomach. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. If breathing is stopped, trained personnel should begin artificial respiration (AR) or, if the heart has stopped, cardiopulmonary resuscitation (CPR) immediately. Immediately transport victim to an emergency care facility.
Note to Physician	Not available

Section 5. Fire-fighting Measures	
Flammability Flammable.	Flammable Limits LOWER: 0.9% UPPER: 12%
Flash Points CLOSED CUP: 13°C (55.4°F) (TCC)	Auto-Ignition Temperature Unknown

Fire Hazards in Presence of Various Substances	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. May accumulate in confined spaces.	Explosion Hazards in Presence of Various Substances	Do not cut, weld, heat, drill or pressurize empty container. Containers may explode in heat of fire. Vapours may form explosive mixtures with air. Sensitive to static discharge.
Products of Combustion	Carbon oxides (CO, CO ₂), acrid smoke and irritating vapours as products of incomplete combustion.		
Fire Fighting Media and Instructions	<p>NAERG2000, GUIDE 128, Flammable liquids (Non-polar/Water-immiscible). CAUTION: This product has a moderate flash point above 40°C: Use of water spray when fighting fire may be inefficient.</p> <p>If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions.</p> <p>SMALL FIRES: Dry chemical, CO₂, water spray or regular foam. LARGE FIRES: Water spray, fog or regular foam. Do not use straight streams. Move containers from fire area if you can do it without risk. Fires Involving Tanks or Car/Trailer Loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.</p> <p>Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting devices or any discolouration of tank. ALWAYS stay away from the ends of tanks. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible withdraw from area and let fire burn. Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.</p>		

Section 6. Accidental Release Measures

Material Release or Spill	Evacuate non-essential personnel. Ventilate area. Ensure clean-up personnel wear appropriate personal protective equipment. If spilled in a confined space, ensure appropriate confined space entry protocols are followed. Extinguish all ignition sources. Stop leak if safe to do so. Avoid breathing vapours or mists of material. Avoid contact with spilled material. Use appropriate inert absorbent material to absorb spilled product. Do not use paper or other flammable materials to absorb product. Collect used absorbent for later disposal. Ground and bond all equipment used to clean up the spilled material, as it may be a static accumulator. Consult current National Emergency Response Guide Book (NAERG) for appropriate spill measures if necessary. Do not allow spilled material to enter sewer systems as vapours may accumulate and may cause an explosion/fire hazard. Avoid contaminating sewers, streams, rivers and other water courses with spilled material. Notify appropriate authorities immediately.
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Section 7. Handling and Storage

Handling	FLAMMABLE MATERIAL. Handle with care. Avoid contact with any sources of ignition, flames, heat, and sparks. Ensure all equipment is grounded/bonded. Avoid contact with any incompatible or reactive materials. Wear proper personal protective equipment (See Section 8). Avoid confined spaces and areas with poor ventilation. Remove severely contaminated clothing. Properly dispose of contaminated leather articles including shoes that cannot be decontaminated. Exercise caution when washing/drying clothing contaminated with flammable materials. Avoid skin contact. Avoid eye contact. Avoid inhalation of product vapours or mists. Do not ingest this product. Avoid generating mists. Ensure container is securely closed when not in use. Personnel who handle this material should practice good personal hygiene during and after handling to help prevent accidental ingestion of this product. Empty containers may contain product residue. Do not pressurize, cut, heat, or weld empty containers. Do not reuse containers without commercial cleaning and/or reconditioning.
Storage	Store as flammable material. Store away from heat and sources of ignition. Avoid direct sunlight. Store away from incompatible and reactive materials (See section 5 and 10). Ensure the storage containers are grounded/bonded. Store in a dry, cool and well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Use explosion-proof ventilation equipment. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection - <i>The selection of personal protective equipment varies, depending upon conditions of use.</i>	
Eyes	Chemical splash goggles should be worn when handling this material.
Body	If this material may come into contact with the body during handling and use, we recommend wearing appropriate protective clothing to prevent contact with the skin. (Contact your PPE provider for more information).
Respiratory	A NIOSH-approved air-purifying respirator with an organic vapour cartridge or canister with particulate filter (R and/or P series) 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 or self contained breathing apparatus 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	If this material may come in contact with the hands during handling and use, we recommend wearing gloves of the following material(s): Polyvinyl alcohol (PVA), or Fluoro-elastomer. Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Liquid.	Viscosity	Not available
Colour	Yellow.	Pour Point	Not applicable.
Odour	Alcohol like.	Softening Point	Not applicable.
Odour Threshold	Not available	Dropping Point	Not applicable.
Boiling Point	83°C (181.4°F)	Penetration	Not applicable.
Density	0.79 @ 15°C	Oil / Water Dist. Coefficient	Not available
Vapour Density	>1	Ionicity (in water)	Not available
Vapour Pressure	Not available Evaporation rate: <1 (Ether=1)	Dispersion Properties	Not available
Volatility	>95% (VOCs)	Solubility	Negligible.

Section 10. Stability and Reactivity

Corrosivity	Not available		
Stability	The product is stable under normal handling and storage conditions.	Hazardous Polymerization	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents, peroxides, nitric acid, strong alkalis, strong mineral acids, and oleum.	Decomposition Products	May release CO _x , acrid smoke, and irritating vapours when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation and ingestion.		
Acute Lethality	<p>Acute toxicity information is not available for the product as a whole, therefore, data for the hazardous ingredient is provided below:</p> <p><u>Stoddard Solvent (8052-41-3):</u> Acute Oral toxicity (LD50): >5000 mg/kg (rat) Acute Dermal toxicity (LD50): >3000 mg/kg (rabbit) Acute Inhalation toxicity (LC50): >1300 ppm/4h (rat)</p> <p><u>Isopropanol (67-63-0):</u> Acute Oral toxicity (LD50): 5000 mg/kg (rat) Acute Dermal toxicity (LD50): 12,800 mg/kg (rabbit) Acute Inhalation toxicity (LC50): 17,000 ppm/4h (rat)</p> <p><u>1, 2, 4-Trimethylbenzene (95-63-6):</u> Acute Oral toxicity (LD50): 5000 mg/kg (rat) Acute Inhalation toxicity (LC50): 18,000 mg/m³/4h (rat)</p> <p><u>Xylene (mixed isomers) (1330-20-7):</u> Acute Oral toxicity (LD50): 1590 mg/kg (rat) Acute Dermal toxicity (LD50): >1,700 mg/kg (rabbit) Acute Inhalation toxicity (LC50): 4785 ppm/4h (mouse)</p>		
Chronic or Other Toxic Effects	<p>Dermal Route: This product contains a component (at >= 1%) that can cause skin irritation. Therefore, this product is considered to be a skin irritant.</p> <p>Inhalation Route: Inhalation of this product may cause respiratory tract irritation. Inhalation 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. Frequent or prolonged inhalation of this product may lead to absorption of this product in harmful amounts which may have adverse effects on the: kidneys.</p> <p>Oral Route: Ingestion of this product may cause gastro-intestinal irritation. 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. Ingestion of this product may lead to aspiration of the liquid, especially if vomiting occurs. This may result in chemical pneumonitis (inflammation of the lungs) and/or pulmonary edema (an accumulation of fluid in the lungs).</p> <p>Eye Irritation/Inflammation: This product contains a component (at >= 1%) that can cause eye irritation. Therefore, this product is considered to be an eye irritant.</p> <p>Immunotoxicity: Not available</p> <p>Skin Sensitization: Contact with this product is not expected to cause skin sensitization, based upon the available data and the known hazards of the components.</p>		

Respiratory Tract Sensitization:	Contact with this product is not expected to cause respiratory tract sensitization, based upon the available data and the known hazards of the components.
Mutagenic:	This product is not known to contain any components at >= 0.1% that have been shown to cause mutagenicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a mutagen.
Reproductive Toxicity:	This product is not known to contain any components at >= 0.1% that have been shown to cause reproductive toxicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a reproductive toxin.
Teratogenicity/Embryotoxicity:	This product contains a component(s) at >= 0.1% that has been shown to cause teratogenicity and/or embryotoxicity in some laboratory tests at non-maternally toxic doses. Therefore, this product is considered to be a teratogen/embryotoxin.
Carcinogenicity (ACGIH):	This product is not known to contain any chemicals at reportable quantities that are listed as Group A1, A2, or A3 carcinogens by ACGIH.
Carcinogenicity (IARC):	This product is not known to contain any chemicals at reportable quantities that are listed as Group 1, 2A, or 2B carcinogens by IARC.
Carcinogenicity (NTP):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.
Carcinogenicity (IRIS):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by IRIS.
Carcinogenicity (OSHA):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.
Other Considerations	No additional remark.

Section 12. Ecological Information			
Environmental Fate	Not available	Persistence/Bioaccumulation Potential	Not available
BOD5 and COD	Not available	Products of Biodegradation	Not available
Additional Remarks	No additional remark.		

Section 13. Disposal Considerations	
Waste Disposal	Spent/ used/ waste product may meet the requirements of a hazardous waste. Consult your local or regional authorities. Ensure that waste management processes are in compliance with government requirements and local disposal regulations.

Section 14. Transport Information			
TDG Classification	FLAMMABLE LIQUIDS, N.O.S. (Isopropanol), Class 3, UN 1993, PGII (CL-TDG)	Special Provisions for Transport	This product may be shipped as a Limited Quantity if the volume is ≤1L and in accordance with the Limited Quantity Provisions, (CL-TDG).

Section 15. Regulatory Information																																									
Other Regulations	<p>This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List).</p> <p>This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.</p> <p>Please contact Product Safety for more information.</p>																																								
DSD/DPD (Europe)	Not evaluated.	HCS (U.S.A.)	CLASS: Combustible liquid. CLASS: Irritating substance. CLASS: Target organ effects.																																						
ADR (Europe) (Pictograms)	NOT EVALUATED FOR EUROPEAN TRANSPORT NON ÉVALUÉ POUR LE TRANSPORT EUROPÉEN.	DOT (U.S.A) (Pictograms)																																							
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Section 16. Other Information

References Available upon request.
* Marque de commerce de Petro-Canada - Trademark

Glossary

ACGIH - American Conference of Governmental Industrial Hygienists	IRIS - Integrated Risk Information System
ADR - Agreement on Dangerous goods by Road (Europe)	LD50/LC50 - Lethal Dose/Concentration kill 50%
ASTM - American Society for Testing and Materials	LDLo/LCLo - Lowest Published Lethal Dose/Concentration
BOD5 - Biological Oxygen Demand in 5 days	NAERG'96 - North American Emergency Response Guide Book (1996)
CAN/CGA B149.2 Propane Installation Code	NFPA - National Fire Prevention Association
CAS - Chemical Abstract Services	NIOSH - National Institute for Occupational Safety & Health
CEPA - Canadian Environmental Protection Act	NPRI - National Pollutant Release Inventory
CERCLA - Comprehensive Environmental Response, Compensation and Liability Act	NSNR - New Substances Notification Regulations (Canada)
CFR - Code of Federal Regulations	NTP - National Toxicology Program
CHIP - Chemicals Hazard Information and Packaging Approved Supply List	OSHA - Occupational Safety & Health Administration
COD5 - Chemical Oxygen Demand in 5 days	PEL - Permissible Exposure Limit
CPR - Controlled Products Regulations	RCRA - Resource Conservation and Recovery Act
DOT - Department of Transport	SARA - Superfund Amendments and Reorganization Act
DSCL - Dangerous Substances Classification and Labeling (Europe)	SD - Single Dose
DSD/DPD - Dangerous Substances or Dangerous Preparations Directives (Europe)	STEL - Short Term Exposure Limit (15 minutes)
DSL - Domestic Substance List	TDG - Transportation Dangerous Goods (Canada)
EEC/EU - European Economic Community/European Union	TDLo/TCLo - Lowest Published Toxic Dose/Concentration
EINECS - European Inventory of Existing Commercial Chemical Substances	TLm - Median Tolerance Limit
EPCRA - Emergency Planning and Community Right to Know Act	TLV-TWA - Threshold Limit Value-Time Weighted Average
FDA - Food and Drug Administration	TSCA - Toxic Substances Control Act
FIFRA - Federal Insecticide, Fungicide and Rodenticide Act	USEPA - United States Environmental Protection Agency
HCS - Hazardous Communication System	USP - United States Pharmacopoeia
HMIS - Hazardous Material Information System	WHMIS - Workplace Hazardous Material Information System
IARC - International Agency for Research on Cancer	

For Copy of MSDS

Internet: www.petro-canada.ca/msds

Western Canada, Ontario & Central Canada, telephone: 1-800-668-0220; fax: 1-800-837-1228

Quebec & Eastern Canada, telephone: 514-640-8308; fax: 514-640-8385

For Product Safety Information: (905) 804-4752

Prepared by Product Safety - TLM on 5/12/2004.

Data entry by Product Safety - RS.

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.



Material Safety Data Sheet

WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
	B-2, D-2A, D-2B		

Section 1. Chemical Product and Company Identification	
Product Name GASOLINE, UNLEADED	Code W102E
Synonym Regular, Unleaded Gasoline (US Grade), Mid-Grade, Plus, Super, WinterGas, SummerGas, Supreme, SuperClean WinterGas, RegularClean, PlusClean, Premium, marked or dyed gasoline, Super Premium (94 RO)	Validated on 6/9/2004.
Manufacturer PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3	In case of Emergency Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).
Material Uses 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.	

Section 2. Composition and Information on Ingredients					
			<i>Exposure Limits (ACGIH)</i>		
Name	CAS #	% (V/V)	TLV-TWA(8 h)	STEL	CEILING
Gasoline	8006-61-9	85-100	300 ppm (890 mg/m ³)	500 ppm (1480 mg/m ³)	Not established
Methyl tert-butyl ether	1634-04-4	0-15	40 ppm (144mg/m ³)	Not established	Not established
Note: Petro-Canada does not use MTBE in the manufacturing of its gasoline, however MTBE can be introduced from time to time through the use of external gasoline blendstocks.					
Manufacturer Recommendation	Not applicable				
Other Exposure Limits	Consult local, state, provincial or territory authorities for acceptable exposure limits.				

Section 3. Hazards Identification.	
Potential Health Effects	Possible cancer hazard. Inhalation of vapours can be irritating to respiratory tract and cause CNS depression with symptoms of nausea, headaches, vomiting, dizziness, fatigue, light-headedness, reduced coordination, unconsciousness and possibly death. Skin and eye contact can cause irritation. Toxic if ingested. For more information, refer to Section 11.

Section 4. First Aid Measures	
Eye Contact	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention if irritation persists.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Seek medical attention.
Inhalation	Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform artificial respiration. Allow the victim to rest in a well ventilated area. Seek medical attention.
Ingestion	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Seek medical attention.
Note to Physician	Not available

Section 5. Fire-fighting Measures

Flammability	Flammable liquid (NFPA).	Flammable Limits	Lower: 1.3%; Upper: 7.6% (NFPA).
Flash Points	Closed Cup: -50 to -38°C (-58 to -36°F), ASTM D56 Standard Test Method for Flash Point by Tag Closed Tester.	Auto-Ignition Temperature	257°C (495°F) (NFPA).
Fire Hazards in Presence of Various Substances	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.	Explosion Hazards in Presence of Various Substances	Do not cut, weld, heat, drill or pressurize empty container. Containers may explode in heat of fire. Vapours may form explosive mixtures with air.
Products of Combustion	Carbon oxides (CO, CO ₂), nitrogen oxides (NO _x), polynuclear aromatic hydrocarbons, phenols, smoke and irritating vapours as products of incomplete combustion.		
Fire Fighting Media and Instructions	NAERG96, GUIDE 128, flammable/combustible liquid (non-polar/water-immiscible). CAUTION: This product has a very low flash point, use of water spray when fighting fire may be inefficient. SMALL FIRE: Use DRY chemicals, CO ₂ , water spray or foam. LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet. If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions. DO NOT extinguish a leaking gas flame unless leak can be stopped. Shut off fuel to fire if it is possible to do so without hazard. If this is impossible, withdraw from area and let fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discolouration of tank due to fire. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. Avoid flushing spilled material into sewers, streams or other bodies of water. Self-contained breathing apparatus (SCBA) will be required if approaching the fire from downwind, or to enter enclosed areas or buildings.		

Section 6. Accidental Release Measures

Material Release or Spill	NAERG96, GUIDE 128, flammable/combustible liquid (non-polar/water-immiscible). Evacuate in a downwind direction for at least 300 meters (1000 feet). ELIMINATE ALL IGNITION SOURCES. Ventilate closed spaces before entering. By forced ventilation, maintain concentration of vapour below the range of explosive mixture. Avoid contact, fully-encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire. Stop leak if without risk. Use vapour suppressing foam or water spray to reduce vapours; it may reduce vapour, but it may not prevent ignition in closed spaces; isolate area until vapour has dispersed. Contain spill. Absorb with inert absorbents such as dry clay, or diatomaceous earth, or recover using electrically grounded explosion-proof pumps. Avoid inhaling dust of diatomaceous earth for it may contain silica (very fine particle size), making this a potential respiratory hazard. Place used absorbent in closed metal containers for later disposal or burn absorbent in a suitable combustion chamber. DO NOT FLUSH TO SEWERS, STREAMS OR OTHER BODIES OF WATER. Check with applicable jurisdiction for specific disposal requirements of spilled material and empty containers. Notify the appropriate authorities immediately.
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Section 7. Handling and Storage

Handling	Keep away from heat, spark and other sources of ignition. Empty container may contain flammable/explosive residues or vapours. DO NOT reuse empty containers without commercial cleaning or reconditioning. Ground/bond line and equipment during pumping or transfer to avoid accumulation of static charge. DO NOT USE AS CLEANING FLUID OR SIPHON BY MOUTH. Wear proper protective equipment. Avoid inhalation and contact with skin or eyes. Practice good personal hygiene. Wash hands after handling and before eating. Launder work clothes frequently. Discard saturated leather goods.
Storage	Store in cool, dry, isolated, well-ventilated area, and away from direct sunlight, sources of ignition and incompatibles. Flammable materials should be stored in a separate safety storage cabinet or room. Ground all equipment containing material.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection - The selection of personal protective equipment varies, depending upon conditions of use.	
Eyes	Eye protection (i.e., safety glasses, safety goggles and/or face shield) should be determined based on conditions of use. If product is used in an application where splashing may occur, the use of safety goggles and/or a face shield should be considered.
Body	Wear appropriate clothing to prevent skin contact. As a minimum long sleeves and trousers should be worn.

Respiratory Where concentrations in air may exceed the occupational exposure limits given in Section 2 (and those applicable to your area) and where engineering, work practices or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.

Hands Wear appropriate chemically protective gloves. When handling hot product ensure gloves are heat resistant and insulated.

Feet Wear appropriate footwear to prevent product from coming in contact with feet and skin.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Clear liquid.	Viscosity	Not available
Colour	Clear to slightly yellow, undyed liquid. May be dyed red for taxation purposes.	Pour Point	Not applicable.
Odour	Gasoline. MTBE has a terpene-like odour.	Softening Point	Not applicable.
Odour Threshold	Less than 1 ppm.	Dropping Point	Not applicable.
Boiling Point	25 to 220°C (77 to 428°F) Initial boiling point by ASTM D86 Standard Test Method.	Penetration	Not applicable.
Density	0.7 kg/L @ 15°C (59°F).	Oil / Water Dist. Coefficient	Not available
Vapour Density	3 to 4 (Air = 1) (NFPA).	Ionicity (in water)	Insoluble in water.
Vapour Pressure	<107 kPa @ 37.8°C (100°F)	Dispersion Properties	Not available
Volatility	Volatile.	Solubility	Hydrocarbon components virtually insoluble in water. Soluble in alcohol, ether, chloroform, and benzene. Dissolves fats, oils and natural resins.

Section 10. Stability and Reactivity

Corrosivity	Non corrosive.		
Stability	The product is stable under normal handling and storage conditions.	Hazardous Polymerization	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents, acids.	Decomposition Products	May release CO _x , NO _x , phenols, polynuclear aromatic hydrocarbons, smoke and irritating vapours when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation, and ingestion.		
Acute Lethality	<p>Gasoline: Acute oral toxicity (LD50): 13 600 mg/kg (rat). Acute dermal toxicity (LD50): >5000 mg/kg (rabbit). Acute inhalation toxicity (LC50): >300 000 mg/m³/4h (rat).</p> <p>MTBE: Acute oral toxicity (LD50): 29630 mg/kg (rat). Acute dermal toxicity (LD50): >6800 mg/kg (rabbit). Acute inhalation toxicity (LC50): 23 576 ppm/4h (rat).</p>		
Chronic or Other Toxic Effects	<p>Dermal Route: This product can cause skin irritation. Prolonged or repeated contact with skin may cause dermatitis.</p> <p>Inhalation Route: Inhalation of vapours can be irritating to respiratory tract and cause CNS depression with symptoms of nausea, headaches, vomiting, dizziness, fatigue, light-headedness, reduced coordination, unconsciousness and possibly death.</p> <p>Oral Route: Swallowing or vomiting of the liquid may result in aspiration into the lungs. Can cause CNS depression. (See Inhalation Route for symptoms).</p> <p>Eye Irritation/Inflammation: Can cause irritation to the eyes.</p> <p>Immunotoxicity: Not available</p>		

Skin Sensitization:	This product is not expected to be a skin sensitizer, based on the available data and the known hazards of the components.
Respiratory Tract Sensitization:	This product is not expected to be a respiratory tract sensitizer, based on the available data and the known hazards of the components.
Mutagenic:	This product is not considered to be a mutagen, based on the available data and the known hazards of the components.
Reproductive Toxicity:	This product is not considered to be a reproductive hazard, based on the available data and the known hazards of the components.
Teratogenicity/Embryotoxicity:	This product is not considered to be a teratogen or an embryotoxin, based on the available data and the known hazards of the components.
Carcinogenicity (ACGIH):	ACGIH A3: animal carcinogen. [Gasoline, MTBE]
Carcinogenicity (IARC):	IARC Group 2B: possibly carcinogenic to humans. [Gasoline]
Carcinogenicity (NTP):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.
Carcinogenicity (IRIS):	Not available
Carcinogenicity (OSHA):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.
Other Considerations	Unleaded gasoline caused kidney effects in male rats and liver effects in female mice.

Section 12. Ecological Information			
Environmental Fate	Not available	Persistence/Bioaccumulation Potential	Not available
BOD5 and COD	Not available	Products of Biodegradation	Not available
Additional Remarks	Not available		

Section 13. Disposal Considerations	
Waste Disposal	Preferred waste management priorities are: (1) recycle or reprocess; (2) incineration with energy recovery; (3) disposal at licensed waste disposal facility. Ensure that disposal or reprocessing is in compliance with government requirements and local disposal regulations. Consult your local or regional authorities.

Section 14. Transport Information	
TDG Classification	GASOLINE, 3, UN1203, PGII (CL-TDG)
Special Provisions for Transport	See Transportation of Dangerous Goods Regulations.

Section 15. Regulatory Information																	
Other Regulations	<p>CEPA: This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List). EPA: All components of this formulation are listed on the US EPA-TSCA Inventory.</p> <p>This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR. Please contact Product Safety for more information.</p>																
DSD/DPD (Europe)	Not evaluated.	HCS (U.S.A.)	<p>CLASS: Contains material which may cause cancer.</p> <p>CLASS: Flammable liquid having a flash point lower than 37.8°C (100°F).</p> <p>CLASS: Irritating substance.</p> <p>CLASS: Target organ effects.</p>														
ADR (Europe) (Pictograms)	<p>NOT EVALUATED FOR EUROPEAN TRANSPORT</p> <p>NON ÉVALUÉ POUR LE TRANSPORT EUROPÉEN.</p>	DOT (U.S.A) (Pictograms)															
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Fire Hazard	4																
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Health	2	Fire Hazard	4														
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		Rating	<p>0 Insignificant</p> <p>1 Slight</p> <p>2 Moderate</p>														

Personal Protection (H)

Specific hazard

3 High
4 Extreme

Section 16. Other Information

References Available upon request.
* Marque de commerce de Petro-Canada - Trademark

Glossary

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CFR - Code of Federal Regulations	NTP - National Toxicology Program
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CPR - Controlled Products Regulations	RCRA - Resource Conservation and Recovery Act
DOT - Department of Transport	SARA - Superfund Amendments and Reorganization Act
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DSD/DPD - Dangerous Substances or Dangerous Preparations Directives (Europe)	STEL - Short Term Exposure Limit (15 minutes)
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EEC/EU - European Economic Community/European Union	TDLo/TCLo - Lowest Published Toxic Dose/Concentration
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FDA - Food and Drug Administration	TSCA - Toxic Substances Control Act
FIFRA - Federal Insecticide, Fungicide and Rodenticide Act	USEPA - United States Environmental Protection Agency
HCS - Hazardous Communication System	USP - United States Pharmacopoeia
HMIS - Hazardous Material Information System	WHMIS - Workplace Hazardous Material Information System
IARC - International Agency for Research on Cancer	

For Copy of MSDS

Fuels & Solvents:
Western Canada, telephone: 403-296-4158; fax: 403-296-6551
Ontario & Central Canada, telephone: 1-800-668-0220; fax: 1-800-837-1228
Quebec & Eastern Canada, telephone: 514-640-8308; fax: 514-640-8385

For Product Safety Information: (905) 804-4752

Prepared by Product Safety - JDW on 6/9/2004.

Data entry by Product Safety - RS.

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WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
	Not controlled		

Section 1. Chemical Product and Company Identification	
Product Name	TRAXON* XL SYNTHETIC BLEND 75W-90, 80W-140
Synonym	Not available
Manufacturer	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3
Material Uses	These products are multipurpose automotive hypoid gear lubricants, suitable for use in lower temperatures in passenger cars, trucks and off-highway vehicles.
Code	TRXL759, 470-499-0 TRXL814, 470-500-0
Validated on	5/29/2003.
In case of Emergency	Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).

Section 2. Composition and Information on Ingredients					
Exposure Limits (ACGIH)					
Name	CAS #	% (W/W)	TLV-TWA(8 h)	STEL	CEILING
1) Mixture of severely hydrotreated and hydrocracked and/or solvent-refined base oil (petroleum), synthetic hydrocarbons and other proprietary, non-hazardous additives.	Mixture	100	5 mg/m ³ (oil mist)	10 mg/m ³ (oil mist)	Not established
Manufacturer Recommendation	Not applicable				
Other Exposure Limits	Consult local, state, provincial or territory authorities for acceptable exposure limits.				

Section 3. Hazards Identification.	
Potential Health Effects	Non irritating to slight transient irritation to skin and eyes, but no permanent damage. Relatively non-toxic via ingestion. This product has a low vapour pressure and is not expected to present an inhalation exposure at ambient conditions. Upon heating to high temperatures, or mechanical actions which may produce vapours or mists, inhalation of product may cause irritation of the breathing passages. For more information, refer to Section 11.

Section 4. First Aid Measures	
Eye Contact	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Seek medical attention.
Inhalation	Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform artificial respiration. Allow the victim to rest in a well ventilated area. Seek medical attention.
Ingestion	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Seek medical attention.
Note to Physician	Not available

Section 5. Fire-fighting Measures			
Flammability	May be combustible at high temperature.	Flammable Limits	Not available
Flash Points	OPEN CUP: $\geq 183^{\circ}\text{C}$ (361.4°F) (Cleveland)	Auto-Ignition Temperature	Not available
Fire Hazards in Presence of Various Substances	Low fire hazard. This material must be heated before ignition will occur.	Explosion Hazards in Presence of Various Substances	Do not cut, weld, heat, drill or pressurize empty container. Containers may explode in heat of fire.
Products of Combustion	Carbon oxides (CO, CO ₂), nitrogen oxides (NO _x), sulphur oxides (SO _x), smoke and irritating vapours as products of incomplete combustion.		

Fire Fighting Media and Instructions	NAERG96, GUIDE 171, Substances (low to moderate hazard). If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (0.5 mile) in all directions; also, consider initial evacuation for 800 meters (0.5 mile) in all directions. Shut off fuel to fire if it is possible to do so without hazard. If this is impossible, withdraw from area and let fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discolouration of tank due to fire. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. SMALL FIRE: use DRY chemicals, foam, water spray or CO2. LARGE FIRE: use water spray, fog or foam. For small outdoor fires, portable fire extinguishers may be used, and self contained breathing apparatus (SCBA) may not be required. For all indoor fires and any significant outdoor fires, SCBA is required. Respiratory and eye protection are required for fire fighting personnel.
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Section 6. Accidental Release Measures

Material Release or Spill	Consult current National Emergency Response Guide Book (NAERG) for appropriate spill measures if necessary. Extinguish all ignition sources. Stop leak if safe to do so. Dike spilled material. Use appropriate inert absorbent material to absorb spilled product. Collect used absorbent for later disposal. Avoid contact with spilled material. Avoid contaminating sewers, streams, rivers and other water courses with spilled material. Notify appropriate authorities immediately.
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Section 7. Handling and Storage

Handling	Avoid contact with any sources of ignition, flames, heat, and sparks. Avoid skin contact. Avoid eye contact. Avoid inhalation of product vapours or mists. Empty containers may contain product residue. Do not pressurize, cut, heat, or weld empty containers. Do not reuse containers without commercial cleaning and/or reconditioning. Personnel who handle this material should practice good personal hygiene during and after handling to help prevent accidental ingestion of this product. Properly dispose of contaminated leather articles including shoes that cannot be decontaminated.
Storage	Store in dry, cool, well-ventilated area. Keep container tightly closed. Store away from incompatible and reactive materials (See section 5 and 10).

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection - <i>The selection of personal protective equipment varies, depending upon conditions of use.</i>	
Eyes	Eye protection (i.e., safety glasses, safety goggles and/or face shield) should be determined based on conditions of use. If product is used in an application where splashing may occur, the use of safety goggles and/or a face shield should be considered.
Body	Wear appropriate clothing to prevent skin contact. As a minimum long sleeves and trousers should be worn.
Respiratory	Where concentrations in air may exceed the occupational exposure limits given in Section 2 (and those applicable to your area) and where engineering, work practices or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.
Hands	Wear appropriate chemically protective gloves. When handling hot product ensure gloves are heat resistant and insulated.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Viscous liquid.	Viscosity	75W90: 106.7 cSt @ 40°C (104°F), 16.52 cSt @ 100°C (212°F), VI=168 80W140: 254.8 cSt @ 40°C (104°F), 25.24 cSt @ 100°C (212°F), VI=127
Colour	Colourless to pale yellow.	Pour Point	75W90: -42°C (-44°F) 80W140: -36°C (-33°F)
Odour	No odour or slight petroleum oil like.	Softening Point	Not applicable.
Odour Threshold	Not available	Dropping Point	Not applicable.
Boiling Point	Not available	Penetration	Not applicable.
Density	0.8699 - 0.878 kg/L @ 15°C (59°F).	Oil / Water Dist. Coefficient	Not available
Vapour Density	Not available	Ionicity (in water)	Not available
Vapour Pressure	Negligible at ambient temperature and pressure.	Dispersion Properties	Not available
Volatility	Non-volatile	Solubility	Insoluble in water.

Section 10. Stability and Reactivity

Corrosivity	Copper corrosion, 3h, 121°C (ASTM D0130): 1b		
Stability	The product is stable under normal handling and storage conditions.	Hazardous Polymerization	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents.	Decomposition Products	May release CO _x , NO _x , SO _x , H ₂ S, PO _x , SiO _x , methacrylate monomers, aldehydes, alkyl mercaptans, smoke and irritating vapours when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation and ingestion.		
Acute Lethality	Based on toxicity of components. Acute oral toxicity (LD50): >5000 mg/kg (rat). Acute dermal toxicity (LD50): >2000 mg/kg (rabbit). Acute inhalation toxicity (LC50): >2500 mg/m ³ /4h (rat).		
Chronic or Other Toxic Effects			
Dermal Route:	Prolonged or repeated contact may cause skin irritation characterized by dermatitis or oil acne.		
Inhalation Route:	Negligible breathing hazard at normal temperatures (up to 38°C) or recommended blending temperatures. Elevated temperatures or mechanical action may form vapours, mists or fumes. Inhalation of oil mists or vapours from hot oil may cause irritation of the upper respiratory tract.		
Oral Route:	Low toxicity; has laxative effect.		
Eye Irritation/Inflammation:	Repeated or prolonged contact may cause transient irritation, but no permanent damage.		
Immunotoxicity:	Not available		
Skin Sensitization:	This product is not expected to be a skin sensitizer, based on the available data and the known hazards of the components.		
Respiratory Tract Sensitization:	This product is not expected to be a respiratory tract sensitizer, based on the available data and the known hazards of the components.		
Mutagenic:	This product is not expected to be a mutagen, based on the available data and the known hazards of the components.		
Reproductive Toxicity:	This product is not expected to be a reproductive hazard, based on the available data and the known hazards of the components.		
Teratogenicity/Embryotoxicity:	This product is not expected to be a teratogen or an embryotoxin, based on the available data and the known hazards of the components.		
Carcinogenicity (ACGIH):	This product is not known to contain any chemicals at reportable quantities that are listed as A1 or A2 carcinogens by ACGIH.		
Carcinogenicity (IARC):	This product is not known to contain any chemicals at reportable quantities that are listed as group 1, 2A or 2B carcinogens by IARC.		
Carcinogenicity (NTP):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.		
Carcinogenicity (IRIS):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by IRIS.		
Carcinogenicity (OSHA):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.		
Other Considerations	No additional remark.		

Section 12. Ecological Information

Environmental Fate	Not available	Persistence/ Bioaccumulation Potential	Not available
BOD5 and COD	Not available	Products of Biodegradation	Not available
Additional Remarks	No additional remark.		

Section 13. Disposal Considerations

Waste Disposal	Spent/ used/ waste product may meet the requirements of a hazardous waste. Consult your local or regional authorities. Ensure that waste management processes are in compliance with government requirements and local disposal regulations.		
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Section 14. Transport Information

TDG Classification	Not controlled under TDG (Canada).	Special Provisions for Transport	Not applicable.
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Section 15. Regulatory Information

Other Regulations This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List).

All components of this formulation are listed on the US EPA-TSCA Inventory.

All components of this product are on the European Inventory of Existing Commercial Chemical Substances (EINECS).

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

Please contact Product Safety for more information.

DSD/DPD (Europe)	Not classified under the Dangerous Substances or Dangerous Preparations Directives.	HCS (U.S.A.)	Not controlled under the HCS (United States).
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ADR (Europe) (Pictograms)	NOT EVALUATED FOR EUROPEAN TRANSPORT NON ÉVALUÉ POUR LE TRANSPORT EUROPÉEN.	DOT (U.S.A) (Pictograms)	
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HMS (U.S.A.)	Health Hazard		NFPA (U.S.A.)		Health	Fire Hazard	Reactivity	Specific hazard	Rating	0 Insignificant
	Fire Hazard								1 Slight	
	Reactivity								2 Moderate	
	Personal Protection								3 High	
									4 Extreme	

Section 16. Other Information

References	Available upon request. * Marque de commerce de Petro-Canada - Trademark
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Glossary	
ACGIH - American Conference of Governmental Industrial Hygienists	IRIS - Integrated Risk Information System
ADR - Agreement on Dangerous goods by Road (Europe)	LD50/LC50 - Lethal Dose/Concentration kill 50%
ASTM - American Society for Testing and Materials (LDLo/LCLo - Lowest Published Lethal Dose/Concentration
BOD5 - Biological Oxygen Demand in 5 days	NAERG'96 - North American Emergency Response Guide Book (1996)
CAN/CGA B149.2 Propane Installation Code	NFPA - National Fire Prevention Association
CAS - Chemical Abstract Services	NIOSH - National Institute for Occupational Safety & Health
CEPA - Canadian Environmental Protection Act	NPRI - National Pollutant Release Inventory
CERCLA - Comprehensive Environmental Response, Compensation and Liability Act	NSNR - New Substances Notification Regulations (Canada)
CFR - Code of Federal Regulations	NTP - National Toxicology Program
CHIP - Chemicals Hazard Information and Packaging Approved Supply List	OSHA - Occupational Safety & Health Administration
COD5 - Chemical Oxygen Demand in 5 days	PEL - Permissible Exposure Limit
CPR - Controlled Products Regulations	RCRA - Resource Conservation and Recovery Act
DOT - Department of Transport	SARA - Superfund Amendments and Reorganization Act
DSCL - Dangerous Substances Classification and Labeling (Europe)	SD - Single Dose
DSD/DPD - Dangerous Substances or Dangerous Preparations Directives (Europe)	STEL - Short Term Exposure Limit (15 minutes)
DSL - Domestic Substance List	TDG - Transportation Dangerous Goods (Canada)
EEC/EU - European Economic Community/European Union	TDLo/TCLo - Lowest Published Toxic Dose/Concentration
EINECS - European Inventory of Existing Commercial Chemical Substances	TLm - Median Tolerance Limit
EPCRA - Emergency Planning and Community Right to Know Act	TLV-TWA - Threshold Limit Value-Time Weighted Average
FDA - Food and Drug Administration	TSCA - Toxic Substances Control Act
FIFRA - Federal Insecticide, Fungicide and Rodenticide Act	USEPA - United States Environmental Protection Agency
HCS - Hazardous Communication System	USP - United States Pharmacopoeia
HMS - Hazardous Material Information System	WHMIS - Workplace Hazardous Material Information System
IARC - International Agency for Research on Cancer	

For Copy of MSDS	Prepared by Product Safety - JDW on 5/29/2003.
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:	Data entry by Product Safety - JDW.
Internet: www.petro-canada.ca	
Lubricants: Western Canada, telephone: 1-800-661-1199; fax: (780) 464-9564	

Ontario & Central Canada, telephone: 1-800-268-5850 and (905) 822-4222; fax:
1-800-201-6285
Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 800-201-6285

For Product Safety Information: (905) 804-4752

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.



WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
	Not controlled		

Section 1. Chemical Product and Company Identification	
Product Name PETRO-CANADA SUPREME 5W-30, 10W-30, 10W-40, 20W-50 MOTOR OIL	Code 410-344, MOSP53 410-341, MOSP13 410-342, MOSP14 410-343, MOSP25
Synonym Not available.	Validated on 8/31/2004.
Manufacturer PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3	In case of Emergency Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).
Material Uses Supreme is designed for the lubrication of all gasoline, propane and CNG engines where the manufacturer recommends the use of API SM quality oils. SAE 5W-30 and 10W-30 grades also meet the requirements of ILSAC GF-4.	

Section 2. Composition and Information on Ingredients					
			<i>Exposure Limits (ACGIH)</i>		
Name	CAS #	% (W/W)	TLV-TWA(8 h)	STEL	CEILING
Mixture of severely hydrotreated and hydrocracked base oil (petroleum) and other proprietary, non-hazardous additives.	Mixture	100	5 mg/m ³ (oil mist)	10 mg/m ³ (oil mist)	Not established
Manufacturer Recommendation	Not applicable				
Other Exposure Limits	Consult local, state, provincial or territory authorities for acceptable exposure limits.				

Section 3. Hazards Identification.	
Potential Health Effects	Prolonged or repeated contact may cause skin irritation, defatting, drying and dermatitis. Not expected to cause more than slight skin or eye irritation. With its relatively low vapour pressure, this product is not expected to be inhaled in any appreciable quantity at ambient conditions. If heated to high temperatures or subjected to mechanical actions which produce vapours or mists, inhalation may cause respiratory tract irritation. Ingestion may produce a laxative effect. For more information refer to Section 11 of this MSDS.

Section 4. First Aid Measures	
Eye Contact	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Seek medical attention.
Inhalation	Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform artificial respiration. Allow the victim to rest in a well ventilated area. Seek medical attention.
Ingestion	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Seek medical attention.
Note to Physician	Not available

Section 5. Fire-fighting Measures			
Flammability	May be combustible at high temperature.	Flammable Limits	Not available.
Flash Points	OPEN CUP: 223°C (433.4°F) (Cleveland)	Auto-Ignition Temperature	Not available
Fire Hazards in Presence of Various Substances	Low fire hazard. This material must be heated before ignition will occur.	Explosion Hazards in Presence of Various Substances	Do not cut, weld, heat, drill or pressurize empty container. Containers may explode in heat of fire.

Products of Combustion	Carbon oxides (CO, CO ₂), nitrogen oxides (NO _x), sulphur oxides (SO _x), calcium oxides (CaO _x), phosphorus compounds (PO _x), zinc oxides, boron oxides and molybdenum, smoke and irritating vapours as products of incomplete combustion.
Fire Fighting Media and Instructions	NAERG96, GUIDE 171, Substances (low to moderate hazard). If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (0.5 mile) in all directions; also, consider initial evacuation for 800 meters (0.5 mile) in all directions. Shut off fuel to fire if it is possible to do so without hazard. If this is impossible, withdraw from area and let fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discolouration of tank due to fire. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. SMALL FIRE: use DRY chemicals, foam, water spray or CO ₂ . LARGE FIRE: use water spray, fog or foam. For small outdoor fires, portable fire extinguishers may be used, and self contained breathing apparatus (SCBA) may not be required. For all indoor fires and any significant outdoor fires, SCBA is required. Respiratory and eye protection are required for fire fighting personnel.

Section 6. Accidental Release Measures

Material Release or Spill	Consult current National Emergency Response Guide Book (NAERG) for appropriate spill measures if necessary. Extinguish all ignition sources. Stop leak if safe to do so. Dike spilled material. Use appropriate inert absorbent material to absorb spilled product. Collect used absorbent for later disposal. Avoid contact with spilled material. Avoid contaminating sewers, streams, rivers and other water courses with spilled material. Notify appropriate authorities immediately.
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Section 7. Handling and Storage

Handling	Avoid contact with any sources of ignition, flames, heat, and sparks. Avoid skin contact. Avoid eye contact. Avoid inhalation of product vapours or mists. Empty containers may contain product residue. Do not pressurize, cut, heat, or weld empty containers. Do not reuse containers without commercial cleaning and/or reconditioning. Personnel who handle this material should practice good personal hygiene during and after handling to help prevent accidental ingestion of this product. Properly dispose of contaminated leather articles including shoes that cannot be decontaminated.
Storage	Store away from incompatible and reactive materials (See section 5 and 10). Keep container tightly closed. Store in dry, cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection - The selection of personal protective equipment varies, depending upon conditions of use.	
Eyes	Eye protection (i.e., safety glasses, safety goggles and/or face shield) should be determined based on conditions of use. If product is used in an application where splashing may occur, the use of safety goggles and/or a face shield should be considered.
Body	Wear appropriate clothing to prevent skin contact. As a minimum long sleeves and trousers should be worn.
Respiratory	Where concentrations in air may exceed the occupational exposure limits given in Section 2 (and those applicable to your area) and where engineering, work practices or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.
Hands	Wear appropriate chemically protective gloves. When handling hot product ensure gloves are heat resistant and insulated.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Viscous liquid.	Viscosity	5W-30: 62.3 cSt @ 40°C (104°F), 10.6 cSt @ 100°C (212°F). VI=160 10W-30: 67.4 cSt @ 40°C (104°F), 10.5 cSt @ 100°C (212°F). VI=143 10W-40: 97.2 cSt @ 40°C (104°F), 14.1 cSt @ 100°C (212°F). VI=143 20W-50: 170 cSt @ 40°C (104°F), 19.0 cSt @ 100°C (212°F). VI=127
Colour	Light amber.	Pour Point	5W-30: -36°C (-33°F) 10W-30: -36°C (-33°F) 10W-40: -30°C (-22°F) 20W-50: -24°C (-11°F)
Odour	Mild petroleum oil like.	Softening Point	Not applicable.
Odour Threshold	Not available.	Dropping Point	Not applicable.
Boiling Point	Not available.	Penetration	Not applicable.

Density	0.8566 - 0.8775 kg/L @ 15°C (59°F).	Oil / Water Dist. Coefficient	Not available.
Vapour Density	Not available.	Ionicity (in water)	Not available
Vapour Pressure	Negligible at ambient temperature and pressure.	Dispersion Properties	Not available
Volatility	Non-volatile	Solubility	Insoluble in water.

Section 10. Stability and Reactivity

Corrosivity	Copper corrosion, 3h, 121°C (ASTM D0130): 1a		
Stability	The product is stable under normal handling and storage conditions.	Hazardous Polymerization	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents and acids.	Decomposition Products	May release CO _x , H ₂ S, methacrylate monomers, alkyl mercaptans, smoke and irritating vapours when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation, and ingestion.		
Acute Lethality	Acute toxicity information is not available for the product as a whole, therefore, data for some of the ingredients is provided below: Acute oral toxicity (LD50): >5000 mg/kg (rat). Acute dermal toxicity (LD50): >2000 mg/kg (rabbit). Acute inhalation toxicity (LC50): >2500 mg/m ³ /4h (rat).		
Chronic or Other Toxic Effects	<p>Dermal Route: Prolonged or repeated contact may defat and dry skin, and cause dermatitis. Short-term exposure is expected to cause only slight irritation, if any.</p> <p>Inhalation Route: With its relatively low vapour pressure, this product is not expected to be inhaled in any appreciable quantity at ambient conditions. If heated to high temperatures or subjected to mechanical actions which produce vapours or mists, inhalation may cause respiratory tract irritation.</p> <p>Oral Route: Ingestion of this product may lead to aspiration of the liquid, especially if vomiting occurs. This may result in chemical pneumonitis (inflammation of the lungs) and/or pulmonary edema (an accumulation of fluid in the lungs). May produce a laxative effect.</p> <p>Eye Irritation/Inflammation: Short-term exposure is expected to cause only slight irritation, if any.</p> <p>Immunotoxicity: Not available.</p> <p>Skin Sensitization: Contact with this product is not expected to cause skin sensitization, based upon the available data and the known hazards of the components.</p> <p>Respiratory Tract Sensitization: Contact with this product is not expected to cause respiratory tract sensitization, based upon the available data and the known hazards of the components.</p> <p>Mutagenic: This product is not known to contain any components at $\geq 0.1\%$ that have been shown to cause mutagenicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a mutagen.</p> <p>Reproductive Toxicity: This product is not known to contain any components at $\geq 0.1\%$ that have been shown to cause reproductive toxicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a reproductive toxin.</p> <p>Teratogenicity/Embryotoxicity: This product is not known to contain any components at $\geq 0.1\%$ that have been shown to cause teratogenicity and/or embryotoxicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a teratogen/embryotoxin.</p> <p>Carcinogenicity (ACGIH): This product is not known to contain any chemicals at reportable quantities that are listed as Group A1 or A2 carcinogens by ACGIH.</p> <p>Carcinogenicity (IARC): This product is not known to contain any chemicals at reportable quantities that are listed as Group 1, 2A, or 2B carcinogens by IARC.</p> <p>Carcinogenicity (NTP): This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.</p> <p>Carcinogenicity (IRIS): This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by IRIS.</p> <p>Carcinogenicity (OSHA): This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.</p>		
Other Considerations	No additional remark.		

Section 12. Ecological Information

Environmental Fate	Not available	Persistence/Bioaccumulation Potential	Not available
BOD5 and COD	Not available.	Products of Biodegradation	Not available.
Additional Remarks	No additional remark.		

Section 13. Disposal Considerations

Waste Disposal	Spent/ used/ waste product may meet the requirements of a hazardous waste. Consult your local or regional authorities. Ensure that waste management processes are in compliance with government requirements and local disposal regulations.
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Section 14. Transport Information

TDG Classification	Not a hazardous material for transport according to the TDG Regulations. (Canada)	Special Provisions for Transport	Not applicable.
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Section 15. Regulatory Information

Other Regulations	<p>This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List).</p> <p>All components of this formulation are listed on the US EPA-TSCA Inventory.</p> <p>All components of this product are on the European Inventory of Existing Commercial Chemical Substances (EINECS).</p> <p>This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.</p> <p>Please contact Product Safety for more information.</p>																						
DSD/DPD (Europe)	Not evaluated.	HCS (U.S.A.)	Does not meet the definitions of a health or physical hazard according to the OSHA - Hazard Communication Standard. (United States)																				
ADR (Europe) (Pictograms)	<p>NOT EVALUATED FOR EUROPEAN TRANSPORT</p> <p>NON ÉVALUÉ POUR LE TRANSPORT EUROPÉEN.</p>	DOT (U.S.A) (Pictograms)																					
HMIS (U.S.A.)	<table border="1"> <tr><td>Health Hazard</td><td>1</td></tr> <tr><td>Fire Hazard</td><td>1</td></tr> <tr><td>Reactivity</td><td>0</td></tr> <tr><td>Personal Protection</td><td>B</td></tr> </table>	Health Hazard	1	Fire Hazard	1	Reactivity	0	Personal Protection	B	NFPA (U.S.A.)	<table border="1"> <tr><td>Health</td><td>1</td><td>Fire Hazard</td><td>1</td></tr> <tr><td></td><td>1</td><td>Reactivity</td><td>0</td></tr> <tr><td></td><td></td><td>Specific hazard</td><td></td></tr> </table>	Health	1	Fire Hazard	1		1	Reactivity	0			Specific hazard	
Health Hazard	1																						
Fire Hazard	1																						
Reactivity	0																						
Personal Protection	B																						
Health	1	Fire Hazard	1																				
	1	Reactivity	0																				
		Specific hazard																					
		Rating	<p>0 Insignificant</p> <p>1 Slight</p> <p>2 Moderate</p> <p>3 High</p> <p>4 Extreme</p>																				

Section 16. Other Information

References	Available upon request. * Marque de commerce de Petro-Canada - Trademark
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Glossary	<p>ACGIH - American Conference of Governmental Industrial Hygienists</p> <p>ADR - Agreement on Dangerous goods by Road (Europe)</p> <p>ASTM - American Society for Testing and Materials</p> <p>BOD5 - Biological Oxygen Demand in 5 days</p> <p>CAN/CGA B149.2 Propane Installation Code</p> <p>CAS - Chemical Abstract Services</p> <p>CEPA - Canadian Environmental Protection Act</p> <p>CERCLA - Comprehensive Environmental Response, Compensation and Liability Act</p> <p>CFR - Code of Federal Regulations</p> <p>CHIP - Chemicals Hazard Information and Packaging Approved Supply List</p> <p>COD5 - Chemical Oxygen Demand in 5 days</p> <p>CPR - Controlled Products Regulations</p> <p>DOT - Department of Transport</p> <p>DSCL - Dangerous Substances Classification and Labeling (Europe)</p> <p>DSD/DPD - Dangerous Substances or Dangerous Preparations</p> <p>IRIS - Integrated Risk Information System</p> <p>LD50/LC50 - Lethal Dose/Concentration kill 50%</p> <p>LDLo/LCLo - Lowest Published Lethal Dose/Concentration</p> <p>NAERG'96 - North American Emergency Response Guide Book (1996)</p> <p>NFPA - National Fire Prevention Association</p> <p>NIOSH - National Institute for Occupational Safety & Health</p> <p>NPRI - National Pollutant Release Inventory</p> <p>NSNR - New Substances Notification Regulations (Canada)</p> <p>NTP - National Toxicology Program</p> <p>OSHA - Occupational Safety & Health Administration</p> <p>PEL - Permissible Exposure Limit</p> <p>RCRA - Resource Conservation and Recovery Act</p> <p>SARA - Superfund Amendments and Reorganization Act</p> <p>SD - Single Dose</p> <p>STEL - Short Term Exposure Limit (15 minutes)</p> <p>TDG - Transportation Dangerous Goods (Canada)</p> <p>TDLo/TCLo - Lowest Published Toxic Dose/Concentration</p>
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Directives (Europe)
DSL - Domestic Substance List
EEC/EU - European Economic Community/European Union
EINECS - European Inventory of Existing Commercial Chemical Substances
EPCRA - Emergency Planning and Community Right to Know Act
FDA - Food and Drug Administration
FIFRA - Federal Insecticide, Fungicide and Rodenticide Act
HCS - Hazard Communication Standard
HMIS - Hazardous Material Information System
IARC - International Agency for Research on Cancer

TLM - Median Tolerance Limit
TLV-TWA - Threshold Limit Value-Time Weighted Average
TSCA - Toxic Substances Control Act
USEPA - United States Environmental Protection Agency
USP - United States Pharmacopoeia
WHMIS - Workplace Hazardous Material Information System

For Copy of MSDS

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: www.petro-canada.ca

Lubricants:

Western Canada, telephone: 1-800-661-1199; fax: (780) 464-9564
Ontario & Central Canada, telephone: 1-800-268-5850 and (905) 822-4222; fax: 1-800-201-6285
Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 800-201-6285

For Product Safety Information: (905) 804-4752

Prepared by Product Safety - TLM on 8/31/2004.

Data entry by Product Safety - RS.

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.



Material Safety Data Sheet

WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
	Not controlled		

Section 1. Chemical Product and Company Identification	
Product Name	DRILL ROD HEAVY GREASE
Synonym	Not available.
Manufacturer	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3
Material Uses	This product is recommended for the lubrication of diamond drill rods.
Code	650-265, DRODH
DSL	See Section 15
TSCA	See Section 15
In case of Emergency	Petro-Canada: 403-296-3000 Canotec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).

Section 2. Composition and Information on Ingredients					
			<i>Exposure Limits (ACGIH)</i>		
Name	CAS #	% (W/W)	TLV-TWA(8 h)	STEL	CEILING
1) Mixture of severely hydrotreated and hydrocracked, and/or solvent-refined base oil (petroleum) and other proprietary, non-hazardous additives.	Mixture	100	5 mg/m ³ (oil mist)	10 mg/m ³ (oil mist)	Not established

Section 3. Hazards Identification.	
Potential Health Effects	Non irritating to slight transient irritation to skin and eyes, but no permanent damage. Relatively non-toxic via ingestion. This product has a low vapour pressure and is not expected to present an inhalation exposure at ambient conditions. Upon heating to high temperatures, or mechanical actions which may produce vapours or mists, inhalation of product may cause irritation of the breathing passages. For more information, refer to Section 11.

Section 4. First Aid Measures	
Eye Contact	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. High pressure grease gun is capable of injecting grease through the skin. Grease gun injuries require immediate physician assessment. Seek medical attention.
Inhalation	Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform artificial respiration. Allow the victim to rest in a well ventilated area. Seek medical attention.
Ingestion	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Seek medical attention.
Note to Physician	Not available

Section 5. Fire-fighting Measures			
Flammability	May be combustible at high temperature.	Flammable Limits	Not available.
Flash Points	Mineral Oil Blend: OPEN CUP: 252°C (485.6°F). (Cleveland).	Auto-Ignition Temperature	Not available.
Fire Hazards in Presence of Various Substances	Low fire hazard. This material must be heated before ignition will occur.	Explosion Hazards in Presence of Various Substances	Containers may explode in heat of fire. Do not cut, weld, heat, drill or pressurize empty container.
Products of Combustion	Carbon oxides (CO, CO ₂), smoke and irritating vapours as products of incomplete combustion.		
Fire Fighting Media and Instructions	NAERG96, GUIDE 171, Substances (low to moderate hazard). If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (0.5 mile) in all directions; also, consider initial evacuation for 800 meters (0.5 mile) in all directions. Shut off fuel to fire if it is possible to do so without hazard. If this is impossible, withdraw from area and let fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tank due to fire. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. SMALL FIRE: use DRY chemicals, foam, water spray or CO ₂ . LARGE FIRE: use water spray, fog or foam. For small outdoor fires, portable fire extinguishers may be used, and self contained breathing apparatus (SCBA) may not be required. For all indoor fires and any significant outdoor fires, SCBA is required. Respiratory and eye protection are required for fire fighting personnel.		

Section 6. Accidental Release Measures

Material Release or Spill	Consult current National Emergency Response Guide Book (NAERG) for appropriate spill measures if necessary. Extinguish all ignition sources. Stop leak if safe to do so. Dike spilled material. Use appropriate inert absorbent material to absorb spilled product. Collect used absorbent for later disposal. Avoid contact with spilled material. Avoid contaminating sewers, streams, rivers and other water courses with spilled material. Notify appropriate authorities immediately.
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Section 7. Handling and Storage

Handling	Avoid contact with any sources of ignition, flames, heat, and sparks. Avoid skin contact. Avoid eye contact. Avoid inhalation of product vapours or mists. Empty containers may contain product residue. Do not pressurize, cut, heat, or weld empty containers. Do not reuse containers without commercial cleaning and/or reconditioning. Personnel who handle this material should practice good personal hygiene during and after handling to help prevent accidental ingestion of this product. Properly dispose of contaminated leather articles including shoes that cannot be decontaminated.
Storage	Store in dry, cool, well-ventilated area. Keep container tightly closed. Store away from incompatible and reactive materials (See section 5 and 10).

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection - The selection of personal protective equipment varies, depending upon conditions of use.	
Eyes	Eye protection (i.e., safety glasses, safety goggles and/or face shield) should be determined based on conditions of use. If product is used in an application where splashing may occur, the use of safety goggles and/or a face shield should be considered.
Body	Wear appropriate clothing to prevent skin contact. As a minimum long sleeves and trousers should be worn.
Respiratory	Where concentrations in air may exceed the occupational exposure limits given in Section 2 (and those applicable to your area) and where engineering, work practices or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.
Hands	Wear appropriate chemically protective gloves. When handling hot product ensure gloves are heat resistant and insulated.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.
Exposure Limits	Consult local, state, provincial or territory authorities for acceptable exposure limits. This product is not expected to form a mist based on its properties and expected use.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Paste of long fibred texture.	Viscosity	Mineral Oil Blend: 155.5 cSt @ 40°C (104°F), 14.42 cSt @ 100°C (212°F), VI=89
Colour	Dark greenish-brown	Pour Point	Mineral Oil Blend: -15°C (5°F)
Odour	Mild grease like.	Softening Point	Not available
Odour Threshold	Not available.	Dropping Point	201°C (394°F)
Boiling Point	Not available.	Penetration	234 (60 strokes)
Specific Gravity	Mineral Oil Blend: 0.8898 kg/L @ 15°C (59°F).	Oil / Water Dist. Coeff.	Not available.
Vapor Density	Not available.	Ionicity (in water)	Not available
Vapor Pressure	Negligible at ambient temperature and pressure.	Dispersion Properties	Not available.
Volatility	Non-volatile.	Solubility	Insoluble in water.

Section 10. Stability and Reactivity

Corrosivity	Not corrosive to copper.	
Stability	The product is stable under normal handling and storage conditions.	Hazardous Polymerization Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents, acids and alkalis.	Decomposition Products May release COx, NOx, SOx, diphenylamine, alkenes, smoke and irritating vapours when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation and ingestion.
Acute Lethality	Based on toxicity of components. Acute oral toxicity (LD50): >5000 mg/kg (rat). Acute dermal toxicity (LD50): >2000 mg/kg (rabbit).
Chronic or Other Toxic Effects	
Dermal Route:	Prolonged or repeated contact may cause skin irritation characterized by dermatitis or oil acne.
Inhalation Route:	Negligible breathing hazard at normal temperatures (up to 38°C) or recommended blending temperatures. Elevated temperatures or mechanical action may form vapours, mists or fumes. Inhalation of oil mists or vapours from hot oil may cause irritation of the upper respiratory tract.
Oral Route:	Low toxicity; has laxative effect.
Eye Irritation/Inflammation:	Repeated or prolonged contact may cause transient irritation, but no permanent damage.
Immunotoxicity:	Not available.
Skin Sensitization:	This product is not expected to be a skin sensitizer, based on the available data and the known hazards of the components.
Respiratory Tract Sensitization:	This product is not expected to be a respiratory tract sensitizer, based on the available data and the known hazards of the components.
Mutagenic:	Based on actual test results of base oils and results of similar products, severely hydrotreated base oils give negative results when tested for: (a) Salmonella Typhimurium TA98 using the Modified Ames Assay for Petroleum Product; (b) Salmonella-Escherichia coli/Mammalian-Microsome Reverse Mutation Assay (Ames test) with a Confirmatory Assay; (c) Structural Chromosomal Aberrations in Chinese Hamster Ovary (CHO) Cells.
Reproductive Toxicity:	This product is not expected to be a reproductive hazard, based on the available data and the known hazards of the components.
Teratogenicity/Embryotoxicity:	This product is not expected to be a teratogen or an embryotoxin, based on the available data and the known hazards of the components.
Carcinogenicity (ACGIH):	This product is not known to contain any chemicals at reportable quantities that are listed as A1 or A2 carcinogens by ACGIH.
Carcinogenicity (IARC):	This product is not known to contain any chemicals at reportable quantities that are listed as group 1, 2A or 2B carcinogens by IARC.
Carcinogenicity (NTP):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.
Carcinogenicity (IRIS):	Not available.
Carcinogenicity (OSHA):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.
Other Considerations	No additional remark.

Section 12. Ecological Information

Environmental Fate	Not available.	Persistence/ Bioaccumulation Potential	Not available
BOD5 and COD	Not available.	Products of Biodegradation	Not available.
Additional Remarks	No additional remark.		

Section 13. Disposal Considerations

Waste Disposal	Spent/ used/ waste product may meet the requirements of a hazardous waste. Consult your local or regional authorities. Ensure that waste management processes are in compliance with government requirements and local disposal regulations.
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Section 14. Transport Information

TDG Classification	Not controlled under TDG (Canada).	Special Provisions for Transport	Not applicable.
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Section 15. Regulatory Information

Other Regulations This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List).

All components of this formulation are listed on the US EPA-TSCA Inventory.

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

Please contact Product Safety for more information.

DSD/DPD (Europe) Not evaluated.

DSD/DPD (Europe) (Pictograms)	NOT EVALUATED FOR EUROPEAN TRANSPORT NON ÉVALUÉ POUR LE TRANSPORT EUROPÉEN.	DOT (U.S.A) (Pictograms)	
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HMIS (U.S.A.)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">Health Hazard</td><td style="text-align: center; padding: 2px;">1</td></tr> <tr><td style="padding: 2px;">Fire Hazard</td><td style="text-align: center; padding: 2px;">1</td></tr> <tr><td style="padding: 2px;">Reactivity</td><td style="text-align: center; padding: 2px;">0</td></tr> <tr><td style="padding: 2px;">Personal Protection</td><td style="text-align: center; padding: 2px;">B</td></tr> </table>	Health Hazard	1	Fire Hazard	1	Reactivity	0	Personal Protection	B	NFPA (U.S.A.)	
Health Hazard	1										
Fire Hazard	1										
Reactivity	0										
Personal Protection	B										

Section 16. Other Information

References Available upon request.
* Marque de commerce de Petro-Canada - Trademark

Glossary

<p>ACGIH - American Conference of Governmental Industrial Hygienists ADR - Agreement on Dangerous goods by Road (Europe) ASTM - American Society for Testing and Materials () BOD5 - Biological Oxygen Demand in 5 days CAN/CGA B149.2 Propane Installation Code CAS - Chemical Abstract Services CEPA - Canadian Environmental Protection Act CERCLA - Comprehensive Environmental Response, Compensation and Liability Act CFR - Code of Federal Regulations CHIP - Chemicals Hazard Information and Packaging Approved Supply List COD5 - Chemical Oxygen Demand in 5 days CPR - Controlled Products Regulations DOT - Department of Transport DSCL - Dangerous Substances Classification and Labeling (Europe) DSD/DPD - Dangerous Substances or Dangerous Preparations Directives (Europe) DSL - Domestic Substance List EEC/EU - European Economic Community/European Union EINECS - European Inventory of Existing Commercial Chemical Substances EPCRA - Emergency Planning and Community Right to Know Act FDA - Food and Drug Administration FIFRA - Federal Insecticide, Fungicide and Rodenticide Act HCS - Hazardous Communication System HMIS - Hazardous Material Information System IARC - International Agency for Research on Cancer</p>	<p>IRIS - Integrated Risk Information System LD50/LC50 - Lethal Dose/Concentration kill 50% LDLo/LCLo - Lowest Published Lethal Dose/Concentration NAERG'96 - North American Emergency Response Guide Book (1996) NFPA - National Fire Prevention Association NIOSH - National Institute for Occupational Safety & Health NPRI - National Pollutant Release Inventory NSNR - New Substances Notification Regulations (Canada) NTP - National Toxicology Program OSHA - Occupational Safety & Health Administration PEL - Permissible Exposure Limit RCRA - Resource Conservation and Recovery Act SARA - Superfund Amendments and Reorganization Act SD - Single Dose STEL - Short Term Exposure Limit (15 minutes) TDG - Transportation Dangerous Goods (Canada) TDLo/TCLo - Lowest Published Toxic Dose/Concentration TLm - Median Tolerance Limit TLV-TWA - Threshold Limit Value-Time Weighted Average TSCA - Toxic Substances Control Act USEPA - United States Environmental Protection Agency USP - United States Pharmacopoeia WHMIS - Workplace Hazardous Material Information System</p>
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<p>Information Contact Internet: www.petro-canada.ca</p> <p>Lubricants: Western Canada, telephone: 1-800-661-1199; fax: (780) 464-9564 Ontario & Central Canada, telephone: 1-800-268-5850 and (905) 822-4222; fax: 1-800-201-6285 Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 800-201-6285</p> <p>For Product Safety Information: (905) 804-4752</p>	<p>Prepared by Product Safety - JDW on 4/29/2003.</p> <p>Data entry by Product Safety - JDW.</p>
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To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.



Material Safety Data Sheet

WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
	Not controlled		

Section 1. Chemical Product and Company Identification	
Product Name	TOOL JOINT COMPOUND
Synonym	Not available.
Manufacturer	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3
Material Uses	Tool Joint Compound is used in drilling operations as a thread compound for rotary shouldered pipe connections to prevent galling and to provide a positive seal against drilling mud pressure.
Code	650-774, TOOL
DSL	See Section 15
TSCA	See Section 15
In case of Emergency	Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).

Section 2. Composition and Information on Ingredients					
			<i>Exposure Limits (ACGIH)</i>		
Name	CAS #	% (W/W)	TLV-TWA(8 h)	STEL	CEILING
1) Proprietary ingredients.	Not available.	≥90	Not available.	Not available.	Not available.
2) Mica	12001-26-2	≤10	3 mg/m ³	Not established	Not established

Section 3. Hazards Identification.	
Potential Health Effects	Non irritating to slight transient irritation to skin and eyes, but no permanent damage. Relatively non-toxic via ingestion. This product has a low vapour pressure and is not expected to present an inhalation exposure at ambient conditions. Upon heating to high temperatures, or mechanical actions which may produce vapours or mists, inhalation of product may cause irritation of the breathing passages. For more information, refer to Section 11.

Section 4. First Aid Measures	
Eye Contact	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. High pressure grease gun is capable of injecting grease through the skin. Grease gun injuries require immediate physician assessment. Seek medical attention.
Inhalation	Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform artificial respiration. Allow the victim to rest in a well ventilated area. Seek medical attention.
Ingestion	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Seek medical attention.
Note to Physician	Not available

Section 5. Fire-fighting Measures	
Flammability	May be combustible at high temperature.
Flash Points	Mineral Oil Blend: OPEN CUP: 250°C (482°F) (Cleveland)
Fire Hazards in Presence of Various Substances	Low fire hazard. This material must be heated before ignition will occur.
Products of Combustion	Carbon oxides (CO, CO ₂), nitrogen oxides (NO _x), sulphur oxides (SO _x), hydrocarbons, metal oxides, smoke and irritating vapours as products of incomplete combustion.
Fire Fighting Media and Instructions	NAERG96, GUIDE 171, Substances (low to moderate hazard). If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (0.5 mile) in all directions; also, consider initial evacuation for 800 meters (0.5 mile) in all directions. Shut off fuel to fire if it is possible to do so without hazard. If this is impossible, withdraw from area and let fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tank due to fire. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. SMALL FIRE: use DRY chemicals, foam, water spray or CO ₂ . LARGE FIRE: use water spray, fog or foam. For small outdoor fires, portable fire extinguishers may be used, and self contained breathing apparatus (SCBA) may not be required. For all indoor fires and any significant outdoor fires, SCBA is required. Respiratory and eye protection are required for fire fighting personnel.
Flammable Limits	Lower: 0.9%; Upper: 7%
Auto-Ignition Temperature	>260°C (500°F)
Explosion Hazards in Presence of Various Substances	Do not cut, weld, heat, drill or pressurize empty container. Containers may explode in heat of fire.

Section 6. Accidental Release Measures

Material Release or Spill	NAERG96, GUIDE 171, Substances (low to moderate hazard). ELIMINATE ALL IGNITION SOURCES. Avoid contact. Stop leak if without risk. Contain spill. Absorb with inert absorbents, dry clay, or diatomaceous earth. Avoid inhaling dust of diatomaceous earth for it may contain silica in very fine particle size, making this a potential respiratory hazard. Place used absorbent in closed metal containers for later disposal or burn absorbent in a suitable combustion chamber. DO NOT FLUSH TO SEWERS, STREAMS OR OTHER BODIES OF WATER. Check with applicable jurisdiction for specific disposal requirements of spilled material and empty containers. Notify the appropriate authorities immediately.
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Section 7. Handling and Storage

Handling	Keep away from sources of ignition. DO NOT reuse empty containers without commercial cleaning or reconditioning. Practice good personal hygiene. Wash hands after handling and before eating. Launder work clothes frequently. Discard saturated leather goods.
Storage	Store in tightly closed containers in cool, dry, isolated, well-ventilated area, and away from incompatibles.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection - <i>The selection of personal protective equipment varies, depending upon conditions of use.</i>	
Eyes	Eye protection (i.e., safety glasses, safety goggles and/or face shield) should be determined based on conditions of use. If product is used in an application where splashing may occur, the use of safety goggles and/or a face shield should be considered.
Body	Wear appropriate clothing to prevent skin contact. As a minimum long sleeves and trousers should be worn.
Respiratory	Where concentrations in air may exceed the occupational exposure limits given in Section 2 (and those applicable to your area) and where engineering, work practices or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.
Hands	Wear appropriate chemically protective gloves. When handling hot product ensure gloves are heat resistant and insulated.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.
Exposure Limits	Consult local authorities for acceptable exposure limits. This product is not expected to form a mist based on its properties and expected use.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Smooth buttery paste.	Viscosity	Mineral Oil Blend: 103.3 cSt @ 40°C, 11.5 cSt @ 100°C, VI=98
Colour	Grey.	Pour Point	Mineral Oil Blend: -15°C
Odour	Mild petroleum odour.	Softening Point	Not available.
Odour Threshold	Not available.	Dropping Point	196°C
Boiling Point	<316°C (600°F)	Penetration	280 (60 strokes)
Specific Gravity	Mineral Oil Blend: 0.8741 kg/L @ 15°C (59°F).	Oil / Water Dist. Coeff.	Not available.
Vapor Density	Not available.	Ionicity (in water)	Not available.
Vapor Pressure	Negligible at ambient temperature and pressure.	Dispersion Properties	Not available.
Volatility	Non-volatile	Solubility	Insoluble in water.

Section 10. Stability and Reactivity

Corrosivity	Not available.		
Stability	The product is stable under normal handling and storage conditions.	Hazardous Polymerization	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents and acids.	Decomposition Products	May release COx, NOx, SOx, hydrocarbons, metal oxides, smoke and irritating vapours when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation, and ingestion.		
Acute Lethality	Not available.		
Chronic or Other Toxic Effects			
Dermal Route:	Prolonged or repeated contact may cause skin irritation characterized by dermatitis or oil acne.		
Inhalation Route:	Negligible breathing hazard at normal temperatures (up to 38°C) or recommended blending temperatures. Elevated temperatures or mechanical action may form vapours, mists or fumes. Inhalation of oil mists or vapours from hot oil may cause irritation of the upper respiratory tract.		
Oral Route:	Low toxicity; has laxative effect.		

Continued on Next Page

Available in French

Eye Irritation/Inflammation:	Repeated or prolonged contact may cause transient irritation, but no permanent damage.
Immunotoxicity:	Not available.
Skin Sensitization:	This product is not expected to be a skin sensitizer, based on the available data and the known hazards of the components.
Respiratory Tract Sensitization:	This product is not expected to be a respiratory tract sensitizer, based on the available data and the known hazards of the components.
Mutagenic:	This product is not expected to be a mutagen, based on the available data and the known hazards of the components.
Reproductive Toxicity:	This product is not expected to be a reproductive hazard, based on the available data and the known hazards of the components.
Teratogenicity/Embryotoxicity:	This product is not expected to be a teratogen or an embryotoxin, based on the available data and the known hazards of the components.
Carcinogenicity (ACGIH):	Not available.
Carcinogenicity (IARC):	This product is not known to contain any chemicals at reportable quantities that are listed as group 1, 2A or 2B carcinogens by IARC.
Carcinogenicity (NTP):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.
Carcinogenicity (IRIS):	Not available.
Carcinogenicity (OSHA):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.
Other Considerations	No additional remark.

Section 12. Ecological Information			
Environmental Fate	Not available.	Persistence/ Bioaccumulation Potential	Not available
BOD5 and COD	Not available.	Products of Biodegradation	Not available.
Additional Remarks	No additional remark.		

Section 13. Disposal Considerations	
Waste Disposal	Preferred waste management priorities are: (1) recycle or reprocess; (2) incineration with energy recovery; (3) disposal at licensed waste disposal facility. Ensure that disposal or reprocessing is in compliance with government requirements and local disposal regulations. Consult your local or regional authorities.

Section 14. Transport Information			
TDG Classification	Not controlled under TDG (Canada).	Special Provisions for Transport	Not applicable.

Section 15. Regulatory Information											
Other Regulations	<p>This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List).</p> <p>All components of this formulation are listed on the US EPA-TSCA Inventory.</p> <p>This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.</p> <p>Please contact Product Safety for more information.</p>										
DSD/DPD (Europe)	Not evaluated.										
DSD/DPD (Europe) (Pictograms)	NOT EVALUATED FOR EUROPEAN TRANSPORT NON ÉVALUÉ POUR LE TRANSPORT EUROPÉEN.	DOT (U.S.A.) (Pictograms) 									
HMIS (U.S.A.)	<table border="1"> <tr> <td>Health Hazard</td> <td>1</td> </tr> <tr> <td>Fire Hazard</td> <td>1</td> </tr> <tr> <td>Reactivity</td> <td>1</td> </tr> <tr> <td>Personal Protection</td> <td>B</td> </tr> </table>	Health Hazard	1	Fire Hazard	1	Reactivity	1	Personal Protection	B	NFPA (U.S.A.) 	Health  Fire Hazard Reactivity Specific hazard
Health Hazard	1										
Fire Hazard	1										
Reactivity	1										
Personal Protection	B										

Section 16. Other Information

References Available upon request.
 * Marque de commerce de Petro-Canada - Trademark

Glossary

ACGIH - American Conference of Governmental Industrial Hygienists	IRIS - Integrated Risk Information System
ADR - Agreement on Dangerous goods by Road (Europe)	LD50/LC50 - Lethal Dose/Concentration kill 50%
ASTM - American Society for Testing and Materials (LDLo/LCLo - Lowest Published Lethal Dose/Concentration
BOD5 - Biological Oxygen Demand in 5 days	NAERG'96 - North American Emergency Response Guide Book (1996)
CAN/CGA B149.2 Propane Installation Code	NFPA - National Fire Prevention Association
CAS - Chemical Abstract Services	NIOSH - National Institute for Occupational Safety & Health
CEPA - Canadian Environmental Protection Act	NPRI - National Pollutant Release Inventory
CERCLA - Comprehensive Environmental Response, Compensation and Liability Act	NSNR - New Substances Notification Regulations (Canada)
CFR - Code of Federal Regulations	NTP - National Toxicology Program
CHIP - Chemicals Hazard Information and Packaging Approved Supply List	OSHA - Occupational Safety & Health Administration
COD5 - Chemical Oxygen Demand in 5 days	PEL - Permissible Exposure Limit
CPR - Controlled Products Regulations	RCRA - Resource Conservation and Recovery Act
DOT - Department of Transport	SARA - Superfund Amendments and Reorganization Act
DSCCL - Dangerous Substances Classification and Labeling (Europe)	SD - Single Dose
DSD/DPD - Dangerous Substances or Dangerous Preparations Directives (Europe)	STEL - Short Term Exposure Limit (15 minutes)
DSL - Domestic Substance List	TDG - Transportation Dangerous Goods (Canada)
EEC/EU - European Economic Community/European Union	TDLo/TCLo - Lowest Published Toxic Dose/Concentration
EINECS - European Inventory of Existing Commercial Chemical Substances	TLm - Median Tolerance Limit
EPCRA - Emergency Planning and Community Right to Know Act	TLV-TWA - Threshold Limit Value-Time Weighted Average
FDA - Food and Drug Administration	TSCA - Toxic Substances Control Act
FIFRA - Federal Insecticide, Fungicide and Rodenticide Act	USEPA - United States Environmental Protection Agency
HCS - Hazardous Communication System	USP - United States Pharmacopoeia
HMIS - Hazardous Material Information System	WHMIS - Workplace Hazardous Material Information System
IARC - International Agency for Research on Cancer	

Information Contact Internet: www.petro-canada.ca

Lubricants:
Western Canada, telephone: 1-800-661-1199;
fax: (780) 464-9564
Ontario & Central Canada, telephone:
1-800-268-5850 and (905) 822-4222; fax:
1-800-201-6285
Quebec & Eastern Canada, telephone:
1-800-576-1686; fax: 800-201-6285

For Product Safety Information: (905) 804-4752

Prepared by Product Safety - JDW on 12/18/2002.

Data entry by Product Safety - JDW.

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

MATERIAL SAFETY DATA SHEET

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name:	Portland Cement, GU (General use hydraulic cement, formerly Normal Portland Cement), HE (High early-strength hydraulic cement) and HS (High sulphate-resistant hydraulic cement).		
CAS #:	65997-15-1		
Product Use:	Preparation of concrete and mortar.		
MSDS Information:	This MSDS was produced in November, 2002, and replaces any previous versions. This MSDS covers all types of portland cement. Individual composition of constituents will vary within the range shown in Section 2.		
Product Code:	Not Applicable.		
Chemical Family:	Calcium compounds. Calcium silicate compounds and other calcium compounds containing iron and aluminum make up the majority of this product.		
Chemical Name And Synonyms:	Portland cement. Portland cement is also known as hydraulic cement and/or normal portland cement.		
Formula:	This product consists of finely ground portland cement clinker, gypsum and limestone (for some products).		
Supplier/Manufacturer:	Lehigh Inland Cement Limited P.O. Box 3961, Station D, 12640 - 156 Street Edmonton, Alberta, Canada, T5L 4P5		Telephone (780) 420 2500
Emergency Contact Information:	Lehigh Inland Cement Limited P.O. Box 3961, Station D, 12640 - 156 Street Edmonton, Alberta, Canada, T5L 4P5		Telephone (780) 420 2541

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

Portland Cement Exposure Limits:	ACGIH TLV-TWA	10 mg total dust/m ³
	OSHA PEL-TWA	15 mg total dust/m ³
	OSHA PEL-TWA	5 mg respirable dust/m ³

Portland Cement Ingredients & Their Exposure Limits:

Ingredient	CAS#	% By Weight	ACGIH TLV-TWA	OSHA PEL-TWA
Calcium Silicates	various	60-80%	10 mg total dust/m ³	15 mg total dust/m ³ 5 mg respirable dust/m ³
Gypsum	7778-18-9	3-7%	10 mg total dust/m ³	15 mg total dust/m ³ 5 mg respirable dust/m ³
Crystalline Silica	14808-60-7	less than 0.1%	0.10 mg respirable quartz/m ³ NIOSH REL (8-hour TWA) = 0.05 mg respirable quartz dust/m ³	(10 mg respirable dust/m ³)/(percent silica+2)
Calcium Carbonate	1317-65-3	0-5%	10 mg total dust/m ³	15 mg total dust/m ³ 5 mg respirable dust/m ³
Magnesium Oxide	1309-48-4	1-4%	10 mg total dust/m ³	10 mg total dust/m ³
Calcium Oxide	1305-78-8	0.5-1.5%	2 mg total dust/m ³	5 mg total dust/m ³

Trace Elements:

Portland cement is made from materials mined from the earth and is processed using energy provided by fuels. Trace amounts of chemicals, some of which may be potentially harmful, might be detected during chemical analysis. For example, in addition to the ingredients listed above, portland cement may contain potassium and sodium sulfate compounds, chromium compounds (including up to 0.003% hexavalent chromium) and nickel compounds.

MATERIAL SAFETY DATA SHEET

SECTION 3 - HAZARDS IDENTIFICATION

Emergency Overview:

Portland cement is a light gray powder that poses little immediate hazard. A single short term exposure to the dry powder is not likely to cause serious harm. However, exposure of sufficient duration to wet portland cement can cause serious, potentially irreversible tissue (skin or eye) destruction in the form of chemical (caustic) burns, including third degree burns. The same type of tissue destruction can occur if wet or moist areas of the body are exposed for sufficient duration to dry portland cement.

Potential Health Effects:

- **Relevant routes of exposure are:**

Eye contact, skin contact, inhalation, and ingestion.

Effects Resulting From EYE CONTACT:

Exposure to airborne dust may cause immediate or delayed irritation or inflammation.

Eye contact by larger amounts of dry powder or splashes of wet portland cement may cause effects ranging from moderate eye irritation to chemical burns and blindness. Such exposures require immediate first aid (see Section 4) and medical attention to prevent significant damage to the eye.

Effects Resulting From SKIN CONTACT:

Discomfort or pain cannot be relied upon to alert a person to a hazardous skin exposure. Consequently, the only effective means of avoiding skin injury or illness involves minimizing skin contact, particularly contact with wet cement. Exposed persons may not feel discomfort until hours after the exposure has ended and significant injury has occurred.

Exposure to dry portland cement may cause drying of the skin with consequent mild irritation or more significant effects attributable to aggravation of other conditions. Dry portland cement contacting wet skin or exposure to moist or wet portland cement may cause more severe skin effects including thickening, cracking, or fissuring of the skin. Prolonged exposure can cause severe skin damage in the form of (caustic) chemical burns.

Some individuals may exhibit an allergic response upon exposure to portland cement, possibly due to trace amounts of chromium. The response may appear in a variety of forms ranging from a mild rash to severe skin ulcers. Persons already sensitized may react to their first contact with the product. Other persons may first experience this effect after years of contact with portland cement products.

Effects Resulting From INHALATION:

Portland cement may contain trace amounts of crystalline silica. Prolonged exposure to respirable free crystalline silica may aggravate other lung conditions. It also may cause delayed lung injury including silicosis, a disabling and potentially fatal lung disease, and/or other diseases. (Also see "Carcinogenic Potential" below.)

Exposure to portland cement may cause irritation to the moist mucous membranes of the nose, throat, and upper respiratory system. It may also leave unpleasant deposits in the nose.

Effects Resulting From INGESTION:

Although small quantities of dust are not known to be harmful, ill effects are possible if larger quantities are consumed. Portland cement should not be eaten.

- **Carcinogenic Potential:**

Portland cement is not listed as a carcinogen by NTP, OSHA, or IARC. It may, however, contain trace amounts of substances listed as carcinogens by these organizations.

Crystalline silica, a potential trace level contaminant in portland cement, is now classified by IARC as a known human carcinogen (Group 1). NTP has characterized respirable silica as "reasonably anticipated to be [a] carcinogen".

- **Medical Conditions That May Be Aggravated By Inhalation Or Dermal Exposure:**

Pre-existing upper respiratory and lung diseases.
Unusual (hyper) sensitivity to hexavalent chromium (chromium⁺⁶) salts.

MATERIAL SAFETY DATA SHEET

SECTION 4 - FIRST-AID MEASURES

Eyes:

Immediately flush eyes thoroughly with water. Continue flushing for at least 15 minutes, including under lids, to remove all particles. Call physician immediately.

Skin:

Wash skin with cool water and pH-neutral soap or a mild detergent intended for use on skin. Seek medical treatment in all cases of prolonged exposure to wet cement, cement mixtures, liquids from fresh cement products, or prolonged wet skin exposure to dry cement.

Inhalation Of Airborne Dust:

Remove to fresh air. Seek medical help if coughing and other symptoms do not subside. ("Inhalation" of gross amounts of portland cement requires immediate medical attention.)

Ingestion:

Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

SECTION 5 - FIRE-FIGHTING MEASURES

Flammability:	Not Flammable.
Flash Point:	Not Applicable.
Lower Explosive Limit:	Not Applicable.
Upper Explosive Limit:	Not Applicable.
Auto ignition Temperature:	Not Applicable.
Sensitivity To Static Discharge:	Not Applicable.
Sensitivity To Impact:	Not Applicable.
Extinguishing Media:	Not Applicable.
Special Fire-Fighting Procedures:	None.
Hazardous Combustion Products:	Not Applicable.
Unusual Fire And Explosion Hazards:	Not Applicable.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Collect dry material using a scoop. Avoid actions that cause dust to become airborne. Avoid inhalation of dust and contact with skin. Wear appropriate personal protective equipment as described in Section 8.

Scrape up wet material and place in an appropriate container. Allow the material to "dry" before disposal. Do not attempt to wash portland cement down drains.

Dispose of waste material according to local, provincial, state and federal regulations.

SECTION 7 - HANDLING AND STORAGE

Keep portland cement dry until used. Normal temperatures and pressures do not affect the material.

Promptly remove dusty clothing or clothing which is wet with cement fluids and launder before reuse. Wash thoroughly after exposure to dust or wet cement mixtures or fluids.

MATERIAL SAFETY DATA SHEET

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection:

When engaged in activities where cement dust or wet cement or concrete could contact the eye, wear safety glasses with side shields or goggles. In extremely dusty environments and unpredictable environments, wear unvented or indirectly vented goggles to avoid eye irritation or injury. Contact lenses should not be worn when working with portland cement or fresh cement products.

Skin Protection:

Prevention is essential to avoiding potentially severe skin injury. Avoid contact with unhardened (wet) portland cement products. If contact occurs, promptly wash affected area with soap and water. Where prolonged exposure to unhardened portland cement products might occur, wear impervious clothing and gloves to eliminate skin contact. Where required, wear boots that are impervious to water to eliminate foot and ankle exposure.

Do not rely on barrier creams; barrier creams should not be used in place of gloves.

Periodically wash areas contacted by dry portland cement or by wet cement or concrete fluids with a pH-neutral soap. Wash again at the end of work. If irritation occurs, immediately wash the affected area and seek treatment. If clothing becomes saturated with wet concrete, it should be removed and replaced with clean dry clothing.

Respiratory Protection:

Avoid actions that cause dust to become airborne. Use local or general ventilation to control exposures below applicable exposure limits.

Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84 after July 10, 1998) respirators in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation.

Ventilation:

Use local exhaust or general dilution ventilation to control exposure within applicable limits.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White to gray powder.
Odor:	No distinct odor.
Odor Threshold:	Not applicable.
Physical State:	Solid (powder).
pH (as a solid):	Not applicable.
pH (in water) (ASTM D 1293-95):	12 to 13
Solubility In Water:	Slightly soluble (0.1 to 1.0 %).
Vapor Pressure:	Not applicable.
Vapor Density:	Not applicable.
Boiling Point:	Not applicable (i.e., >1000°C).
Freezing Point:	Not applicable.
Melting Point:	Not applicable.
Specific Gravity (H₂O = 1.0):	3.15
Evaporation Rate:	Not applicable.
Coeff. Water/Oil Dist.:	Not applicable.

SECTION 10 - STABILITY AND REACTIVITY

Stability:	Stable
Conditions to avoid:	Unintentional contact with water.
Incompatibility:	Portland cement reacts with water to produce a caustic solution, pH 12 to pH 13. Wet portland cement is alkaline. As such it is incompatible with acids, ammonium salts and aluminum metal. Aluminum powder and other alkali and alkaline earth elements will react in wet mortar or concrete, liberating hydrogen gas. Portland cement dissolves in hydrofluoric acid producing corrosive silicon tetrafluoride gas. Silicates react with powerful oxidizers such as fluorine, chlorine, trifluoride and oxygen difluoride.

MATERIAL SAFETY DATA SHEET

SECTION 10 - STABILITY AND REACTIVITY (CONTINUED)

Hazardous Decomposition: Will not spontaneously occur. Adding water results in hydration and produces (caustic) calcium hydroxide.

Hazardous Polymerization: Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION

Effects Of Acute Exposure:

Portland cement and wet portland cement mixtures can dry the skin, cause alkali burns and irritate the eyes and upper respiratory tract. Ingestion can cause irritation of the throat.

Effects Of Chronic Exposure:

Portland cement dust can cause inflammation of the tissue lining the interior of the nose and the cornea (white) of the eye.

SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicity: No recognized unusual toxicity to plants or animals.

Relevant Physical And Chemical Properties: See Sections 9 and 10.

SECTION 13 - DISPOSAL CONSIDERATIONS

Dispose of waste material according to local, provincial, state and federal regulations. (Since portland cement is stable, uncontaminated material may be saved for future use.)

Dispose of bags in an approved landfill or incinerator.

SECTION 14 - TRANSPORT INFORMATION

Hazardous materials description/proper shipping name: Portland cement is not hazardous under the TDG Act (Canada) or DOT regulations (USA).

Hazard Class: Not applicable.

Identification Number: Not applicable.

Required Label Text: Not applicable.

Hazardous substances/reportable quantities (RO): Not applicable.

SECTION 15 - REGULATORY INFORMATION

Status under USDOL-OSHA Hazard Communication Rule, 29 CFR 1910.1200:

Portland cement is considered a "hazardous chemical" under this regulation, and should be part of any hazard communication program.

Status under CERCLA/Superfund, 40 CFR 117 and 302:

Not listed.

Hazard Category under SARA (Title III), Sections 311 and 312:

Portland cement qualifies as a "hazardous substance" with delayed health effects.

Status under SARA (Title III), Section 313:

Not subject to reporting requirements under Section 313.

MATERIAL SAFETY DATA SHEET

SECTION 15 - REGULATORY INFORMATION (CONTINUED)

Status under TSCA (as of May 1997):

Some substances in portland cement are on the TSCA inventory list.

Status under the Federal Hazardous Substances Act:

Portland cement is a "hazardous substance" subject to statutes promulgated under the subject act.

Status under California Proposition 65:

This product contains chemicals (trace metals) known to the State of California to cause cancer, birth defects or other reproductive harm. California law requires the manufacturer to give the above warning in the absence of definitive testing to prove the defined risks do not exist.

Status under Canadian Environmental Protection Act:

Not listed.

Status under WHMIS:

Portland cement is considered to be a hazardous material under the Hazardous Products Act as defined by the Controlled Products Regulations and is therefore subject to the labeling and MSDS requirements of the Workplace Hazardous Materials Information System (WHMIS).

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

SECTION 16 - OTHER INFORMATION

Prepared By:	Robin Cowdrey
Approved By:	Bob Rimes
Approval Date or Revision Date:	September 1, 2004
Date Of Previous MSDS:	November 1, 2002
MSDS Number:	Not Applicable

Other Important Information:

Portland cement should only be used by knowledgeable persons. A key to using the product safely requires the user to recognize that portland cement chemically reacts with water, and that some of the intermediate products of this reaction (that is, those present while a portland cement product is "setting") pose a far more severe hazard than does portland cement itself.

While the information provided in this material safety data sheet is believed to provide a useful summary of the hazards of portland cement as it is commonly used, the sheet cannot anticipate and provide all of the information that might be needed in every situation. Inexperienced product users should obtain proper training before using this product.

In particular, the data furnished in this sheet does not address hazards that may be posed by other materials mixed with portland cement to produce portland cement products. Users should review other relevant material safety data sheets before working with this portland cement or working on portland cement products, for example, portland cement concrete.

No representations or warranties with respect to the accuracy or correctness of this information, or of any kind or nature whatsoever are given, made or intended by Lehigh Inland Cement Limited. No legal responsibility whatsoever is assumed for this information, or for any injuries or damages, however caused which may result from the use of this information. This information is offered solely for informational purposes and is subject to your own independent investigation and verification.

SECTION 1 – PRODUCT INFORMATION

Product Name: Propane
Trade Name: LPG (Liquified Petroleum Gas), LP-Gas
Chemical Formula: C₃H₈

Supplier: Superior Propane Inc.
 1111 - 49th Avenue N.E.
 Calgary, AB T2E 8V2

WHMIS CLASSIFICATION
 Class A - Compressed Gas
 Class B, Division 1 - Flammable Gas

Business: (403) 730-7500

Local Market
Emergency Number: _____
 (Non Medical)

Application and Use: Propane is commonly used as a fuel for heating, cooking, automobiles, forklift trucks, crop drying and welding and cutting operations. Propane is used in industry as a refrigerant, solvent and as a chemical feedstock.

SECTION 2 – HAZARDOUS INGREDIENTS

COMPONENTS	CAS NO.	% Volume (v/v)	LD50
Propane	74 -98-6	90% - 99%	Not Applicable
Propylene	115 -07-1	0% - 5%	Not Applicable
Ethane	74 -84-0	0% - 5%	Not Applicable
Butane and heavier hydro carbons	106 -97-8	0% - 2.5%	Not Applicable

Occupational Exposure Limit:

Based upon animal test data, the acute toxicity of this product is expected to be inhalation: 4 hour LC50 = 280,000 ppm (Rat).
Note: Composition is typical for HD-5 Propane per The Canadian General Standard Board CGSB 3.14 National Standard of Canada. Exact composition will vary from shipment to shipment.

SECTION 3 – CHEMICAL AND PHYSICAL DATA

Form: Liquid and vapour while stored under pressure.
Boiling Point: -42°C @ 1 atm.
Freezing Point: -188°C
Evaporation Rate: Rapid (Gas at normal ambient conditions).
Vapour Pressure: 1435 kPa (maximum) @ 37.8°C
Vapour Density: 1.52 (Air = 1)
Coefficient of Water/Oil Distribution: Not available.
pH: Not available.

Solubility in water: Slight, 6.1% by volume @ 17.8°C
Specific Gravity: 0.51 (water = 1)
Appearance/Odour: Colourless liquid and vapour while stored under pressure. Colourless and odourless gas in natural state at any concentration. Commercial propane has an odourant added, ethyl mercaptan, which has an odour similar to boiling cabbage.*
Odour Threshold: 4800 ppm

* With proper handling, transportation and storage, adding a chemical odourant such as eth-merc has proven to be a very effective warning device, but all odourants have certain limitations. The effectiveness of the odourant may be diminished by a person's sense of smell, by competing odours and by oxidation which may cause a potentially dangerous situation.

SECTION 4 – FIRE OR EXPLOSION HAZARD

Flash Point: -103.4°C
Method: Closed cup.
Flammable Limits: Lower 2.4%, Upper 9.5%
Auto Ignition Temperature: 432°C
Products Evolved Due To Heat Or Combustion: Carbon monoxide can be produced when primary air and secondary air are deficient while combustion is taking place.
Fire and Explosive Hazards: Explosive air-vapour mixtures may form if allowed to leak to atmosphere.
Sensitivity To Impact: No.
Sensitivity To Static Discharge: Yes.

Fire Extinguishing Precautions: Use water spray to cool exposed cylinders or tanks. Do not extinguish fire unless the source of the escaping gas that is fueling the fire can be turned off. Fire can be extinguished with carbon dioxide and/or dry chemical (BC). Container metal shells require cooling with water to prevent flame impingement and the weakening of metal. If sufficient water is not available to protect the container shell from weakening, the area will be required to be evacuated. If gas has not ignited, liquid or vapour may be dispersed by water spray or flooding.
Special Fire Fighting Equipment: Protective clothing, hose monitors, fog nozzles, self-contained breathing apparatus.

SECTION 5 – REACTIVITY DATA

Stability: Stable.
Conditions To Avoid: Keep separate from oxidizing agents. Gas explodes spontaneously when mixed with chloride dioxide.
Incompatibility: Remove sources of ignition and observe distance requirements for storage tanks from combustible material, drains and openings to building.

Hazardous Decomposition Products: Deficient primary and secondary air can produce carbon monoxide.
Hazardous Polymerization: Will not occur.

SECTION 6 – TOXICOLOGICAL PROPERTIES OF MATERIAL

ROUTES OF ENTRY:

Inhalation: Simple asphyxiant. No effect at concentrations of 10,000 ppm (peak exposures). Higher concentrations may cause central nervous system disorder and/or damage. Lack of oxygen may cause dizziness, loss of coordination, weakness, fatigue, euphoria, mental confusion, blurred vision, convulsions, breathing failure, coma and death. Breathing high vapour concentrations (saturated vapours) for a few minutes may be fatal. Saturated vapours may be encountered in confined spaces and/or under conditions of poor ventilation. Avoid breathing vapours or mist.

Skin and Eye Contact: Exposure to vapourizing liquid may cause frostbite (cold burns) and permanent eye damage.

Ingestion: Not considered to be a hazard.

Acute Exposure: The acute toxicity of this product is expected to be inhalation: 4 hour LC50=280,000ppm (Rat).

Chronic Exposure: There are no reported effects from long term low level exposure.

Sensitization to Product: Skin–unknown, Respiratory–unknown.

Occupational Exposure Limits: American Conference of Governmental Industrial Hygienists (ACGIH) lists as a simple asphyxiant. ACGIH TLV: 1000 ppm.

Carcinogenicity, Reproductive Toxicity, Teratogenicity, Mutagenicity: No effects reported.

SECTION 7 – PREVENTIVE MEASURES

Eyes: Safety glasses, are recommended when transferring product.

Skin: Insulated gloves required if contact with liquid or liquid cooled equipment is expected. Wear gloves and long sleeves when transferring product.

Inhalation: Where concentration in air would reduce the oxygen level below 18% air or exceed occupational exposure limits in section 6, self-contained breathing apparatus is required.

Ventilation: Explosion proof ventilation equipment required in confined spaces.

SECTION 8 – EMERGENCY AND FIRST AID PROCEDURES

FIRST AID:

Eyes: Should eye contact with liquid occur, flush eyes with lukewarm water for 15 minutes. Obtain immediate medical care.

Skin: In case of “Cold Burn” from contact with liquid, immediately place affected area in lukewarm water and keep at this temperature until circulation returns. If fingers or hands are frostbitten, have the victim hold his hand next to his body such as under the armpit. Obtain immediate medical care.

Ingestion: None considered necessary.

Inhalation: Remove person to fresh air. If breathing is difficult or has stopped, administer artificial respiration. Obtain immediate medical care.

SPILL OR LEAK:

Eliminate leak if possible.

Eliminate source of ignition.

Ensure cylinder is upright.

Disperse vapours with hose streams using fog nozzles. Monitor low areas as propane is heavier than air and can settle into low areas. Remain upwind of leak. Keep people away. Prevent vapour and/or liquid from entering into sewers, basements or confined areas.

SECTION 9 – TRANSPORTATION, HANDLING AND STORAGE

- Transport and store cylinders and tanks secured in an upright position in a ventilated space away from ignition sources (so the pressure relief valve is in contact with the vapour space of the cylinder or tank).
- Cylinders that are not in use must have the valves in the closed position and be equipped with a protective cap or guard.
- Do not store with oxidizing agents, oxygen, or chlorine cylinders.

- Empty cylinders and tanks may contain product residue. Do not pressurize, cut, heat or weld empty containers.
- Transport, handle and store according to applicable federal and provincial codes and regulations.

Transportation of Dangerous Goods (TDG)

- TDG Classification: Flammable Gas 2.1
- TDG Shipping Name: Liquefied Petroleum Gas (Propane)
- TDG Special Provisions: 56, 90, 102
- PIN Number: UN1075

SECTION 10 – PREPARATION

Superior Propane Inc., Regulations & Safety Department. (403) 730-7500 Date prepared: November 2001.
Supersedes: September 1999.

The information contained herein is believed to be accurate. It is provided independently of any sale of the product. It is not intended to constitute performance information concerning the product. No express warranty, implied warranty of merchantability or fitness for a particular purpose is made with respect to the product information contained herein.

**MATERIAL SAFETY DATA SHEET**

Date Prepared: November 14, 2003
Supersedes: September 17, 1998
MSDS Number: 08366

1. PRODUCT INFORMATION

Product Identifier: UNIREX LOTEMP MOLY GREASE

Application and Use:
Lubricating grease

Product Description:

A grease, a mixture of lubricating oil, soap and additives.

REGULATORY CLASSIFICATION

WHMIS:

Not a controlled product

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT

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

TDG INFORMATION (RAIL/ROAD):

Not Regulated in Canada.

Please be aware that other regulations may apply.

TELEPHONE NUMBERS

Emergency 24 hr. (519) 339-2145
Technical Info. (800) 268-3183

MANUFACTURER/SUPPLIER:

IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(416) 968-4441

2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a) (i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #
Not applicable		

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: <20.00 cSt at 40 deg C
Vapour Density: not available
Boiling Point: not available
Evaporation rate: <1 (1= n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: 245 deg C ASTM D97
Odour Threshold: not available
Vapour Pressure: 0.002 kPa at 20 deg C
Density: 0.92 g/cc at 15 deg C
Appearance/odour: Black paste, petroleum odour.

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
Elevated temperatures or mechanical action may form vapours, mists or fumes which may be irritating to the eyes, nose, throat and lungs.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Low toxicity.
Frequent or prolonged contact may irritate the skin.
High pressure greasing equipment is capable of injecting grease under the skin which may have severe health consequences.

INGESTION:

Low toxicity.
Small amounts of this liquid drawn into the lungs from swallowing or vomiting may cause severe health effects (e.g. bronchopneumonia or pulmonary edema).

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products, the acute toxicity of this product is expected to be:

Oral : LD50 > 5000 mg/kg (Rat)
Dermal : LD50 > 3160 mg/kg (Rabbit)
Inhalation : LC50 > 5000 mg/m3 (Rat)

OCCUPATIONAL EXPOSURE LIMIT:

ACGIH recommends:

For insoluble Molybdenum compounds, 10 mg/m3.

For oil mists, 5 mg/m3.

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

In case of adverse exposure to vapours, mists and/or fumes formed at elevated temperature, or by mechanical action, immediately remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Flush with large amounts of water. Use soap if available.

Remove severely contaminated clothing (including shoes) and launder before reuse.

If irritation persists, seek medical attention.

Consult a physician immediately if the material is injected under the skin from the misuse of high pressure greasing equipment.

INGESTION:

DO NOT induce vomiting since it is important that no amount of the material should enter the lungs (aspiration). Keep at rest. Get prompt medical attention.

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon

conditions of use.

In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves.

Where only incidental contact is likely, wear safety glasses with side shields. No other special precautions are necessary provided skin/eye contact is avoided.

Where concentrations in air may exceed the occupational exposure limits given in Section 4 and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

ENGINEERING CONTROLS:

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care.

Store in a cool, well ventilated place away from incompatible materials.

In keeping with good personal hygiene practices, wash hands thoroughly after handling the material.

Store and load at normal (up to 38 deg C) temperature and at atmospheric pressure.

Empty containers may contain product residue. Do not pressurize cut, heat, or weld empty containers. Do not reuse empty containers without commercial cleaning or reconditioning.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard.

Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth.

Allow material to solidify and scrape up. Place material in suitable containers for recycle or disposal.

Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately.

Take all additional action necessary to prevent and remedy the adverse effects of the spill.

WATER SPILL:

Remove from surface by skimming or with suitable absorbents. If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in unconfined waters.

Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately.

Take all additional action necessary to prevent and remedy the adverse effects of the spill.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: >110 deg C COC ASTM D92 est.baseoil

Autoignition: NA Flammable Limits: LEL: NA UEL: NA

GENERAL HAZARDS:

Low Hazard; liquids may burn upon heating to temperatures at or above the flash point.

Decomposes; flammable/toxic gases will form at elevated temperatures (thermal decomposition).

Toxic gases will form upon combustion.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel. Shut off fuel to fire.

Use foam, dry chemical or water spray to extinguish fire.

Respiratory and eye protection required for fire fighting personnel.

A self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA may not be required.

HAZARDOUS COMBUSTION PRODUCTS:

Smoke, carbon monoxide, carbon dioxide and traces of oxides of sulphur

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

Fumes, smoke, carbon monoxide and sulphur oxides in case of incomplete combustion

9. NOTES

All components of this product are listed on the U.S. TSCA inventory.

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REVISION SUMMARY:

Since 17 September 1998, this MSDS has been revised in Section(s):
1, 7

10. PREPARATION

Date Prepared: November 14, 2003
Prepared by: Lubricants & Specialties
IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(800) 268-3183

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MATERIAL SAFETY DATA SHEET

Date Prepared: April 06, 2002
Supersedes: January 08, 1999
MSDS Number: 08258

1. PRODUCT INFORMATION

Product Identifier: UNIVIS N 22

Application and Use:
Hydraulic fluid

Product Description:

Mixture of paraffinic and naphthenic hydrocarbons (saturated and unsaturated), and additives.

REGULATORY CLASSIFICATION

WHMIS:
Not a controlled product

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT
All components of this product are either on the Domestic Substances List (DSL) or are exempt.

TDG INFORMATION (RAIL/ROAD):
Not Regulated in Canada.

Please be aware that other regulations may apply.

TELEPHONE NUMBERS

Emergency 24 hr. (519) 339-2145
Technical Info. (800) 268-3183

MANUFACTURER/SUPPLIER:

IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(416) 968-4441

2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a) (i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #
Not applicable		

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: 22.00 cSt at 40 deg C
Vapour Density: not available
Boiling Point: 229 to 512 deg C
Evaporation rate: <0.1 (1= n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: -48 deg C ASTM D97
Odour Threshold: not available
Vapour Pressure: <1 kPa at 38 deg C
Density: 0.87 g/cc at 15 deg C
Appearance/odour: Yellow oil, petroleum odour

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
Elevated temperatures or mechanical action may form vapours, mists or fumes which may be irritating to the eyes, nose, throat and lungs.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Low toxicity.
Frequent or prolonged contact may irritate the skin.

INGESTION:

Low toxicity.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products, the acute toxicity of this product is expected to be:

Oral : LD50 > 5000 mg/kg (Rat)
Dermal : LD50 > 3160 mg/kg (Rabbit)
Inhalation : LC50 > 5000 mg/m3 (Rat)

OCCUPATIONAL EXPOSURE LIMIT:

ACGIH recommends:

For oil mists, 5 mg/m3.

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

Vapour pressure of this material is low and as such inhalation under normal conditions is usually not a problem. If overexposed to oil mist, remove from further exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Flush with large amounts of water. Use soap if available. Remove severely contaminated clothing (including shoes) and launder before reuse. If irritation persists, seek medical attention.

INGESTION:

If swallowed, DO NOT induce vomiting. Keep at rest. Get prompt medical attention.

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.

In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves.

Where only incidental contact is likely, wear safety glasses with side shields. No other special precautions are necessary provided skin/eye contact is avoided.

Where concentrations in air may exceed the occupational exposure limits given in Section 4 and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

ENGINEERING CONTROLS:

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care. Store in a cool, well ventilated place away from incompatible materials. Do not handle or store near an open flame, sources of heat, or sources of ignition.

In keeping with good personal hygiene practices, wash hands thoroughly after handling the material.

Empty containers may contain product residue. Do not pressurize cut, heat, or weld empty containers. Do not reuse empty containers without commercial cleaning or reconditioning.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard. Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth. Recover by pumping or by using a suitable absorbant. Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill.

WATER SPILL:

Remove from surface by skimming or with suitable absorbents. If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in unconfined waters. Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: 150 deg C COC ASTM D92

Autoignition: NA Flammable Limits: LEL: NA UEL: NA

GENERAL HAZARDS:

Low Hazard; liquids may burn upon heating to temperatures at or above the flash point.

Toxic gases will form upon combustion.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel. Shut off fuel to fire.

Use foam, dry chemical or water spray to extinguish fire.

Respiratory and eye protection required for fire fighting personnel.

Avoid spraying water directly into storage containers due to danger of boilover.

A self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA may not be required.

HAZARDOUS COMBUSTION PRODUCTS:

Smoke, carbon monoxide, carbon dioxide under thermal decomposition.

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

none

9. NOTES

All components of this product are listed on the U.S. TSCA inventory.

THREE YEAR WHMIS REVIEW.

10. PREPARATION

Date Prepared: April 06, 2002

Prepared by: Lubricants & Specialties
IMPERIAL OIL
Products Division

111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(800) 268-3183

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MATERIAL SAFETY DATA SHEET

Date Prepared: April 06, 2002
Supersedes: January 08, 1999
MSDS Number: 08259

1. PRODUCT INFORMATION

Product Identifier: UNIVIS N 32

Application and Use:
Hydraulic fluid

Product Description:

Mixture of paraffinic and naphthenic hydrocarbons (saturated and unsaturated), and additives.

REGULATORY CLASSIFICATION

WHMIS:
Not a controlled product

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT
All components of this product are either on the Domestic Substances List (DSL) or are exempt.

TDG INFORMATION (RAIL/ROAD):
Not Regulated in Canada.

Please be aware that other regulations may apply.

TELEPHONE NUMBERS

Emergency 24 hr. (519) 339-2145
Technical Info. (800) 268-3183

MANUFACTURER/SUPPLIER:

IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(416) 968-4441

2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a) (i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #
Not applicable		

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: 32.00 cSt at 40 deg C
Vapour Density: not available
Boiling Point: 229 to 512 deg C
Evaporation rate: <0.1 (1= n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: -42 deg C ASTM D97
Odour Threshold: not available
Vapour Pressure: <1 kPa at 38 deg C
Density: 0.87 g/cc at 15 deg C
Appearance/odour: Yellow oil, petroleum odour

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
Elevated temperatures or mechanical action may form vapours, mists or fumes which may be irritating to the eyes, nose, throat and lungs.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Low toxicity.
Frequent or prolonged contact may irritate the skin.

INGESTION:

Low toxicity.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products, the acute toxicity of this product is expected to be:

Oral : LD50 > 5000 mg/kg (Rat)
Dermal : LD50 > 3160 mg/kg (Rabbit)
Inhalation : LC50 > 5000 mg/m3 (Rat)

OCCUPATIONAL EXPOSURE LIMIT:

ACGIH recommends:

For oil mists, 5 mg/m3.

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

Vapour pressure of this material is low and as such inhalation under normal conditions is usually not a problem. If overexposed to oil mist, remove from further exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Flush with large amounts of water. Use soap if available. Remove severely contaminated clothing (including shoes) and launder before reuse. If irritation persists, seek medical attention.

INGESTION:

If swallowed, DO NOT induce vomiting. Keep at rest. Get prompt medical attention.

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.

In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves.

Where only incidental contact is likely, wear safety glasses with side shields. No other special precautions are necessary provided skin/eye contact is avoided.

Where concentrations in air may exceed the occupational exposure limits given in Section 4 and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

ENGINEERING CONTROLS:

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care. Store in a cool, well ventilated place away from incompatible materials. In keeping with good personal hygiene practices, wash hands thoroughly after handling the material.

Empty containers may contain product residue. Do not pressurize cut, heat, or weld empty containers. Do not reuse empty containers without commercial cleaning or reconditioning.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard. Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth. Recover by pumping or by using a suitable absorbant. Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill.

WATER SPILL:

Remove from surface by skimming or with suitable absorbents. If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in unconfined waters. Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: 165 deg C COC ASTM D92

Autoignition: NA Flammable Limits: LEL: NA UEL: NA

GENERAL HAZARDS:

Low Hazard; liquids may burn upon heating to temperatures at or above the flash point.

Toxic gases will form upon combustion.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel. Shut off fuel to fire.

Use foam, dry chemical or water spray to extinguish fire. Respiratory and eye protection required for fire fighting personnel. Avoid spraying water directly into storage containers due to danger of boilover.

A self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA may not be required.

HAZARDOUS COMBUSTION PRODUCTS:

Smoke, carbon monoxide, carbon dioxide and traces of oxides of sulphur

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

none

9. NOTES

All components of this product are listed on the U.S. TSCA inventory.

THREE YEAR WHMIS REVIEW.

10. PREPARATION

Date Prepared: April 06, 2002
Prepared by: Lubricants & Specialties
IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario

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(800) 268-3183

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**MATERIAL SAFETY DATA SHEET**

Date Prepared: May 13, 2003
Supersedes: April 12, 2000
MSDS Number: 08265

1. PRODUCT INFORMATION

Product Identifier: UNIVIS N 68

Application and Use:
Hydraulic fluid

Product Description:

A lubricating oil consisting of a mixture of saturated and unsaturated hydrocarbons derived from paraffinic distillate, and additives.

REGULATORY CLASSIFICATION

WHMIS:
Not a controlled product

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT
All components of this product are either on the Domestic Substances List (DSL) or are exempt.

TDG INFORMATION (RAIL/ROAD):
Not Regulated in Canada.

Please be aware that other regulations may apply.

TELEPHONE NUMBERS

Emergency 24 hr. (519) 339-2145
Technical Info. (800) 268-3183

MANUFACTURER/SUPPLIER:

IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(416) 968-4441

2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a) (i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #
Not applicable		

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: 68.00 cSt at 40 deg C
Vapour Density: not available
Boiling Point: not available
Evaporation rate: <0.1 (1= n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: -36 deg C ASTM D97
Odour Threshold: not available
Vapour Pressure: <0.1 kPa at 20 deg C
Density: 0.88 g/cc at 15 deg C
Appearance/odour: Yellow oil, petroleum odour

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
Elevated temperatures or mechanical action may form vapours, mists or fumes which may be irritating to the eyes, nose, throat and lungs.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Low toxicity.
Frequent or prolonged contact may irritate the skin.

INGESTION:

Low toxicity.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products,

the acute toxicity of this product is expected to be:

Oral : LD50 > 5000 mg/kg (Rat)
Dermal : LD50 > 3160 mg/kg (Rabbit)
Inhalation : LC50 > 5000 mg/m3 (Rat)

OCCUPATIONAL EXPOSURE LIMIT:

ACGIH recommends:

For oil mists, 5 mg/m3.

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

Vapour pressure of this material is low and as such inhalation under normal conditions is usually not a problem. If overexposed to oil mist, remove from further exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Flush with large amounts of water. Use soap if available. Remove severely contaminated clothing (including shoes) and launder before reuse. If irritation persists, seek medical attention.

INGESTION:

If swallowed, DO NOT induce vomiting. Keep at rest. Get prompt medical attention.

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.

In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves.

Where only incidental contact is likely, wear safety glasses with side shields. No other special precautions are necessary provided skin/eye contact is avoided.

Where concentrations in air may exceed the occupational exposure limits

given in Section 4 and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

ENGINEERING CONTROLS:

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care. Store in a cool, well ventilated place away from incompatible materials. In keeping with good personal hygiene practices, wash hands thoroughly after handling the material. Store and load at normal (up to 38 deg C) temperature and at atmospheric pressure. Empty containers may contain product residue. Do not pressurize cut, heat, or weld empty containers. Do not reuse empty containers without commercial cleaning or reconditioning.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard. Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth. Recover by pumping or by using a suitable absorbant. Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill.

WATER SPILL:

Remove from surface by skimming or with suitable absorbents. If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in unconfined waters. Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: 190 deg C COC ASTM D92

Autoignition: NA Flammable Limits: LEL: NA UEL: NA

GENERAL HAZARDS:

Low Hazard; liquids may burn upon heating to temperatures at or above the flash point.
Toxic gases will form upon combustion.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel.
Shut off fuel to fire.
Use foam, dry chemical or water spray to extinguish fire.
Respiratory and eye protection required for fire fighting personnel.
A self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA may not be required.

HAZARDOUS COMBUSTION PRODUCTS:

Smoke, carbon monoxide, carbon dioxide and traces of oxides of sulphur

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

none

9. NOTES

All components of this product are listed on the U.S. TSCA inventory.

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REVISION SUMMARY:

Since 12 April 2000, this MSDS has been revised in Section(s):
3, 7

10. PREPARATION

Date Prepared: May 13, 2003
Prepared by: Lubricants & Specialties
IMPERIAL OIL

Products Division
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