



Spill Contingency Plan
for the
Confirmation and Exploration Program
Pine Point District, Northwest Territories

Purpose

This document is provided in support of the Mackenzie Valley Land and Water Board (MVLWB) Type A Land Use Permit and Type A Water Licence Application for the Pine Point Mining Limited Confirmation and Exploration Program (CEP). The intent of this document is to describe how this environmental management and monitoring plan relates to the CEP and to list applicable guidelines and standards. It was developed with the available CEP information. This document is not intended for approval but is provided for review purposes and will be further developed and refined as the regulatory process proceeds.

Version History

Pine Point Mining Limited is responsible for the distribution, maintenance, and updating of this document. Changes that do not affect the intent of the document will be made as required (e.g., phone numbers, names of individuals). The table below indicates the version of this document, and a summary of revisions made.

Revision #	Section(s) Revised	Description of Revision	Issue Date
1.0	-	Version for Type A Water Licence and Type A Land Use Permit Applications	25 November 2020

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1.0 Summary

This management plan has been prepared for the Confirmation and Exploration Program at the Pine Point District. This plan includes chemical transport and storage protocols, spill response protocols, and hypothetical spill scenarios.

2.0 Introduction

Pine Point Mining Limited (PPML) has prepared this Spill Contingency Plan for activities related to a proposed Confirmation and Exploration Program (CEP) undertaken on its leases and claims in the Pine Point District, Northwest Territories (NWT).

PPML is committed to conducting operations within the environmental standards of the exploration industry, in compliance with this Spill Contingency Plan and all conditions of permits and licenses authorizing related activities and will comply with laws and regulations relevant to these activities.

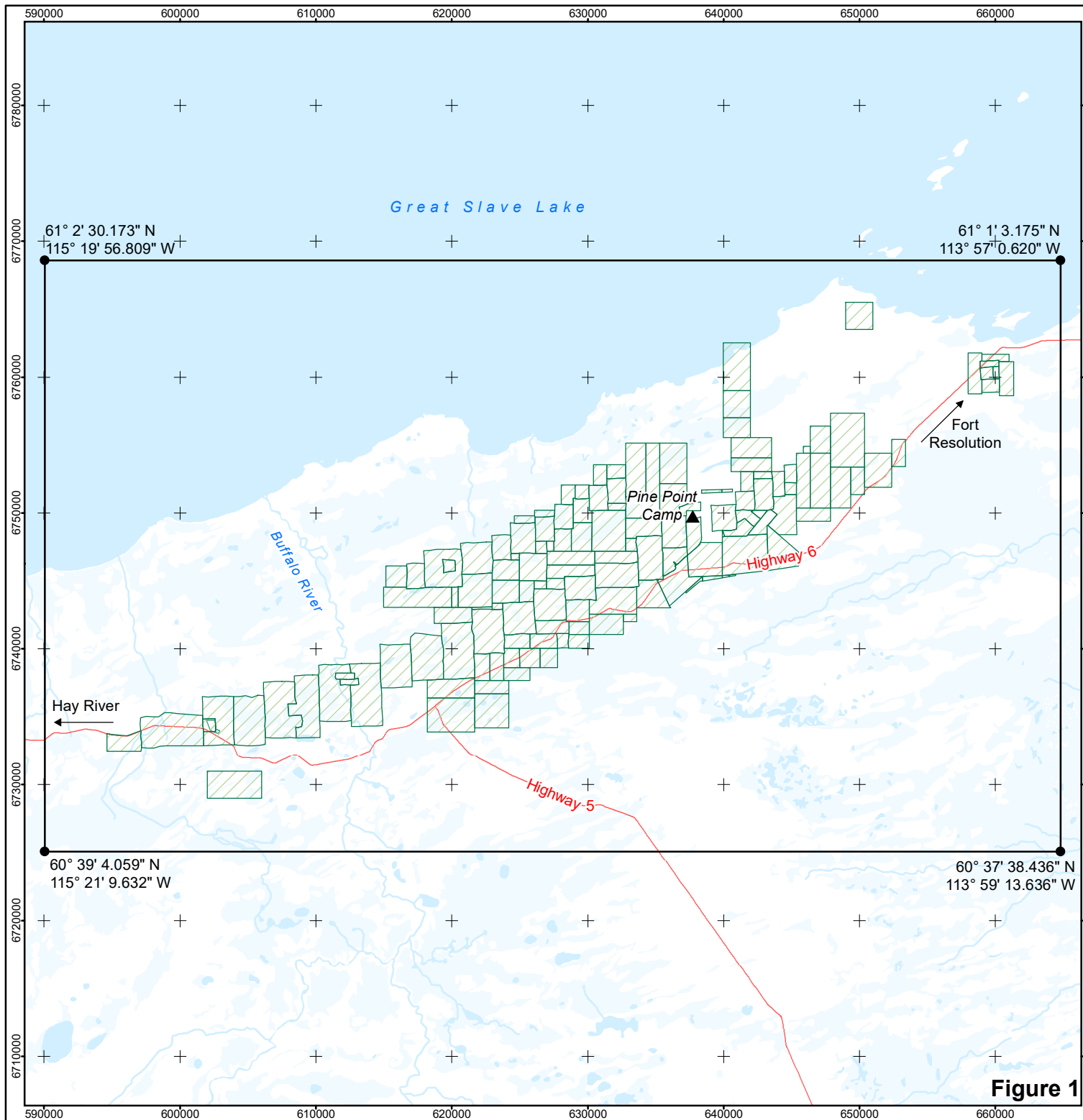
All CEP activities will be carried out by contactors at potential exploration or delineation targets, drill sites, metallurgical sample locations, groundwater test sites and at a camp or camps. PPML activities associated with the program will include supervision of the program, the recovery of drill core, rock and water samples, and the subsequent analysis of the samples. All contractors will be required by contract to comply with this Spill Contingency Plan and with all of the conditions spelled out in permits or licenses authorizing the activities.

The purpose of this document is to provide a plan of action for hazardous materials spills that may occur at program areas of activity. The Plan clearly defines the responsibility of key personnel and outlines procedures to contain and recover hazardous materials spills effectively and efficiently. PPML staff and contractors will be required to familiarize themselves with this Plan and to have it readily available for quick reference during exploration activities. This document was developed in reference to the Indian and Northern Affairs Canada (INAC 2007) Guidelines for Spill Contingency Planning.

Figure 1 shows the leases and claims held by PPML in the Pine Point District. Roads, major water bodies, the existing Pine Point Camp and directions to nearby communities are also illustrated in Figure 1. Activity may occur on any of these lands that are within the illustrated Area of Activity.

Figure 2 shows the layout of the existing Pine Point Camp including hazardous materials storage locations. Individual contractors may employ various drilling muds and compounds during the drilling operations. Petroleum products and hazardous materials considered in the Spill Contingency Plan include:

- Diesel Fuel
- Hydraulic Oil
- Lubricating Oil
- Gasoline
- Antifreeze
- Propane
- Greywater and Sewage

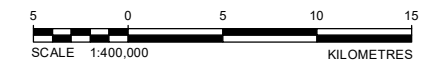


LEGEND

- Proposed Area of Activity
- PPML Mineral Tenure and Surface Leases
- Main Road Access
- Waterbody
- Watercourse
- Wetland

REFERENCE

BASE DATA OBTAINED FROM CANVEC®
DEPARTMENT OF NATURAL RESOURCES CANADA
ALL RIGHTS RESERVED.
DATUM: NAD 1983 CSRS UTM ZONE 11N
CREATED BY: AURORA GEOSCIENCES LTD.



FILE ID: PPM-20201019-PP_Confirmation_and_Exploration_Program

PROJECT	PINE POINT MINING LIMITED		
TITLE	CONFIRMATION AND EXPLORATION PROGRAM		
	DESIGN	RM	06/04/2017
	CHECK	RM	12/06/2020
	REVIEW	SM	20/10/2020
	SCALE AS SHOWN		

Figure 1

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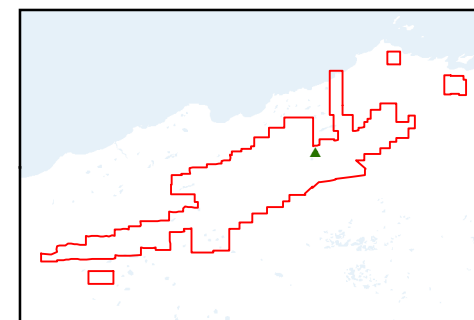
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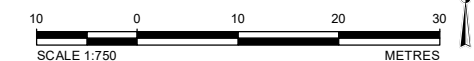
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LEGEND**Pine Point Camp Infrastructure**

- Cold Storage
- Communications Tower
- Core Tent/Storage Tent
- Dry Tents
- Fuel Storage
- Generator
- Greywater Management
- Kitchen
- Medic Tent
- Office Structure
- Latrine
- Recreation Facility
- Sleeper Tents
- Camp Foot Print

**REFERENCE**

NTS 50K MAP SHEET: 085B16
 BASE DATA OBTAINED FROM CANVEC®
 DEPARTMENT OF NATURAL RESOURCES CANADA
 ALL RIGHTS RESERVED
 DATUM: NAD 1983 CSRS UTM ZONE 11N
 CREATED BY: AURORA GEOSCIENCES LTD.



FILE ID: PPM-20201116-Detailed_Infrastructure

PROJECT		PINE POINT MINING LIMITED	
TITLE		PINE POINT CAMP DETAILED INFRASTRUCTURE	
		PROJECT	PPM-20005-NT
		DESIGN	RM 06/04/2017
		GIS	BF 16/11/2020
		CHECK	SM 17/11/2020
		REVIEW	SM 17/11/2020
		SCALE AS SHOWN	

Figure 2

3.0 Chemical Storage and Transport

Fuel storage at each drill site location is projected to consist of approximately 400 litres of diesel within engineered tankage on the drill, one or more 400 to 600 litre double walled containment tanks (or equivalent), 100-lb cylinders of propane and one small safety container (20 litres) of gasoline for UTV, ATV and snowmobile use, and assorted lubricants. In addition, individual water pumps will have approximately 50 litres of fuel stored in the pump tank, approximately 100 litres in 20 litre safety containers or 100 litre safety transfer caddy with rotary pump and one 100-lb or one 250-lb cylinder of propane. The volumes noted above are for one (1) diamond drill; when additional diamond drills or other types of drills are utilized these volumes will increase accordingly. The maximum amount of fuel stored on site at any given time includes these volumes in addition to the fuel that will be in the fuel tanks of each vehicle (truck, snow cat, drill rig, etc.)

The maximum volumes of fuel to be stored at the Pine Point project site at any given time include:

Table 1: Maximum Fuel Quantities

Fuel	Volume	Typical Storage Type	Location
Diesel	275,000 litres	5 litre to 205 litre containers; tanks up to 100,000 litres in compliance with applicable Transport Canada and/or Environment and Climate Change Canada regulations	Camp / Drill / Fuel Cache
Gasoline	28,000 litres	5 litre to 205 litre containers; tanks up to 15,000 litres in compliance with applicable Transport Canada and/or Environment and Climate Change Canada regulations	Camp / Drill / Fuel Cache
Aviation Fuel	28,000 litres	205 litre containers	Camp / Fuel Cache
Propane	100,000 lbs	20 lb to 2,000 gallon cylinder/tank	Camp / Drill / Fuel Cache

Storage containers will be designed to contain the products stored therein. Fuel will be stored no closer than 100 metres from the ordinary high-water mark of a water body. Spill response kits will be located for ease of access at fuel storage and transfer sites.

Other on-site petroleum-based materials will be small quantities, often located at the drilling shacks. Contractors will be required to have a complete set of Safety Data Sheet (SDS) / Manufacturer's Safety Data Sheets (MSDS) for any chemicals used in their drilling operations readily available at the drill site. Table 2 outlines the use and storage of compounds and chemicals commonly employed in drilling processes.

Table 2: Chemical Use and Storage

Item	Delivery	Typical Storage
Drilling Additives	Contractor	20 litre Buckets at drill site and/or at fuel cache
Hydraulic Fluids, Lubricating Oils and Grease	Contractor	20 litre Buckets at drill site and/or at fuel cache
Antifreeze	Contractor	20 litre Buckets at drill site and/or at fuel cache
Portland Cement	Contractor	40 kilogram bags on pallets at drill site and/or at fuel cache

*Note: Contractors have individualized protocols for optimizing the operations of each drill. Those protocols may include use of drilling muds or other additives. Drilling protocols require substantial adaptive management to account for the variable conditions encountered in drilling programs. These operations will be subject to close scrutiny by the Inspector. Contractors will be required to have complete sets of Manufacturer's Safety Data Sheets as well as appropriate worker Personal Protection Equipment.

Some contractors may prefer to haul fuel as needed rather than establish an on-site cache. Chemicals and fuels will be transported around the site in appropriately licensed and placarded vehicles.

4.0 Spill Response Organization

PPML will require its contractors to comply with permit conditions and follow its management plans. Furthermore, PPML understands that the inspectors have a helpful role in ensuring that all contractors adhere to the permit and will cooperate with the inspectors. In the event of a hazardous materials spill on the defined lease blocks, in the camp(s) perimeter or on the access to the drill lease blocks, whether access is public or private, all personnel will follow a defined response and notification procedure led by the PPML On-Site Contract Coordinator or the senior PPML representative.

On-Site Contract Coordinator/PPML Representative

PPML's On-Site Contract Coordinator/representative will be someone with extensive experience in managing exploration programs. The On-Site Contract Coordinator has the following responsibilities:

- Assume complete authority over the spill area and coordinate the actions of site personnel
- Evaluate the spill, the actions taken by the First Person at Site (Section 5.0) and develop an overall response plan
- Mobilize personnel and equipment to the site of the spill
- Report spills that meet or exceed reportable quantities immediately to the 24 hour NWT Spill Line and Environmental Manager
- Obtain additional manpower, equipment and materials if they are not available on site
- Provide regulatory agencies and PPML management with information regarding the status of clean-up activities
- Prepare and submit a report on the spill incident to regulatory agencies within 30 days of the event

Environmental Manager

The Environmental Manager has the following responsibilities:

- Provide technical advice regarding probable environmental effects from the spill
- Provide advice to the On-Site Contract Coordinator for spill response procedures
- Assist in developing any sampling, testing or monitoring of soil or water directly affected by the spill
- Complete the sampling plan and submit collected samples to the plan's defined testing facility
- Notify local Aboriginal groups of specifics concerning the spill: size, material spilled, response plan, effectiveness of initial spill response and results of subsequent testing as affected area is monitored
- Copy the On-Site Contract Coordinator on all correspondence with contactors and Indigenous groups concerning response and affected areas
- Work with the ENR Inspector to ensure that restoration and reclamation work is completed to the Inspector's satisfaction.
- Submit a report to the Board on the restoration and reclamation activities.

Contract Employees

For exploration programs to be carried out during the term of the LUP, the CEP will be carried out by a prime contractor or a prime contractor and one or more secondary contractor(s). While the On-Site Contract Coordinator will define and oversee spill response, the spill response will be staffed and carried out by the contractor. It is the contractor's responsibility to ensure that all employees are trained in compliance with Government of the Northwest Territories (GNWT) regulations for spill response activities. It is also their responsibility to ensure that a complete set of MSDS documents for any chemicals used in their drilling operations are readily available at the drill site. Furthermore, it is the contractor's responsibility to comply with permit conditions related to spill prevention.

All contractors and PPML staff must comply with the spill prevention measures in the permit. These measures typically require: inspections, installation and maintenance of appropriate secondary containment at fuel storage and transfer areas, guidance on where fuel storage areas may be located and how they must be labeled and marked, use of hazmat drip trays and diapers, reporting requirements, etc. PPML will encourage its contractors to use secondary containment that has proven to be effective in the North. For example, an impermeable membrane such as the mini-berm sold by SEI Industries Ltd. can be used for up to four 205 L barrels.

5.0 Initial Spill Response

Specific actions and communications are in place to ensure an expedited response to a hazardous materials spill (Figure 3). Initial Spill Response measures include the following steps:

First Person at the Site

- Identify the material that has been spilled
- Assess any potential hazard to people in the vicinity of the spill
- Control danger to human life if it is possible to do without additional assistance
- Assess if the spill can be stopped or brought under control
- Stop the flow of material if it can be done safely
- Immediately report the spill to the On-Site Coordinator
- Call the 24 hour NWT Spill Line (867-920-8130) IF the On-Site Coordinator cannot be contacted
- Resume effective action to contain, mitigate or terminate the flow of spilled material

On-Site Contract Coordinator

- Obtain available reliable information concerning the spill
- Notify Spill Response team of the relevant Contractor
- Call the 24 hour NWT Spill Line at (867) 920-8130 as soon as possible to report the spill and provide initial incident details if not already done by the First Person at the Site.
- Report the spill to an Inspector within 24 hours
- If spill meets or exceeds a reportable quantity, complete and fax a NWT Spill Report Form to (867) 873-6924 (A copy of the form is appended at the end of this plan.)
- Liaise with the Environmental Manager to investigate and gather relevant information about the spill and submit a detailed spill report to the applicable regulatory agencies no later than 30 days after the spill event

6.0 Spill Response Notification Flowchart

This flowchart will be posted at the drill site and also at the core logging facility. Spills will be reported to the government if the spilled quantity meets or exceeds quantities defined by GNWT as a reportable quantity.

Figure 3: Spill Response Notification Flowchart

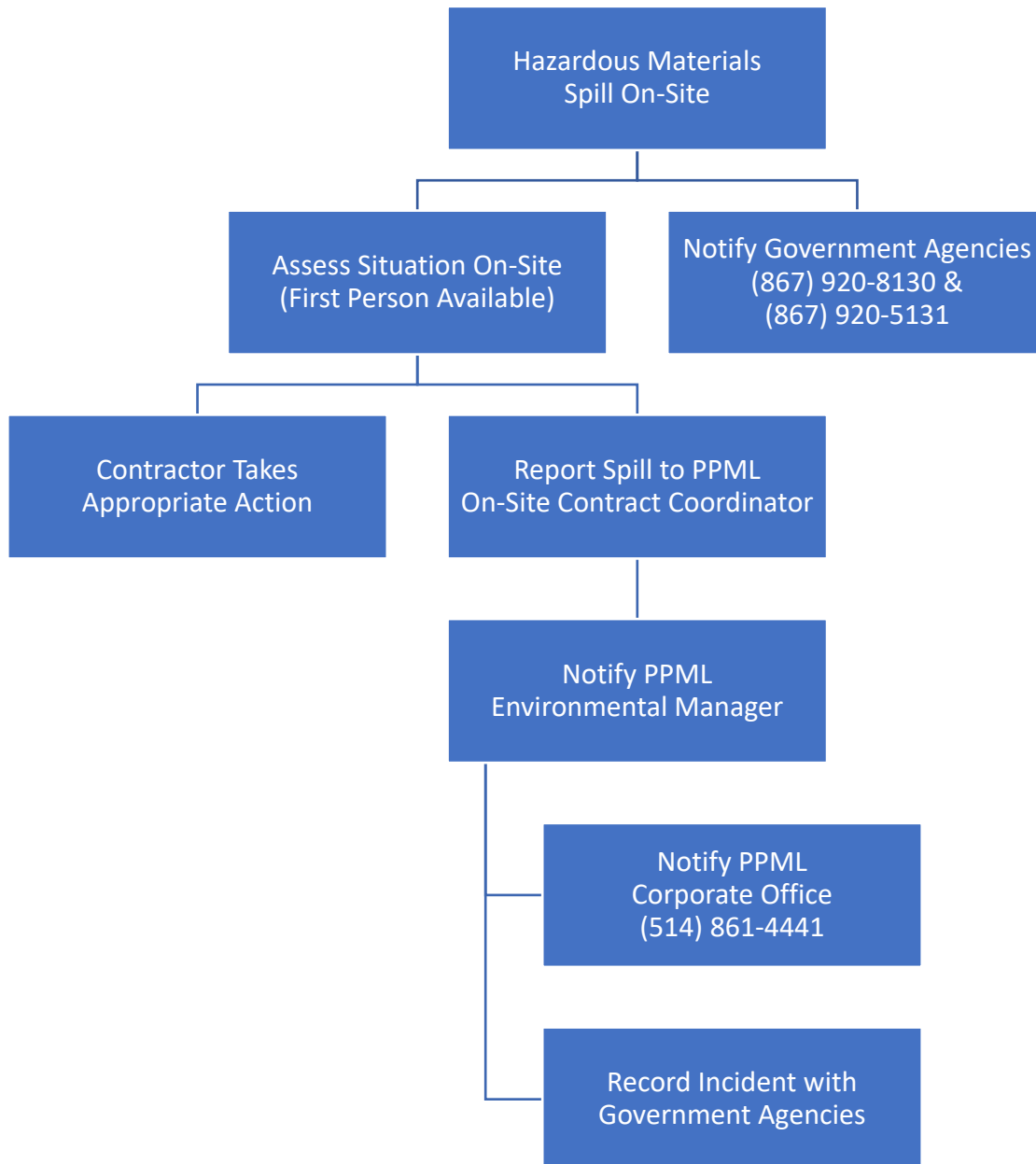


Table 3: Reportable Spill Quantities for Substances Likely to be Used in Program Activities

Substance	Reportable Quantity
Compressed gas (Flammable, or Non-corrosive & Non-flammable)	Any amount of gas from containers with a capacity greater than 100 litres
Flammable Liquid	> 100 litres
Toxic Substances	> 5 litres or 5 kilograms
Environmentally Hazardous Substances Intended for Disposal	> 1 litre or 1 kilogram
Other contaminants--for example, crude oil, drilling fluid, produced water, waste or spent chemicals, used or waste oil, vehicle fluids, wastewater.	≥ 100 litres or 100 kilograms
Graywater and Sewage	Any amount (unless otherwise authorized)
Reported releases or potential releases of any size that: 1. are near or in an open water body; 2. are near or in a designated sensitive environment or habitat; 3. Pose an imminent threat to human health or safety; or 4. Pose an imminent threat to a listed species at risk or its critical habitat	Any amount

Source: GNWT 2020

7.0 Spill Response Contacts

Internal Contacts

Spill response contacts (Table 3) and the spill response flowchart (Figure 2) will be posted at the drill rig and in the core logging facility. There will be unique copies for each rotation. PPML expects to establish an office in Hay River in the near future. Contact information for staff and office will be kept up-to-date at the work sites.

Table 4: Spill Response Contacts

Position	Name	Contacts
On-Site Contract Coordinator	Jason McLaughlin	(250) 815-6777
	Daniel Slade	(250) 882-4996
PPML Chief Geologist	Robin Adair	Office: (514) 861-4441
		Mobile: (506) 259-4310
Aurora Geosciences Limited	Dave White	Office: (867) 920-2729
		Mobile: (867) 445-6442
PPML Environment Manager	Andrew Williams	Mobile: (416) 209-2056
PPML Resources Limited	Head Office	Office: (514) 861-4441

External Contacts

Additional assistance may be necessary from the following organizations:

Emergency Services	
Ambulance	(867) 874-9333
Fire	(867) 874-2222
Police (Hay River)	(867) 874-1111
Police (Fort Resolution)	(867) 394-1111
Medical Emergency	(867) 874-7100
Poison Control	(867) 874-7100
Government	
NWT 24-Hour Spill Report Line	(867) 920-8130
Environment Canada 24-hour Spill Line Pager	(867) 920-5131
Government of NWT; ENR Environmental Division	(867) 875-5550
GNWT Lands Inspector (W of Buffalo R)	(867) 874-6995
GNWT Lands Inspector (E of Buffalo R)	(867) 872-2558
Inspector for Rail Line area	(867) 669-2442 or (867) 669-2468
MVLWB	(867) 669-0506
ECCC Environmental Enforcement	(867) 669-4730
Department of Fisheries and Oceans	(867) 669-4900
National Environmental Emergencies Centre	(867) 283-2333
Charter Companies	
Acasta Helicopters	(867) 873-3306
Carter Air Services	(867) 871-2281
Landa Aviation	(867) 874-3500
Remote Helicopters Ltd.	(780) 849-2222

8.0 Spill Response Action Plan

Diesel Fuel, Hydraulic Oil and Lubricating Oil

Stop the spill flow if it is possible and safety permits. No smoking is permitted when responding to a diesel fuel, hydraulic oil or lubricating oil spill. Largest possible spill is 100,000 L.

On Land

- Do not flush into ditches or drainage systems.
- Build barrier with soil to block entry into waterways.
- Remove the spill by using sorbent pads or digging out the soil.

On Water

- Use a containment boom to concentrate the spill for recovery.
- Use sorbent pads to remove small spills.
- Use a skimmer to remove larger spills.

On Ice and Snow

- Block entry into waterways by building a barrier with snow to contain the spill.
- Remove the spill using sorbent pads and shovel contaminated ice and snow into plastic buckets with lids and or polypropylene bags.

Storage and Transfer

- Store all contaminated water, snow/ice, soils, clean-up supplies, and absorbent materials in closed, labeled containers.
- Store containers in ventilated areas away from incompatible materials.

Disposal

- Transfer to an authorized waste receiver as identified in the Waste Management Plan or consult with Federal and/or Territorial Environmental Authorities before disposing of contaminated material.

Gasoline

Stop the spill flow if it is possible and safety permits. Eliminate ignition sources such ferrous metal tools. Gasoline forms vapors that can ignite and explode. No smoking is permitted when responding to a gasoline spill.

On Land

- Build barrier with soil to block entry into waterways.
- Do not flush into ditches or drainage systems.
- Do not attempt to contain the spill if ignition potential exists.
- Use particulate sorbent material to soak up the spill.

Spill Contingency Plan

On Water

- Contain and remove spills only after vapors have dissipated.
- Use containment booms to concentrate spills.
- Use a skimmer on a contained slick.

On Ice and Snow

- Block entry into waterways by building a barrier with snow to contain the spill.
- Remove the spill by using particulate sorbent and shovel contaminated ice and snow into plastic buckets with lids and/or polypropylene bags.

Storage and Transfer

- Store all contaminated water, snow/ice, soils, clean-up supplies, and absorbent materials in closed, labeled containers.
- Store containers in ventilated areas away from incompatible materials.
- Electrically ground all containers and transporting equipment.

Disposal

- Transfer to an authorized waste receiver as identified in the Waste Management Plan or consult with Federal and/or Territorial Environmental Authorities before disposing of contaminated material.

Antifreeze

Stop the spill flow if it is possible and safety permits.

On Land

- Do not flush into ditches or drainage systems.
- Build barrier with soil to block entry into waterways.
- Remove spill using sorbent pads or digging out soil.

On Water

- Be aware that antifreeze sinks and mixes with water.
- Confine and isolate the spill, for example by damming or diverting the spill.
- Pump contaminated water into containers.

On Ice and Snow

- Block entry into waterways by building a barrier with snow to contain the spill.
- Remove the spill by using particulate sorbent and shovel contaminated ice and snow into plastic buckets with lids and/or polypropylene bags.

Storage and Transfer

- Store all contaminated water, snow/ice, soils, clean-up supplies, and absorbent materials in closed, labeled containers.
- Store containers in ventilated areas away from incompatible materials.

Disposal

- Transfer to an authorized waste receiver as identified in the Waste Management Plan or consult with Federal and/or Territorial Environmental Authorities before disposing of contaminated material.

Propane

Stop the spill flow if it is possible and safety permits. Eliminate ignition sources. No smoking is permitted when responding to a propane spill.

On Land

- Do not attempt to contain or remove the spill.

On Ice and Snow

- Do not attempt to contain or remove the spill.

Storage and Transfer

- It is not possible to collect and/or contain propane once it is released.

Disposal

- No disposal is required.

9.0 Spill Response Resource Inventory

On- and off-site resources are available to support spill response initiatives

9.1 On-Site Inventory

Spill Kits

PPML and its contractors will maintain spill kits on-site at all works sites. In addition, one spill kit will be located in the temporary Maintenance Shop and another spill kit will be located in the Fuel and Lube Storage Area. Spill kit inventories will contain the following items:

- 16 Gauge Open-Top Drum with Bolting Ring and Gasket (205 litre)
- Disposable Polyethylene Bags (5 mil)
- Shovel (spark proof)
- Absorbent Booms
- Absorbent Particulate
- Sorbent Sheets
- PVC Oil Resistant Gloves
- Respirators
- Splash Protective Goggles

Spill Contingency Plan

General Resources

Hand tools will be kept on site to aid in the mitigation of hazardous materials spills. Mobile equipment may also be available for emergency use and to respond to spill incidents.

- Hand tools
- Wheel barrow
- Water
- PPE
- First Aid Kit
- Snowmobile/ATV
- Vac Truck
- Earthmoving Equipment (eg. Dozer, Grader, Loader)

9.2 Off-Site Inventory

Depending on the severity of a spill, the external contacts listed in section 7.0 of this Plan may be of assistance.

10.0 Disposal Methods

In the event of a spill, the On-Site Contract Coordinator will seek government approval and advice for proper disposal. The selected disposal method will require approval from the PPML Exploration Program Manager. The following disposal options are considered appropriate and are expected to meet government approval.

- Off-Site Disposal (to a receiver qualified to dispose of hazardous materials).
- On-site treatment at a facility approved for the purpose.

11.0 Spill Response Training

The On-Site Contract Coordinator will conduct training for all PPML personnel working on the Program. The prime drill contractor will be responsible for the training and training documentation for all drill employees, and the PPML coordinator will confirm that the documentation is in order. Training will include the following instruction:

- The initial spill response procedure to use in the event of a spill.
- Location and use of emergency equipment to respond to spills.
- Safe operation of equipment and tools to minimize the potential for spills.
- Operational procedures to limit the potential and impact of spills.
- Monthly safety discussions to address work hazards.

12.0 Spill Scenarios

Refer to Section 5 for individual responsibilities.

Most Probable Spill

The most probable spill scenario is one in which a non-reportable quantity of diesel fuel is spilled during a fueling operation. In this scenario, the first person at the site will take the following actions in this order:

- Identify the material that has been spilled.
- Assess whether or not there are any potential hazards to people in the area and control that hazard.
- Stop the flow of diesel fuel if it can be done safely.
- Obtain appropriate materials from the spill kit to clean up the spill (e.g., gloves and other PPE, sorbent sheets, etc.).
- Immediately report the spill to the On-Site Contract Coordinator
- Clean up all traces of the spill and place the contaminated spill kit materials in a labeled and sealed container, report the spill and clean-up action taken to the On-Site Contract Coordinator.

Worst Case Spill

The worst case spill scenario is one in which multiple containment layers of an engineered storage tank are perforated and product is released. In this scenario, the following actions should be taken:

- identify the product that has been spilled
- assess whether or not there are any potential hazards to people in the area and control that hazard to ensure safety of all personnel
- stop the flow of product if it can be done safely
- immediately report the spill to the On-Site Contract Coordinator
- call the 24 hour NWT Spill Line ((867) 920-8130) IF the On-Site Contract Coordinator cannot be contacted
- notify Spill Response Team of the Contractor
- resume effective action to contain, mitigate or terminate the flow of spilled material (Note: Tyvek suits and safety gloves are located in the spill kit and they should be worn if there is any risk of coming in contact with fuel. Containment may include using sorbent pads or particulates, digging a temporary dike or berm, etc.)
- notify PPML Environment Manager and Corporate office,
- report the spill to an Inspector within 24 hours
- resume effective action to clean up all traces of the spill and restore the environmental integrity of the site
- complete and submit NWT Spill Report Form
- gather relevant information and submit a detailed spill report to the applicable regulatory agencies no later than 30 days after the spill event
- work with Inspector to ensure appropriate site restoration
- submit a report on site restoration to the MVLWB

13.0 Monitoring and Evaluation

PPML staff will oversee contractors' operations and will work with them to make sure they are following this plan. The GNWT inspector has an important role in evaluating and monitoring the drill program and ensuring that spill prevention protocols are being observed and spill containment equipment is readily available on-site. PPML project management will maintain open lines of communication with the Inspector. This plan will be reviewed annually by PPML; any changes that may be necessary or desirable will be discussed with the Inspector and then submitted to MVLWB.

14.0 Contingencies

PPML will work with the Inspector to address any non-compliance issues that may arise during Program activities. Should unforeseen circumstances or natural events arise, PPML and its contractors will:

- #1 attempt to find a solution that falls within the allowable activities clearly defined in the permit;
- #2 contact the Inspector to seek advice on an appropriate response; and
- #3 seek a permit modification (last resort).

15.0 References

INAC (Indian and Northern Affairs Canada). 2007. Guidelines for Spill Contingency Planning.

https://mvlwb.com/sites/default/files/guidelines_for_spill_contingency_planning_2007.pdf.

GNWT (Government of the Northwest Territories). 2020. Reportable quantities for NWT spills. Current information on these quantities available at <https://www.enr.gov.nt.ca/en/services/report-spill>.

APPENDIX A: NT-NU Spill Report Form

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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	☐ ORIGINAL SPILL REPORT, OR ☐ UPDATE #	REPORT NUMBER -
	B OCCURRENCE DATE: MONTH - DAY - YEAR		OCCURRENCE TIME		
C	LAND USE PERMIT NUMBER (IF APPLICABLE)		WATER LICENCE NUMBER (IF APPLICABLE)		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM THE NAMED LOCATION			REGION ☐ NT ☐ NUNAVUT ☐ ADJACENT JURISDICTION	
E	LATITUDE DEGREES MINUTES SECONDS		LONGITUDE DEGREES MINUTES SECONDS		
F	RESPONSIBLE PARTY OR VESSEL NAME		RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION		
G	ANY CONTRACTOR INVOLVED		CONTRACTOR ADDRESS OR OFFICE LOCATION		
H	PRODUCT SPILLED		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
	SECOND PRODUCT SPILLED (IF APPLICABLE)		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
I	SPILL SOURCE		SPILL CAUSE	AREA OF CONTAMINATION IN SQUARE METRES	
J	FACTORS AFFECTING SPILL OR RECOVERY		DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT	
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS				
L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE
REPORT LINE USE ONLY					
N	RECEIVED AT SPILL LINE BY	POSITION Station operator	EMPLOYER	LOCATION CALLED Yellowknife, NT	REPORT LINE NUMBER (867) 920-8130
LEAD AGENCY ☐ EC ☐ CCG/TCMSS ☐ GNWT ☐ GN ☐ ILA ☐ AANDC ☐ NEB ☐ OTHER: _____			SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN		FILE STATUS ☐ OPEN ☐ CLOSED
AGENCY		CONTACT NAME	CONTACT TIME	REMARKS	
LEAD AGENCY					
FIRST SUPPORT AGENCY					
SECOND SUPPORT AGENCY					
THIRD SUPPORT AGENCY					

APPENDIX B: SDS/MSDS Information

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AMC PUREVIS

AMC

Chemwatch: 17-8713

Version No: 8.1.1.1

Safety Data Sheet according to WHS and ADG requirements

Chemwatch Hazard Alert Code: 1

Issue Date: 10/08/2017

Print Date: 12/08/2017

L.GHS.AUS.EN

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

Product Identifier

Product name	AMC PUREVIS
Other means of identification	Not Available

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

Relevant identified uses	Drilling fluid additive.
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Details of the supplier of the safety data sheet

Registered company name	AMC
Address	216 Balcatta Rd Balcatta WA 6021 Australia
Telephone	+61 8 9445 4000
Fax	+61 8 9445 4040
Website	www.amcmud.com
Email	amc@imdexlimited.com

Emergency telephone number

Association / Organisation	Not Available
Emergency telephone numbers	1800 039 008 or +61 3 9573 3112,+800 2436 2255 +613 9573 3112
Other emergency telephone numbers	Not Available

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

NON-HAZARDOUS CHEMICAL. NON-DANGEROUS GOODS. According to the WHS Regulations and the ADG Code.

CHEMWATCH HAZARD RATINGS

	Min	Max
Flammability	1	1
Toxicity	0	0
Body Contact	1	1
Reactivity	1	1
Chronic	0	0

0 = Minimum
1 = Low
2 = Moderate
3 = High
4 = Extreme

Poisons Schedule	Not Applicable
Classification	Not Applicable

Label elements

Hazard pictogram(s)	Not Applicable
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SIGNAL WORD

NOT APPLICABLE

Hazard statement(s)

Not Applicable

Precautionary statement(s) Prevention

Not Applicable

Precautionary statement(s) Response

Not Applicable

Precautionary statement(s) Storage

Not Applicable

Precautionary statement(s) Disposal

Not Applicable

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS**Substances**

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
Not Available	100	Ingredients determined not to be hazardous

SECTION 4 FIRST AID MEASURES**Description of first aid measures**

Eye Contact	If this product comes in contact with the eyes: ▶ Wash out immediately with fresh running water. ▶ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. ▶ Seek medical attention without delay; if pain persists or recurs seek medical attention. ▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If skin contact occurs: ▶ Immediately remove all contaminated clothing, including footwear. ▶ Flush skin and hair with running water (and soap if available). ▶ Seek medical attention in event of irritation.
Inhalation	▶ If fumes, aerosols or combustion products are inhaled remove from contaminated area. ▶ Other measures are usually unnecessary.
Ingestion	▶ If swallowed do NOT induce vomiting. ▶ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. ▶ Observe the patient carefully. ▶ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. ▶ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. ▶ Seek medical advice.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5 FIREFIGHTING MEASURES**Extinguishing media**

- ▶ Foam.
- ▶ Dry chemical powder.

Special hazards arising from the substrate or mixture

Fire Incompatibility	▶ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result
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Advice for firefighters

AMC PUREVIS

Fire Fighting	▶ Alert Fire Brigade and tell them location and nature of hazard. ▶ Wear breathing apparatus plus protective gloves.
Fire/Explosion Hazard	▶ Combustible. ▶ Slight fire hazard when exposed to heat or flame. Combustion products include: • carbon dioxide (CO₂) • acrolein • other pyrolysis products typical of burning organic material. CARE: Water in contact with hot liquid may cause foaming and a steam explosion with wide scattering of hot oil and possible severe burns. Foaming may cause overflow of containers and may result in possible fire.
HAZCHEM	Not Applicable

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	Slippery when spilt. ▶ Remove all ignition sources. ▶ Clean up all spills immediately.
Major Spills	Slippery when spilt. Moderate hazard. ▶ Clear area of personnel and move upwind.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

Safe handling	▶ DO NOT allow clothing wet with material to stay in contact with skin Rags wet / soaked with unsaturated hydrocarbons / drying oils may auto-oxidise; generate heat and, in-time, smoulder and ignite. This is especially the case where oil-soaked materials are folded, bunched, compressed, or piled together - this allows the heat to accumulate or even accelerate the reaction Oily cleaning rags should be collected regularly and immersed in water, or spread to dry in safe-place away from direct sunlight or stored, immersed, in solvents in suitably closed containers. ▶ Avoid all personal contact, including inhalation. ▶ Wear protective clothing when risk of exposure occurs.
Other information	▶ Store in original containers. ▶ Keep containers securely sealed.

Conditions for safe storage, including any incompatibilities

Suitable container	▶ Metal can or drum ▶ Packaging as recommended by manufacturer. ▶ Check all containers are clearly labelled and free from leaks.
Storage incompatibility	Avoid contamination of water, foodstuffs, feed or seed. ▶ Avoid reaction with oxidising agents

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Not Available

EMERGENCY LIMITS

AMC PUREVIS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
AMC PUREVIS	Not Available	Not Available	Not Available	Not Available

Ingredient	Original IDLH	Revised IDLH
Ingredients determined not to be hazardous	Not Available	Not Available

MATERIAL DATA

Exposure controls

Appropriate engineering controls	Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.
Personal protection	  
Eye and face protection	▸ Safety glasses with side shields ▸ Chemical goggles. ▸ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants.
Skin protection	See Hand protection below
Hands/feet protection	Wear general protective gloves, eg. light weight rubber gloves. The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
Body protection	See Other protection below
Other protection	No special equipment needed when handling small quantities. OTHERWISE: ▸ Overalls.
Thermal hazards	Not Available

Respiratory protection

Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content. The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Yellow liquid; mixes with water.		
Physical state	Liquid	Relative density (Water = 1)	Not Available
Odour	Not Available	Partition coefficient n-octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature (°C)	Not Available
pH (as supplied)	Not Available	Decomposition temperature	Not Available
Melting point / freezing point (°C)	Not Available	Viscosity (cSt)	Not Available
Initial boiling point and boiling range (°C)	Not Available	Molecular weight (g/mol)	Not Applicable
Flash point (°C)	Not Available	Taste	Not Available
Evaporation rate	Not Available	Explosive properties	Not Available
Flammability	Not Available	Oxidising properties	Not Available
Upper Explosive Limit (%)	Not Available	Surface Tension (dyn/cm or mN/m)	Not Available

AMC PUREVIS

Lower Explosive Limit (%)	Not Available	Volatile Component (%vol)	Not Available
Vapour pressure (kPa)	Not Available	Gas group	Not Available
Solubility in water (g/L)	Miscible	pH as a solution (1%)	7.0-9.0
Vapour density (Air = 1)	Not Available	VOC g/L	Not Available

SECTION 10 STABILITY AND REACTIVITY

Reactivity	See section 7
Chemical stability	- Unstable in the presence of incompatible materials. - Product is considered stable.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Inhaled	The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting. Fine mists generated from plant/ vegetable (or more rarely from animal) oils may be hazardous. Extreme heating for prolonged periods, at high temperatures, may generate breakdown products which include acrolein and acrolein-like substances.
Ingestion	The material has NOT been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence.
Skin Contact	The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling epidermis.
Eye	Although the liquid is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).
Chronic	Long-term exposure to the product is not thought to produce chronic effects adverse to health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course.
AMC PUREVIS	TOXICITY
	Not Available
AMC PUREVIS	IRRITATION
	Not Available
Legend:	1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances

Acute Toxicity	⊘	Carcinogenicity	⊘
Skin Irritation/Corrosion	⊘	Reproductivity	⊘
Serious Eye Damage/Irritation	⊘	STOT - Single Exposure	⊘
Respiratory or Skin sensitisation	⊘	STOT - Repeated Exposure	⊘
Mutagenicity	⊘	Aspiration Hazard	⊘

Legend: ✗ – Data available but does not fill the criteria for classification
✔ – Data available to make classification
⊘ – Data Not Available to make classification

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

AMC PUREVIS	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
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AMC PUREVIS

	Not Available	Not Available	Not Available	Not Available	Not Available
Legend:	Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data				

DO NOT discharge into sewer or waterways.

May be harmful to fauna if not disposed of according to Section 13 and legislative requirements. [AMC]

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
	No Data available for all ingredients	No Data available for all ingredients

Bioaccumulative potential

Ingredient	Bioaccumulation
	No Data available for all ingredients

Mobility in soil

Ingredient	Mobility
	No Data available for all ingredients

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

Product / Packaging disposal	Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. ▶ DO NOT allow wash water from cleaning or process equipment to enter drains. ▶ It may be necessary to collect all wash water for treatment before disposal. ▶ Recycle wherever possible or consult manufacturer for recycling options. ▶ Consult State Land Waste Authority for disposal.
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SECTION 14 TRANSPORT INFORMATION

Labels Required

Marine Pollutant	NO
HAZCHEM	Not Applicable

Land transport (ADG): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

SECTION 15 REGULATORY INFORMATION

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

National Inventory	Status
Australia - AICS	Y
Canada - DSL	Y
Canada - NDSL	Y
China - IECSC	Y
Europe - EINEC / ELINCS / NLP	Y

AMC PUREVIS

Japan - ENCS	Y
Korea - KECI	Y
New Zealand - NZIoC	Y
Philippines - PICCS	Y
USA - TSCA	Y
Legend:	Y = All ingredients are on the inventory N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)

SECTION 16 OTHER INFORMATION

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings.

Definitions and abbreviations

PC—TWA: Permissible Concentration-Time Weighted Average
 PC—STEL: Permissible Concentration-Short Term Exposure Limit
 IARC: International Agency for Research on Cancer
 ACGIH: American Conference of Governmental Industrial Hygienists
 STEL: Short Term Exposure Limit
 TEEL: Temporary Emergency Exposure Limit,
 IDLH: Immediately Dangerous to Life or Health Concentrations
 OSF: Odour Safety Factor
 NOAEL :No Observed Adverse Effect Level
 LOAEL: Lowest Observed Adverse Effect Level
 TLV: Threshold Limit Value
 LOD: Limit Of Detection
 OTV: Odour Threshold Value
 BCF: BioConcentration Factors
 BEI: Biological Exposure Index

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Section 1: Product & Company Information

Product Name: Bentonite

Chemical Family: Sodium Montmorillonite

Product Use: Drilling Mud Additive

Workplace Hazardous Materials Information Systems Data (WHMIS):

	Class ID	Class	Workplace Hazard
	D-2-A	Materials Causing Other Toxic Effects - Very Toxic	Toxic effects

Manufacturer Name: Bri-Chem Supply Ltd.

Address: #15, 53016 Hwy 60, Acheson, AB T5X 5A7 Canada

General Phone Number: (780) 455-8667

General Fax Number: (780) 451-4420

MSDS Revision Date: March 24, 2010

Supersedes: January 1, 2008

Prepared By: Bri-Chem Supply Ltd.

Preparer's Phone: (780) 455-8667

Section 2: Composition/Information on Ingredients

Chemical Name	Concentration	CAS#
Crystalline Silica, Quartz	2 - 6%	14808-60-7

Section 3: Hazards Identification

Emergency Overview: Not Available

Routes of Entry:

Skin Contact: Yes

Skin Absorption: No

Eye Contact: Yes

Inhalation: Yes

Ingestion: No

Potential Health Effects:

Skin:	Possible drying resulting in dermatitis
Eye:	May cause slight irritation and/or redness.
Inhalation:	Acute: (short term) exposure to dust levels exceeding PEL may cause irritation of respiratory tract, resulting in a dry cough. Chronic (long-term) exposure to airborne dust containing respirable size ($< 10 \mu\text{m}$) quartz particles, where respirable quartz particle levels are higher the TLV's, may lead to development of silicosis or other respiratory problems. Persistent dry cough and laboured breathing upon exertion may be symptomatic.
Ingestion:	No adverse effects

Section 4: First Aid Measures

Eye Contact:	Flush eyes with water for at least 15 minutes. If adverse symptoms develop, seek medical attention.
Skin Contact:	Wash with soap and water. If adverse symptoms develop, seek medical attention.
Inhalation:	Remove patient to fresh air. If breathing has stopped, administer artificial respiration, and seek medical attention.
Ingestion:	Not Applicable
Other First Aid:	Not Available

Section 5: Fire Fighting Measures

Conditions Of Flammability:	None. This product will not support combustion.
Extinguishing Media:	None for product. Any media can be used for packaging.
Flashpoint:	Not Applicable
Upper Flammable Limit:	Not Applicable
Lower Flammable Limit:	Not Applicable
Autoignition Temperature:	Not Applicable
Protective Equipment:	None. This product is non-flammable.
Sensitivity To Impact or Static Discharge:	Not Available
Hazardous Combustion Products:	Not Applicable
Fire Comment:	Product becomes slippery when wet.

Section 6: Accidental Release Measures

Personnel Precautions:	Use proper personal protective equipment as listed in section 8.
Spill Cleanup Measures:	Avoid breathing dust: wear respirator approved for silica-bearing dust. Vacuum up to avoid generating airborne dust. Put into approved DOT containers for disposal.

Section 7: Handling & Storage

Handling:	Avoid ingestion. Practice reasonable caution and personal cleanliness.
Storage:	Store in a cool, dry, well ventilated place. Storage area floors may become slippery if wet.

Section 8: Exposure Controls, Personal Protection, Exposure Guidelines

Engineering Controls:	Provide mechanical ventilation to prevent dust concentrations, and to reduce potential exposure.
Personal Protective Equipment:	Chemical-resistant clothing is recommended, including gloves, apron, and goggles.
Respiratory Protection:	Use respirator approved by NIOSH/MSHA for silica-bearing dust.
Exposure Limits:	Bentonite as "particulates not otherwise regulated" OSHA PEL (8hr. TWA) Respirable Quartz 0.1 mg/m ³ Respirable Dust 5 mg/m ³ Total Dust 15 mg/m ³

Chemical Name	ACGIH TLV-TWA	OSHA PEL-TWA
Crystalline Silica, Quartz	0.05 mg/m ³	0.1 mg/m ³

Section 9: Physical & Chemical Properties

Physical State:	Solid
Odour And Appearance:	Tan to gray; odourless
Odour Threshold:	Not Available
Boiling Point:	Not Available
Evaporation Rate:	Not Available
Melting Point:	Approx. 1450°C
Freezing Point:	Not Available
Specific Gravity:	2.45 - 2.55
Solubility in Water:	Insoluble, forms colloidal suspension
Vapour Density:	Not Available

Vapour Pressure:	Not Available
pH:	8 - 10 (5% aqueous suspension)
Flash Point:	Not Applicable
Volatility (% by volume):	Not Available
Coefficient of Water to Oil distribution:	Not Available

Section 10: Stability & Reactivity

Chemical Stability:	Yes
Hazardous Polymerization:	Will not occur.
Conditions Of Chemical Instability:	Not Applicable
Incompatible Substances:	Not Applicable
Special Decomposition Products:	None known.

Section 11: Toxicological Information

Chemical Name	LD ₅₀ (Oral Rat)	LD ₅₀ (Dermal Rabbit)	LC ₅₀ (Inhalation Rat)
Crystalline Silica, Quartz	Not Available	Not Available	Not Available

Effects Of Acute Exposure:	Not Available
Effects Of Chronic Exposure:	Not Available
General Irritancy Of Product:	Not Available
Sensitization:	Not Available
Carcinogenicity:	Not Available
Reproductive Toxicity:	Not Available
Teratogenicity:	Not Available
Embryotoxicity:	Not Available
Mutagenicity:	Not Available
Synergistic Products:	Not Available

Section 12: Ecological Information

Ecotoxicity:	Not Available
Environmental Fate:	Not Available

Section 13: Disposal Considerations

Waste Disposal: All waste should be disposed of according to federal, provincial and local regulations. Containers should NOT be re-used. Containers should be disposed of in accordance with government regulations.

Section 14: Transport Information

TDG Classification: Not regulated
DOT UN Number: Not Applicable
Shipping Notes: No special requirements

Section 15: Regulatory Information

Workplace Hazardous Materials Information Systems Data (WHMIS):

	Class ID	Class	Workplace Hazard
	D-2-A	Materials Causing Other Toxic Effects - Very Toxic	Toxic effects

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

Section 16: Additional Information

MSDS Revision Date: March 24, 2010

MSDS Revision Notes:

MSDS Author: Bri-Chem Supply Ltd.

Disclaimer: This Health and Safety Information is correct to the best of our knowledge and belief at the date of its publication but we cannot accept liability for any loss, injury or damage which may result from its use. We shall ensure, so far as is reasonably practicable, that any revision of this Data Sheet is sent to all customers to whom we have directly supplied this substance, but must point out that it is the responsibility of any intermediate supplier to ensure that such revision is passed to the ultimate user. The information given in the Data Sheet is designed only as a guidance for safe handling, storage and the use of the substance. It is not a specification nor does it guarantee any specific properties. All chemicals should be handled only by competent personnel, within a controlled environment. Should further information be required, this can be obtained through the sales office whose address is at the top of this data sheet.

SECTION I: IDENTIFICATION OF PRODUCT

COMPANY: **Diversity Technologies Corp.** DATE: **November 14, 2017**
8750 – 53rd Ave. PHONE: **780-440-4923**
Edmonton, AB T6E 5G2 FAX: **780-469-1899**

PRODUCT NAME: **BIG BEAR ROD GREASE**

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

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

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

TRANSPORTATION OF DANGEROUS GOODS (TDG)

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

SECTION II: HAZARDOUS INGREDIENTS

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

SECTION III: HEALTH HAZARDS

ROUTE OF ENTRY: ☐ EYE CONTACT ☐ SKIN CONTACT ☐ INHALATION ☐ INGESTION

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

SECTION IV: FIRST AID MEASURES

SKIN CONTACT: Remove by wiping, or with a waterless hand cleaner. Wash with soap and water. Remove and launder contaminated clothing before re-use.

EYE CONTACT: Immediately flush with gently flowing warm water until all residual material is removed. Remove contact lenses if present. Hold eyelids open to ensure thorough flushing. If irritation persists, obtain medical attention.

INGESTION: Do not induce vomiting. Rinse mouth. Obtain immediate medical attention. Never give anything by mouth to an unconscious or convulsing victim.

INHALATION: Move to fresh air. Apply oxygen or artificial respiration as required. If breathing difficulties or distress continues, obtain medical attention.

SECTION V: PHYSICAL DATA

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

SECTION VI: FIRE AND EXPLOSION HAZARD DATA

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

SECTION VII: REACTIVITY DATA

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

HAZARDOUS DECOMPOSITION PRODUCTS: May release CO_x, smoke and irritating vapours when heated to decomposition.

HAZARDOUS POLYMERIZATION: ☒ WILL NOT OCCUR ☐ MAY OCCUR

SECTION VIII: PREVENTATIVE MEASURES

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Not required under normal conditions of use.

VENTILATION: Not required under normal conditions of use.

PROTECTIVE GLOVES: Suggest neoprene or viton.

EYE PROTECTION: Safety glasses with side-shields if required.

OTHER PROTECTIVE EQUIPMENT (Specify): Protective clothing as required to prevent contact. Ensure eyewash station and emergency shower are available.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

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

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

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

WASTE DISPOSAL METHOD

Dispose/incinerate in accordance with federal, provincial and local regulations. It is the responsibility of the end-user to determine if material meets the criteria of hazardous waste at the time of disposal. Dispose of, or recycle, empty containers in accordance with local regulations.

SECTION IX: PREPARATION

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

DATE ISSUED: **November 14, 2017**
SUPERSEDES: **November 20, 2014**
BY: Regulatory Affairs
PHONE: 780-440-4923



MATERIAL SAFETY DATA SHEET

SECTION 1 – GENERAL INFORMATION

Manufacturer:

Modern Masters, Inc.
9380 San Fernando Road,
Sun Valley, California 91352
818-683-0201

HMIS Rating

HEALTH	2*
FLAMMABILITY	0
REACTIVITY	0

Emergency Telephone: 800-942-3166**Preparation Date:** December 15, 2006

Product Name: Modern Masters SkimStone Component 3 Powder Mix
Modified Portland Cement Powder

Product Code: SK1300

SECTION 2 – HAZARDOUS INGREDIENTS

<u>Hazardous Component</u>	<u>CAS #</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Tricalcium Silicate	12168-85-3	50,000,000 particles/ft ³	10mg/m ³
Dicalcium Silicate	10034-77-2	50,000,000 particles/ft ³	10mg/m ³
Tricalcium Aluminate	12042-78-3	50,000,000 particles/ft ³	10mg/m ³
Calcium Sulfate Dihydrate	7778-18-9	50,000,000 particles/ft ³	10mg/m ³
Crystalline Silica	14808-60-7	10 ppm	10 ppm

NA: Not Applicable

N/D: Not Determined

N/E: Not Established

N/R: Not Required

Est.: Estimated

Modern Masters, Incorporated, 9380 San Fernando Road, Sun Valley, California 91352

818-683-0201

MSDS Code: SkimStone Component 3 Dry Powder (12/15/2006)

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MATERIAL SAFETY DATA SHEET

SECTION 3 – HAZARD IDENTIFICATION

Emergency Overview: This material is a dry white powder. It is a stable, non-flammable, dry white powder with a flash point above 200°F.

Primary Routes of Exposure:

Inhalation Skin contact Eye contact

Potential Acute Health Effects:

Inhalation: May cause respiratory tract and mucous membrane irritation.

Eye: May cause eye irritation and/or damage. Contact lenses should not be worn.

Skin: Prolonged or repeated skin contact may cause irritation and caustic (chemical) burns, possibly hours after contact. May cause drying of the skin.

Ingestion: Not hazardous under intended use conditions. Eating large quantities may cause ill effects.

Potential Chronic Health Effects: Inhalation of crystalline silica may cause cancer or lung or kidney damage.

SECTION 4 – FIRST AID MEASURES

Eye contact: Flush eyes with clean water for 15 minutes. Seek medical attention immediately.

Skin contact: Thoroughly wash with soap and warm water before the decorative coating dries. Sensitive individuals may need to wear impervious rubber gloves.

Inhalation: If irritation occurs, remove to fresh air and seek medical attention if cough or other symptoms develop.

Ingestion: Do not induce vomiting. Seek medical attention immediately.

Note to Physician: Treat symptomatically. This material is basically non-toxic. A small quantity (approximately one tablespoon) is unlikely to cause harm.



MATERIAL SAFETY DATA SHEET

SECTION 5 – FIRE FIGHTING MEASURES

- Flash Point (method):** N/D (est. >200°F)
- Extinguishing Media:** Use water spray, foam, or carbon dioxide when fighting fires involving this material.
- Protection of Firefighters:** As in any fire, wear NIOSH approved self-contained breathing apparatus pressure-demand and full protective gear.
- Fire and Explosion Hazards:** Material will not burn.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

- Personal Precautions:** Dry powder can irritate the eyes and mucous membranes. Wear eye and the proper breathing protection.
- Clean Up Methods:** Contain spill with sand or other diking material. Dispose of in accordance with federal, state, and local regulations.
- (See also Section 8 for information on Exposure Controls and Personal Protective Equipment.)

SECTION 7 – HANDLING AND STORAGE

- Handling:** Avoid prolonged or repeated contact with skin. Avoid contact with eyes. Wash hands with soap and warm water after use.
- Storage:** Keep container closed when not in use. Do not reuse container and properly dispose of empty containers.



MATERIAL SAFETY DATA SHEET

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: If necessary, use general room dilution ventilation, process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

Personal Protective Equipment (PPE):

Eye Protection: Eye contact should be avoided. Where eye contact is likely, wear chemical splash goggles and/or full-face shield.

Skin Protection: Wear gloves to prevent prolonged skin contact.

Respiratory Protection: If vapor levels exceed allowable limits, wear a NIOSH approved air-purifying respirator with an organic vapor cartridge.

General Hygiene Practices: Avoid eye and skin contact. Avoid breathing dusts. Wash hands with soap and warm water before eating, drinking, or using the toilet.

SECTION 9 – PHYSICAL DATA

Appearance:	Dry white powder	Odor:	None
Physical State:	Dry powder	pH:	N/A
Boiling Point:	N/A	Melting Point:	N/A
Vapor Pressure:	N/D	Vapor Density:	N/D
Odor Threshold:	N/D	Viscosity:	N/A
Solubility in Water:	Dilutable in water	Specific Gravity (water = 1):	0.7-1.4
Material VOC: Material contains zero (0) grams per liter Volatile Organic Compounds.			



MATERIAL SAFETY DATA SHEET

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable, non-reactive **Incompatibility:** None known
Hazardous Polymerization: Will not occur
Hazardous Decomposition Products: None known

SECTION 11 – TOXICOLOGICAL INFORMATION

(See also Section 15 for related information.)

SECTION 12 – ECOLOGICAL INFORMATION

Chemical Fate and Effects: No data available.

SECTION 13 – DISPOSAL CONSIDERATIONS

Recommended Waste Disposal Method: This material is not considered hazardous waste under Federal Hazardous Waste Regulations (40CFR 261). However, state and local requirements for waste disposal may be more restrictive or otherwise differ from federal regulations. Chemical additions, processing, or otherwise altering this material may render the waste management information presented in this MSDS incomplete, inaccurate, or otherwise inappropriate. Consult all applicable federal, state, and local regulations regarding the proper disposal of this material.

SECTION 14 – TRANSPORTATION INFORMATION

Regulated by the DOT: Not regulated
DOT Proper Shipping Name: Non-hazardous



MATERIAL SAFETY DATA SHEET

SECTION 15 – REGULATORY INFORMATION

CERCLA:

The Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) requires notification to the National Response Center for releases of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQs) in 40 CFR 302.4 (for CERCLA 102).

Components present in this product at a level which could require reporting under the statute are:

<u>Chemical Name</u>	<u>CAS #</u>	<u>Maximum Concentration (Wt. %)</u>
none	N/A	N/A

SARA Title III, section 311/312:

The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311, and 312).

Components present in this product at a level which could require reporting under the statute are:

<u>Chemical Name</u>	<u>CAS #</u>	<u>Maximum Concentration (Wt. %)</u>
Crystalline Silica	14808-60-7	20%
Portland Cement	65997-15-1	65%



MATERIAL SAFETY DATA SHEET

SARA Title III, section 313:

The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313).

Components present in this product at a level which could require reporting under the statute are:

<u>Chemical Name</u>	<u>CAS #</u>	<u>Maximum Concentration (Wt. %)</u>
Crystalline Silica	14808-60-7	20%
Portland Cement	65997-15-1	65%

TSCA:

The components of this mixture are listed in the Toxic Substance Control Act Inventory of Chemical Substances.

This product does not contain any chemicals that would require export notification under Section 12(b) of the TSCA regulation.



MATERIAL SAFETY DATA SHEET

SECTION 16 – OTHER INFORMATION

Legend: **N/A:** Not Applicable **N/D:** Not Determined
 N/E: Not Established **N/R:** Not Required
 STEL: Short Term Exposure Limit **C:** Ceiling Value
 cps: Centipoise **mg/m³:** milligrams per cubic meter
 PPM: Parts Per Million **PPB:** Parts Per Billion
 PEL: Permissible Exposure Limit **TLV:** Time Weighted Average
 mppcf: million particles per cubic foot of air
 ACGIH: American Conference of Governmental Industrial Hygienists
 CPSC: Consumer Product Safety Commission
 DOT: US Department of Transportation
 FHSA: Federal Hazardous Substance Act
 OSHA: Occupational Safety and Health Administration (US Dept. of Labor)
 RCRA: Resource Conservation and Recovery Act
 SARA: Superfund Amendment and Reauthorization Act
 TSCA: Toxic Substance Control Act

HMIS Key

4 = Severe Hazard
3 = Serious Hazard
2 = Moderate Hazard
1 = Slight Hazard
0 = Minimal Hazard

Prepared by: Modern Masters Regulatory Compliance Manager, Technical Management Dept.
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Disclaimer: Modern Masters, Inc. believes, to the best of its knowledge, information, and belief, the information contained herein to be accurate and reliable as of the date of this material safety data sheet. However, because the conditions of handling, use, and storage of these materials are beyond our control, we assume no responsibility or liability for personal injury or property damage incurred by the use of these materials and make no warranty, expressed or implied, regarding the accuracy or reliability of the data or results obtained from their use. All materials may present unknown hazards and should be used with caution. The information and recommendations in this material safety data sheet are offered for the users' consideration and examination. It is the responsibility of the user to determine the final suitability of this information and data to comply with all applicable international, federal, state, and local laws and regulations.



AccuStandard[®], Inc.

125 Market St., New Haven, CT 06513 USA
Tel: 203-786-5290 Fax: 203-786-5287

Emergency Contact Information:

AccuStandard, Inc.
1-203-786-5290

Hours: Monday to Friday 8:00am to 5:00pm EST

SAFETY DATA SHEET

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

1.1 - Product Identifiers

Catalog Name: FD2-W25-10X

Description: #2 Diesel Fuel (25% Weathered) in Dichloromethane

1.2 - Relevant Identified Uses of the Substance or Mixture

Laboratory Chemical Reference Material

1.3 - Supplier Details

Company: AccuStandard, Inc.
125 Market St.
New Haven, CT 06513 USA

Telephone Number: 203-786-5290

Fax: 203-786-5287

Email: edocs@accustandard.com

1.4 - Emergency Telephone Number

Emergency Phone #: AccuStandard, Inc.
1-203-786-5290
Hours: Monday to Friday 8:00am to 5:00pm EST

SECTION 2 - HAZARDS IDENTIFICATION

2.1 - GHS Label Elements



Signal Word: Warning

Hazard Codes:

H302 - Harmful if swallowed. (Acute toxicity, oral, category 4)

H315 - Irritating to skin. (Skin corrosion/irritation, category 2)

H332 - Harmful if inhaled. (Acute toxicity, inhalation, category 4)

H335 - May be irritating to mucous membrane and upper respiratory system. (Specific target organ toxicity, single exposure; Respiratory tract irritation, category 4)

H350 - This product is or contains a component that is classified (ACGIH, IARC, NTP, OSHA) as a possible cancer hazard. (Carcinogenicity, category 1B)

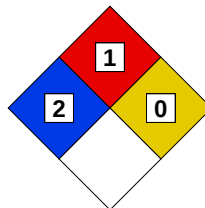
H351 - Suspect cancer hazard. (Carcinogenicity, category 2)

Precautionary Codes:

P202 - This product should only be used by persons trained in the safe handling of hazardous chemicals.

P262 - Do not get in eyes, on skin or clothing.

P264 - Wash thoroughly after handling. Do not take internally. Eye wash and safety equipment should be readily available.



*	2	HEALTH
1		FLAMMABILITY
0		PHYSICAL HAZARD

SECTION 2 - HAZARDS IDENTIFICATION - continued**2.1 - GHS Label Elements** - continued

P280 - Protective gloves must be worn to prevent skin contact.

P284 - Respiratory Protection: If workplace exposure limit(s) of product or any component is exceeded (see TLV/PEL), a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (see your safety equipment supplier). Engineering and/or administrative controls should be implemented to reduce exposure.

P331 - Ingestion: Do NOT induce vomiting. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.

P338 - Eye contact: Immediately flush with plenty of water. After initial flushing, remove and contact lenses and continue flushing for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers.

P360 - Skin contact: Immediately wash skin with soap and plenty of water. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

P404 - Store in a tightly closed container.

2.2 - Other Hazards**2.2.1 - Symptom of Exposure Health/Environment**

Harmful.

Causes depression of central nervous system.

Effects may be delayed.

Lachrymator - causes tearing, blurred vision and pain in the eyes.

Suspect cancer hazard. (Carcinogenicity, category 2)

Exposure can cause headache, nausea, confusion, drowsiness, dizziness and/or vomiting.

2.2.2 - Potential Health Effects

May be irritating to eyes.

Irritating to skin. (Skin corrosion/irritation, category 2)

May be harmful if absorbed through the skin. (Acute toxicity, dermal, category 5)

May be irritating to mucous membrane and upper respiratory system. (Specific target organ toxicity, single exposure; Respiratory tract irritation, category 4)

Harmful if inhaled. (Acute toxicity, inhalation, category 4)

Harmful if swallowed. (Acute toxicity, oral, category 4)

2.2.3 - Routes of Entry

Inhalation, ingestion or skin contact.

2.2.4 - Carcinogenicity

California Proposition 65 cancer hazard.

This product is or contains a component that is classified (ACGIH, IARC, NTP, OSHA) as a possible cancer hazard. (Carcinogenicity, category 1B)

SECTION 3 - COMPOSITION / ANALYTES DATA

Description: #2 Diesel Fuel (25% Weathered) in Dichloromethane

Synonyms: N/A

Molecular Weight: N/A

Molecular Formula: N/A

SECTION 3 - COMPOSITION / ANALYTES DATA - continued

Analyte	CAS Number	% Concentration	ACGIH -TLV (mg/m ³)			OSHA -PEL (mg/m ³)		
			TWA	STEL	Skin	TWA	STEL	Skin
Sulfur	7704-34-9	0.500						
Dichloromethane	75-09-2	99.500	174	50			25	

SECTION 4 - FIRST AID MEASURES**4.1 - First Aid Procedures - General**

Get medical assistance for all cases of overexposure.

4.2 - Eye Contact

Eye contact: Immediately flush with plenty of water. After initial flushing, remove and contact lenses and continue flushing for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. (P338)

4.3 - Skin Contact

Skin contact: Immediately wash skin with soap and plenty of water. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse. (P360)

4.4 - Inhalation

Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention.

4.5 - Ingestion

Ingestion: Do NOT induce vomiting. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person. (P331)

SECTION 5 - FIRE FIGHTING MEASURES**5.1 - Flammable Properties**

During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Containers can build up pressure if exposed to heat.

5.2 - Extinguishing Media

Use alcohol foam, carbon dioxide, dry chemical, or water spray when fighting fires involving this material.

5.3 - Protection of Firefighters

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

SECTION 6 - ACCIDENTAL RELEASE MEASURES**6.1 - Spill Response**

Wear a self-contained breathing apparatus and appropriate Personal protection. Stop leak if you can do so without risk. Ventilate area. Neutralize spill with soda ash or lime. Take up and containerize for proper disposal. Flush spill area with water. Keep combustibles away from spilled material. Comply with Federal, State, and local regulations.

SECTION 7 - HANDLING AND STORAGE

Store in a tightly closed container. (P404)

Store at controlled room temperature.

Avoid breathing vapors or mists.

SECTION 7 - HANDLING AND STORAGE - continued

Use with adequate ventilation. (P271)

Do not get in eyes, on skin or clothing. (P262)

Avoid prolonged or repeated exposure.

This product should only be used by persons trained in the safe handling of hazardous chemicals. (P202)

SECTION 8 - EXPOSURE CONTROLS**8.1 - Engineering Controls/PPE**

Wash thoroughly after handling. Do not take internally. Eye wash and safety equipment should be readily available. (P264)

8.2 - General Hygiene Considerations

Respiratory Protection: If workplace exposure limit(s) of product or any component is exceeded (see TLV/PEL), a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (see your safety equipment supplier). Engineering and/or administrative controls should be implemented to reduce exposure.

Material must be handled or transferred in an approved fume hood or with equivalent ventilation.

Protective gloves must be worn to prevent skin contact. (P280)

(Polyethylene, polyvinyl chloride (PVC) or equivalent)

Safety glasses with side shields must be worn at all times.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear liquid

Odor: Ether-like odor

Odor Threshold: 160 ppm

pH: N/A

Melting Point: -97 °C

Boiling Point: 40 °C

Flash Point: >230 °F

Evaporation Rate (Butyl Acetate=1): 27.5

Flammability Class: IB

Lower Flammability Level: 12

Upper Flammability Level: 23

Vapor Pressure: 353 mmHg (20 °C)

Vapor Density (Air = 1): 2.93 g/L

Specific Gravity: 1.326 g/cm³

Solubility in Water: Slight (1.3%)

Partition Coefficient: log Pow: 1.25

Autoignition Temperature: 556 °C

Decomposition Temperature: N/A

Viscosity: N/A

VOC Content: N/A

Percent Volatile: 99+

SECTION 10 - STABILITY AND REACTIVITY

Stability: Stable

Materials to Avoid: Bases
Oxidizers

Hazardous Decomposition: Hydrogen chloride gas (HCl); Phosgene; Chlorine

Hazardous Polymerization: Will not occur

Condition to Avoid: Excessive heat

SECTION 11 - TOXICOLOGICAL INFORMATION**Human Health Toxicity**

See section 2 for specific toxicological information for the ingredients of this product.

LD50 (Oral): Rat - 1600 mg/kg

LD50 (Dermal) : N/A

LC50 (Inhalation): Rat - 52 mg/L

Dichloromethane has been linked to spontaneous abortions in humans. Investigated as a tumorigen, mutagen, reproductive effector.

WARNING: This product contains chemical(s) known to the state of California to cause cancer.

No other information related to the toxicological properties of this product is available at this time.

SECTION 12 - ECOLOGICAL INFORMATION**Environmental Toxicity**

By complying with sections 6 and 7 there should be no release to the environment.

LC50/96-hour values for fish are over 100 mg/l. This material is not expected to be toxic to aquatic life. This material is not expected to significantly bioaccumulate.

No other information related to the ecological properties of this product is available at this time.

SECTION 13 - DISPOSAL CONSIDERATIONS

Recycle or incinerate at any EPA approved facility or dispose in compliance with Federal, State and local regulations. Empty containers must be triple-rinsed prior to disposal.

SECTION 14 - TRANSPORT INFORMATION**Transportation Information (DOT/IATA)**

UN Number: UN1593

UN Shipping Class: 6.1

UN Packing Group: III

UN Proper Shipping Name: Dichloromethane

Poison by Inhalation: No

Marine Pollutant: No

SECTION 15 - REGULATORY INFORMATION

WARNING: This product contains chemical(s) known to the state of California to cause cancer.

All components are listed on the TSCA Inventory.

SECTION 15 - REGULATORY INFORMATION - continued

For laboratory, research and development use only. Not for manufacturing or commercial purposes.

In addition to federal and state regulations, local regulations may apply. Check with your local regulatory authorities.

SECTION 16 - OTHER INFORMATION

This document has been designed to meet the requirements of OSHA, ANSI, GHS and CHIPs regulations.

The statements contained herein are offered for informational purposes only and are based on technical data that we believe to be accurate. The manufacturer will not assume any liability for the accuracy and completeness of this information. Final determination of the suitability of the material is the responsibility of the user. Although certain hazards are described herein, the user should not presume that these are the only hazards that exist. Since conditions and manner of use are outside of the manufacturers control, we make

**NO WARRANTY OF MERCHANTABILITY, EXPRESSED OR IMPLIED, AND ASSUME NO LIABILITY
RESULTING FROM ITS USE.**

Legend : N/A = Not Available ND = Not Determined NR = Not Regulated

Alteration of any information contained herein without written permission from the manufacturer is strictly prohibited.

HMIS/NFPA HAZARD INDEX

- 0 - Minimal
- 1 - Slight
- 2 - Moderate
- 3 - Serious
- 4 - Severe

* - Additional Hazard

GHS HAZARD INDEX

- Category 1 - Most Severe
- Category 5 - Least Severe

**** End of Document ****

MATERIAL SAFETY DATA SHEET



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EXTREME ROD GREASE

EMERGENCY PHONE NO. (604) 575-6660

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WHMIS HAZARD INDEX:

DEGREE OF HAZARD:

HEALTH 0
FIRE 1
REACTIVITY 0
OTHER: A (GLASSES & GLOVES)

HAZARD RATING:

0 LEAST
1 SLIGHT
2 MODERATE
3 HIGH
4 EXTREME

SECTION 1

PRODUCT IDENTIFICATION

PRODUCT NAME:	EXTREME ROD GREASE
CHEMICAL IDENTIFICATION:	Petroleum Hydrocarbon
MATERIAL USE:	Thick composition, industrial lubricant
WHMIS CLASSIFICATION:	Not controlled
WORK PLACE HAZARD:	Not applicable

TRANSPORTATION OF DANGEROUS GOODS (TDGR)

CLASSIFICATION:	Not dangerous goods
PACKAGE GROUP:	Not applicable
CAS NUMBER:	Not applicable
MSDS CODE:	Not applicable

SECTION 2

HAZARDOUS INGREDIENTS

INGREDIENT:	Mixture of hydrotreated neutral base oil and additives
PERCENTAGE:	100%
CAS NUMBER:	Not applicable
LD (50):	Acute oral toxicity (Rat): 5000 Mg/Kg
LC (50):	Not determined
TLV-TWA:	5 Mg/m ³ (Oil Mist)

EXTREME ROD GREASE

MATERIAL SAFETY DATA SHEET**SECTION 3****PHYSICAL DATA**

APPEARANCE AND ODOUR:	Long fibered grease, greenish brown colour, mild grease like odour.
DENSITY (SPECIFIC GRAVITY):	.89
BOILING POINT:	260°C
MELTING POINT:	Not available
SOLUBILITY:	Insoluble in cold water, soluble in non-polar hydrocarbon solvents.
EVAPORATION RATE: (EE=1):	Not available
VAPOUR PRESSURE: (MM HG):	0.0075 @ 20°C
VAPOUR DENSITY: (AIR = 1):	Not available

SECTION 4**FIRE AND EXPLOSION**

FLASHPOINT:	252°C
FLAMMABLE LIMIT:	Not available
AUTO IGNITION TEMP:	316°C
EXTINGUISHING MEDIA:	Dry chemical, foam, CO ₂ , water spray, fog
SPECIAL FIRE FIGHTING PROCEDURES:	None required
UNUSUAL FIRE AND EXPLOSION HAZARDS:	None

SECTION 5**REACTIVITY DATA**

STABILITY (THERMAL, LIGHT, ETC.):	Stable
INCOMPATIBILITY (CONDITIONS TO AVOID):	Avoid excessive heat, highly reactive with oxidizing agents.
HAZARDOUS POLYMERIZATION:	Will not occur
HAZARDOUS DECOMPOSITION PRODUCTS:	Oxides of carbon and nitrogen, irritating fumes and smoke as products of incomplete combustion.

EXTREME ROD GREASE

MATERIAL SAFETY DATA SHEET

SECTION 6**HEALTH HAZARDS**

ROUTE OF ENTRY:

(X) SKIN

(X) EYE CONTACT

(X) INHALATION

(X) INGESTION

SKIN CONTACT:

EYE CONTACT:

INHALATION:

INGESTION:

Non-irritating; for prolonged exposure wear gloves.

May irritate the eyes

Low vapour pressure, not expected to present inhalation exposure under normal conditions.

Low toxicity on ingestion; has laxative effect and rapidly eliminated.

SECTION 7**PREVENTATIVE MEASURES**

SKIN PROTECTION:

None normally required. Personal preference suggest gloves, boots and long sleeved clothing.

EYE PROTECTION:

Wear safety glasses/goggles.

VENTILATION:

No special ventilation required for normal conditions.

RESPIRATORY PROTECTION:

None normally required. If mist generated by heating or spraying wear an organic vapour respirator with mist filter.

LEAK & SPILL PROCEDURE:

Contain spill. Use appropriate tools to place spilled material in a container for reclaiming or disposal.

WASTE DISPOSAL:

Dispose of in compliance with local and government regulations.

STORAGE REQUIREMENTS:

Store in cool, dry area away from oxidizing agents. Keep containers tightly closed when not in use.

EXTREME ROD GREASE

MATERIAL SAFETY DATA SHEET

SECTION 8**FIRST AID MEASURES**

SKIN:	Wash gently and thoroughly with mild soap and water. Remove and launder contaminated clothes.
EYE:	Immediately flush eyes with running water for at least 15 minutes. Keep eyelids open. Do not use an eye ointment. Seek medical attention if irritation persists.
INHALATION:	Not expected under normal conditions. Remove victim to safe area, perform mouth to mouth resuscitation if victim is not breathing. Seek medical attention.
INGESTION:	Do not induce vomiting. Has laxative effect; rapidly eliminated. Medical assessment advised.

SECTION 9**PREPARATION DATE**

DATE ISSUED:	AUGUST 20, 2009
DATE REVISED:	JANUARY 01, 2018
BY:	PRODUCT SAFETY COMMITTEE

THE DATA REPRESENTED HEREIN IS BELIEVED ACCURATE AND REFLECTS OUR BEST PROFESSIONAL JUDGMENT. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY USE, OR ANY OTHER WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF SUCH DATA, THE RESULTS TO BE OBTAINED FROM THE USE THEREOF, OR THAT ANY SUCH USE DOES NOT INFRINGE ANY PATENT. SINCE THE INFORMATION CONTAINED HEREIN MAY BE APPLIED UNDER CONDITIONS OF USE BEYOND OUR CONTROL AND WITH WHICH WE MAY BE UNFAMILIAR, WE DO NOT ASSUME ANY RESPONSIBILITY FOR THE RESULTS OF SUCH APPLICATION. THIS INFORMATION IS FURNISHED UPON THE CONDITION THAT THE PERSON RECEIVING IT SHALL MAKE HIS OWN DETERMINATION OF THE SUITABILITY OF THE MATERIAL FOR HIS PARTICULAR PURPOSE.

MATERIAL SAFETY DATA SHEET



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PAGE 1 OF 4

EMERGENCY PHONE NO. (604) 575-6660

EXTREME SUPER-G BLUE

WHMIS HAZARD INDEX:

DEGREE OF HAZARD:

HEALTH 1
FIRE 2
REACTIVITY 0
OTHER: B (GLASSES & GLOVES)

HAZARD RATING:

0 LEAST
1 SLIGHT
2 MODERATE
3 HIGH
4 EXTREME

SECTION 1

PRODUCT IDENTIFICATION

PRODUCT NAME: EXTREME SUPER-G BLUE
CHEMICAL IDENTIFICATION: Anionic polyacrylamides in water oil emulsion
MATERIAL USE: Drilling mud additive
WHMIS CLASSIFICATION: B3, D2B
WORK PLACE HAZARD: Combustible liquid; skin & eye irritant

TRANSPORTATION OF DANGEROUS GOODS (TDGR)

CLASSIFICATION: Not dangerous goods
PACKAGE GROUP: NA
CAS NUMBER: NA
MSDS CODE: NA

SECTION 2

HAZARDOUS INGREDIENTS

INGREDIENT:	<u>Mineral spirits</u>	<u>Alkyl Phenol Ethoxylate</u>	<u>Ethoxylated C12-15 Alcohol</u>
PERCENTAGE:	30-60	3-7	0.5-1.5
CAS NUMBER:	64742-47-8	68412-54-4	68131-39-5
LD (50):	>5 g/kg	3 g/kg	>3200 mg/kg
LC (50):	Undetermined	Undetermined	Undetermined

EXTREME SUPER-G BLUE

MATERIAL SAFETY DATA SHEET

SECTION 3**PHYSICAL DATA**

APPEARANCE AND ODOUR:	Blue liquid emulsion, slight odour
DENSITY (SPECIFIC GRAVITY):	NA
BOILING POINT:	NA
MELTING POINT:	NA
SOLUBILITY:	Forms gel
EVAPORATION RATE: (EE=1):	NA
VAPOUR PRESSURE: (MM HG):	NA
VAPOUR DENSITY: (AIR = 1):	NA

SECTION 4**FIRE AND EXPLOSION**

FLASHPOINT:	65°C (TCC)
FLAMMABLE LIMIT:	Undetermined
AUTO IGNITION TEMP:	Undetermined
EXTINGUISHING MEDIA:	Water spray, foam, dry chemical & CO ₂
SPECIAL FIRE FIGHTING PROCEDURES:	Self-contained respirators required for firefighting personnel
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Water may cause slipperiness. Sensitivity to static discharge

SECTION 5**REACTIVITY DATA**

STABILITY (THERMAL, LIGHT, ETC.):	Stable
INCOMPATIBILITY (CONDITIONS TO AVOID):	Strong oxidizing agents, strong reducing agents
HAZARDOUS POLYMERIZATION:	Will not occur
HAZARDOUS DECOMPOSITION PRODUCTS:	NO _x , CO _x

EXTREME SUPER-G BLUE

MATERIAL SAFETY DATA SHEET

SECTION 6**HEALTH HAZARDS**

ROUTE OF ENTRY:

(XX) SKIN

(XX) EYE CONTACT

() INHALATION

(XX) INGESTION

SKIN CONTACT:

Irritant. Can cause redness, inflammation and irritation on prolonged contact

EYE CONTACT:

Severe irritant. Can cause redness, tissue destruction and irritation

INHALATION:

Unlikely

INGESTION:

May cause nausea, diarrhea and abdominal cramps

SECTION 7**PREVENTATIVE MEASURES**

SKIN PROTECTION:

Chemically resistant gloves

EYE PROTECTION:

Safety glasses

VENTILATION:

General mechanical

RESPIRATORY PROTECTION:

NIOSH approved organic vapour cartridge respirator if exposure is excessive

LEAK & SPILL PROCEDURE:

Small spills: soak up with absorbent material
Large spills: dike to contain spill to prevent water pollution. Recover diked material

WASTE DISPOSAL:

Incinerate/dispose of in accordance with local regulations

STORAGE REQUIREMENTS:

Store in a cool, well-ventilated area

EXTREME SUPER-G BLUE

MATERIAL SAFETY DATA SHEET

SECTION 8**FIRST AID MEASURES**

SKIN:	Wash exposed area with soap & water. If irritation or abnormalities persist seek medical attention. Remove contaminated clothing and launder prior to re-use
EYE:	Immediately flush eyes with water for 15 mins and seek medical attention
INHALATION:	Remove to fresh air. If irritation continues, seek medical attention
INGESTION:	If conscious & alert, give 1-2 glasses water. Never give anything by mouth to an unconscious person. Seek medical attention; do not leave unconscious person unattended. Do not induce vomiting

SECTION 9**PREPARATION DATE**

DATE ISSUED:	AUGUST 20, 1996
DATE REVISED:	JANUARY 01, 2018
BY:	PRODUCT SAFETY COMMITTEE

THE DATA REPRESENTED HEREIN IS BELIEVED ACCURATE AND REFLECTS OUR BEST PROFESSIONAL JUDGMENT. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY USE, OR ANY OTHER WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF SUCH DATA, THE RESULTS TO BE OBTAINED FROM THE USE THEREOF, OR THAT ANY SUCH USE DOES NOT INFRINGE ANY PATENT. SINCE THE INFORMATION CONTAINED HEREIN MAY BE APPLIED UNDER CONDITIONS OF USE BEYOND OUR CONTROL AND WITH WHICH WE MAY BE UNFAMILIAR, WE DO NOT ASSUME ANY RESPONSIBILITY FOR THE RESULTS OF SUCH APPLICATION. THIS INFORMATION IS FURNISHED UPON THE CONDITION THAT THE PERSON RECEIVING IT SHALL MAKE HIS OWN DETERMINATION OF THE SUITABILITY OF THE MATERIAL FOR HIS PARTICULAR PURPOSE.

1. Product and Company Identification

Material name	10# Natural Gasoline
Version #	01
Revision date	06-02-2010
CAS #	Mixture
Product use	Fuel.
Manufacturer/Supplier	Devon US Operations 20 North Broadway Oklahoma City, OK 73102-8260 Telephone: (405) 235-3611 - Devon Canadian Operations Calgary, AB. T2P 4H2 2000, 400 – 3rd Avenue SW. Telephone: (403) 232-7100
Emergency	Emergency Chemtrec: Within the USA (800) 424-9300 Outside the USA (703) 527-3887 Devon Canada Emergency Phone: (403) 232-7100

2. Hazards Identification

Physical state	Liquid.
Appearance	Colorless liquid.
Emergency overview	DANGER

Extremely flammable liquid and vapor - vapor may cause flash fire. Harmful or fatal if swallowed. Can enter lungs and cause damage. Causes skin irritation. May cause eye and respiratory tract irritation. Vapors may cause drowsiness and dizziness.

Contains n-hexane. Prolonged and/or repeated exposures may cause damage to the peripheral nervous system (e.g. fingers, feet, arms etc.). Contains benzene. May cause cancer. May cause heritable genetic damage. May cause drowsiness, dizziness, loss of consciousness and death.

OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
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Potential health effects

Routes of exposure

Ingestion. Skin contact. Eye contact. Inhalation.

Eyes

May cause eye irritation. Exposed individuals may experience eye tearing, redness, and discomfort.

Skin

Causes skin irritation. Human and animal studies show that benzene is absorbed through the skin. However, absorption through the skin is normally low because benzene evaporates rapidly. In most cases, any skin contact would also involve significant inhalation exposure.

Inhalation

Breathing of high concentrations may cause dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness. Contains benzene which may cause cancer and cause blood disorders. Contains n-hexane which may cause peripheral nerve damage.

Ingestion

Harmful if swallowed. Can enter lungs and cause damage.

Chronic effects

Prolonged or repeated contact with skin may cause redness, itching, irritation, eczema/chapping and oil acne. Prolonged and repeated contact with the product may cause skin cancer. May cause damage to the liver. Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia. Contains benzene. Human epidemiology studies indicate that prolonged and/or repeated overexposure to benzene may cause damage to the blood-producing system and serious blood disorders, including leukemia. Animal tests suggest that prolonged and/or repeated overexposure to benzene may damage the embryo/fetus. The relevance of these animal studies to humans has not been fully established. May cause cancer. Contains n-hexane. Prolonged and/or repeated exposures may cause damage to the peripheral nervous system (e.g. fingers, feet, arms etc.).

Signs and symptoms

Irritation of eyes and mucous membranes. Skin irritation. Defatting of the skin. Dermatitis. May irritate and cause stomach pain, vomiting, diarrhea and nausea.

Potential environmental effects Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Heptane	142-82-5	7-13
Methylcyclohexane	108-87-2	7-13
n-Hexane	110-54-3	7-13
2-Methylhexane	591-76-4	5-10
3-Methylhexane	589-34-4	5-10
Cyclohexane	110-82-7	5-10
2-Methylpentane	107-83-5	3-7
Dimethylcyclopentanes	Mixtrue	3-7
Dimethylhexanes	Mixtrue	3-7
Methylcyclopentane	96-37-7	3-7
Methylheptanes	Mixtrue	3-7
Toluene	108-88-3	3-7
3-Methylpentane	96-14-0	1-5
Dimethylpentanes	Mixture	1-5
Ethylcyclopentane	1640-89-7	1-5
Octane	111-65-9	1-5
Trimethylcyclopentanes	Mixture	1-5
Benzene	71-43-2	0.5-1

Composition comments The full text for all R-phrases is displayed in Section 16 of the MSDS. All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First Aid Measures

First aid procedures

Eye contact	Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyes wide apart. Get medical attention if irritation develops and persists.
Skin contact	Remove contaminated clothing. Wash with soap and water. In case of rashes, wounds or other skin disorders: Seek medical attention and bring along these instructions.
Inhalation	Move to fresh air. If breathing is difficult, give oxygen. Get medical attention if discomfort develops or persists.
Ingestion	Immediately rinse mouth and drink plenty of water or milk. Keep person under observation. Do not induce vomiting. If vomiting occurs, keep head low. Seek immediate medical attention or advice.

Notes to physician Treat symptomatically. The effects might be delayed.

General advice Get medical attention if any discomfort develops. Refer to the Emergency Response Procedures for Ships Carrying Dangerous Goods (EmS Guide) and the Medical First Aid Guide for Use in Accidents Involving Dangerous Goods (MFAG) as necessary.

5. Fire Fighting Measures

Flammable properties The product is extremely flammable, and explosive vapor/air mixtures may be formed even at normal room temperatures. Material will float and can be re-ignited on surface of water.

Extinguishing media

Suitable extinguishing media	Extinguish with foam, carbon dioxide, dry powder or water fog.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.

Protection of firefighters

Specific hazards arising from the chemical

Thermal decomposition may produce smoke, oxides of carbon and lower molecular weight organic compounds whose composition have not been characterized. Sulphur Oxides (SOx). Nitrogen Oxides (NOx).

Protective equipment and precautions for firefighters

Move containers from fire area if you can do it without risk. Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out.

Special protective equipment for fire-fighters

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with full face-piece operated in positive pressure mode. Use approved gas detectors in confined spaces.

Specific methods

In the event of fire and/or explosion do not breathe fumes. Evacuate area. Water spray should be used to cool containers.

6. Accidental Release Measures

Personal precautions

Eliminate all sources of ignition in vicinity of released vapors. Evacuate all non-essential personnel to an area upwind. Stop leak if possible without any risk. Ventilate enclosed areas to prevent formation of toxic, flammable or oxygen deficient atmospheres. Water spray may be used to reduce vapors. Avoid vapor cloud even with proper respiratory protective equipment. Use suitable protective equipment (section 8). Follow all fire-fighting procedures (section 5). In case of spills, beware of slippery floors and surfaces.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Prevent material from entering drains, sewers or low lying areas. See section 13 for waste disposal information. Do not contaminate water.

Methods for containment

Stop leak if you can do so without risk. Prevent entry into waterways, sewer, basements or confined areas.

Methods for cleaning up

Remove sources of ignition. Beware of the explosion danger. Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible.

Small Spills: Absorb spillage with non-combustible, absorbent material.

Large Spills: Remove with vacuum trucks or pump to storage/salvage vessels. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Wash area with soap and water. Ensure that waste and contaminated materials are collected and removed from the work area as soon as possible in a suitably labeled container.

7. Handling and Storage

Handling

Access to work area should be restricted to people handling the product only. Caution! Vapors may be present in the headspace of closed containers. Ventilate after opening. Avoid contact with eyes, skin, and clothing. Avoid inhalation of vapors. Wear appropriate personal protective equipment. Immediately change contaminated clothes. The product is extremely flammable, and explosive vapor/air mixtures may be formed even at normal room temperatures. Ground container and transfer equipment to eliminate static electric sparks. Vapors are heavier than air and may travel along the floor and in the bottom of containers. Do not eat, drink or smoke when using the product. Be aware of potential for surfaces to become slippery. Observe good industrial hygiene practices. Special precautions should be taken when entering or handling equipment in this type of produced oil service because of possible radioactive contamination. All equipment should be checked for radioactivity or opened to the atmosphere and have forced ventilation applied for at least 4 hours prior to entry or handling. Avoid direct skin contact with any surface. Avoid generation of dust, smoke, fumes, etc. in the work area, or if they cannot be avoided, a tested and certified radionuclide dust respirator should be worn. Smoking, eating, or drinking should be prohibited when working with the equipment. Employees should wash thoroughly with soap and water and discard contaminated clothing after entering or handling the equipment.

Storage

Follow rules for flammable liquids. Keep away from heat, sparks and open flame. Keep in a cool, well-ventilated place. Keep away from food, drink and animal feeding stuffs. Store away from incompatible materials.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

Components

Type

Value

2-Methylhexane (591-76-4)

STEL

500 ppm

TWA

400 ppm

2-Methylpentane (107-83-5)

STEL

1000 ppm

TWA

500 ppm

3-Methylhexane (589-34-4)

STEL

500 ppm

TWA

400 ppm

Components	Type	Value
3-Methylpentane (96-14-0)	STEL	1000 ppm
	TWA	500 ppm
Benzene (71-43-2)	STEL	2.5 ppm
	TWA	0.5 ppm
Cyclohexane (110-82-7)	TWA	100 ppm
Heptane (142-82-5)	STEL	500 ppm
	TWA	400 ppm
Methylcyclohexane (108-87-2)	STEL	500 ppm
	TWA	400 ppm
n-Hexane (110-54-3)	TWA	50 ppm
Octane (111-65-9)	TWA	300 ppm
Toluene (108-88-3)	TWA	20 ppm

U.S. - OSHA

Components	Type	Value
2-Methylhexane (591-76-4)	PEL	500 ppm
		2000 mg/m3
	STEL	2000 mg/m3
	TWA	500 ppm
2-Methylpentane (107-83-5)		1600 mg/m3
		400 ppm
	STEL	3600 mg/m3
	TWA	1000 ppm
3-Methylhexane (589-34-4)		500 ppm
		1800 mg/m3
	STEL	500 ppm
	TWA	2000 mg/m3
3-Methylpentane (96-14-0)		400 ppm
		1600 mg/m3
	STEL	1000 ppm
	TWA	3600 mg/m3
Benzene (71-43-2)		1800 mg/m3
		500 ppm
	Ceiling	25 ppm
	STEL	5 ppm
Cyclohexane (110-82-7)		1 ppm
	TWA	300 ppm
	PEL	1050 mg/m3
	TWA	300 ppm
Heptane (142-82-5)		1050 mg/m3
		2000 mg/m3
	STEL	500 ppm
	TWA	2000 mg/m3
Methylcyclohexane (108-87-2)		500 ppm
		1600 mg/m3
	PEL	2000 mg/m3
	TWA	500 ppm
n-Hexane (110-54-3)		400 ppm
		1600 mg/m3
	PEL	500 ppm
	TWA	1800 mg/m3
Octane (111-65-9)		50 ppm
		180 mg/m3
	PEL	500 ppm
	STEL	2350 mg/m3
		375 ppm
		1800 mg/m3
	TWA	300 ppm

Components	Type	Value
Toluene (108-88-3)	Ceiling	1450 mg/m3
		300 ppm
		150 ppm
	TWA	560 mg/m3
		200 ppm
		375 mg/m3

Canada - Alberta

Components	Type	Value
2-Methylpentane (107-83-5)	STEL	3500 mg/m3
		1000 ppm
	TWA	500 ppm
3-Methylpentane (96-14-0)		1760 mg/m3
	STEL	1000 ppm
	TWA	3500 mg/m3
Benzene (71-43-2)		500 ppm
	STEL	1760 mg/m3
	TWA	8 mg/m3
Cyclohexane (110-82-7)		2.5 ppm
	TWA	0.5 ppm
		1.6 mg/m3
Heptane (142-82-5)		344 mg/m3
	STEL	100 ppm
	TWA	500 ppm
Methylcyclohexane (108-87-2)		2050 mg/m3
	STEL	1640 mg/m3
	TWA	400 ppm
n-Hexane (110-54-3)		500 ppm
	TWA	2050 mg/m3
		1640 mg/m3
Octane (111-65-9)		400 ppm
	TWA	50 ppm
		176 mg/m3
Toluene (108-88-3)		300 ppm
	TWA	1400 mg/m3
		50 ppm
		188 mg/m3

Canada - British Columbia

Components	Type	Value
2-Methylhexane (591-76-4)	STEL	500 ppm
	TWA	400 ppm
2-Methylpentane (107-83-5)	TWA	200 ppm
3-Methylhexane (589-34-4)	STEL	500 ppm
	TWA	400 ppm
3-Methylpentane (96-14-0)	TWA	200 ppm
Benzene (71-43-2)	STEL	2.5 ppm
	TWA	0.5 ppm
Cyclohexane (110-82-7)	TWA	100 ppm
Heptane (142-82-5)	STEL	500 ppm
	TWA	400 ppm
Methylcyclohexane (108-87-2)	TWA	400 ppm
n-Hexane (110-54-3)	TWA	20 ppm
Octane (111-65-9)	TWA	300 ppm
Toluene (108-88-3)	TWA	20 ppm

Additional exposure data

OSHA: The acceptable max. peak above the ceiling concentration for an 8-hour shift is: 50 ppm. The acceptable duration of the peak above the ceiling concentration is: 10 minutes once, only if no other measureable exposure occurs

Engineering controls

Explosion proof exhaust ventilation should be used. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Provide adequate ventilation and minimize the risk of inhalation of vapors. Provide easy access to water supply and eye wash facilities.

Personal protective equipment

Eye / face protection

Wear goggles/face shield.

Skin protection

Wear protective gloves. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. Protection suit must be worn. Anti-static and flame-retardant protective clothing is recommended. Suitable gloves can be recommended by the glove supplier.

Respiratory protection

Wear approved respiratory protection when working with this material unless ventilation is adequate to keep airborne concentrations below recommended exposure standards.

General hygiene considerations

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Private clothes and working clothes should be kept separately. Observe any medical surveillance requirements.

9. Physical & Chemical Properties

Appearance	Colorless liquid.
Color	Colorless.
Odor	Hydrocarbon-like.
Odor threshold	Not available.
Physical state	Liquid.
Form	Liquid.
pH	Not available.
Melting point	Not available.
Freezing point	Not available.
Boiling point	69.1 °F (20.6 °C)
Flash point	-9.4 °F (-23 °C) Tag Closed Cup
Evaporation rate	> 1
Flammability	Not available.
Flammability limits in air, upper, % by volume	7.5
Flammability limits in air, lower, % by volume	1.2
Vapor pressure	3 (38°C/ 100°F)
Vapor density	2.97
Specific gravity	0.72 (Water=1)
Solubility (water)	Slightly.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	437 °F (225 °C)
Decomposition temperature	Not available.
VOC	6 (pounds /gallon)

10. Chemical Stability & Reactivity Information

Chemical stability	Stable at normal conditions.
Conditions to avoid	Heat, sparks, flames, elevated temperatures. Contact with incompatible materials.
Incompatible materials	Strong acids. Strong oxidizing agents.
Hazardous decomposition products	Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

Components

Test Results

Methylcyclohexane (108-87-2)	Acute Inhalation LC25-R Rabbit: 7300 mg/l
Toluene (108-88-3)	Acute Oral LD50 Rat: 2600 - 7500 mg/kg

Components	Test Results
Cyclohexane (110-82-7)	Acute Oral LD50 Rat: 12705 mg/kg
Octane (111-65-9)	Acute Inhalation LC50 Rat: 118 mg/l 4 Hours
Heptane (142-82-5)	Acute Inhalation LC50 Rat: 103 mg/l 4 Hours
3-Methylhexane (589-34-4)	Acute Inhalation LC50 Rat: 103 mg/l 4 Hours
2-Methylhexane (591-76-4)	Acute Inhalation LC50 Rat: 103 mg/l 4 Hours
Benzene (71-43-2)	Acute Inhalation LC50 Mouse: 9980 mg/l Acute Inhalation LC50 Rat: 10000 mg/l 7 Hours Acute Oral LD50 Mouse: 4700 mg/kg Acute Oral LD50 Rat: 3306 mg/kg Acute Other LD50 Mouse: 340 mg/kg Acute Other LD50 Mouse: 0.000001 ml/kg Acute Other LD50 Rat: 2.89 mg/kg
Toxicological information	This product may contain detectable but varying quantities of the naturally occurring radioactive substance radon 222. The amount in the gas itself is not hazardous, but since radon rapidly decays ($t_{1/2} = 3.82$ days) to form other radioactive elements including lead 210, polonium 210, and bismuth 210, equipment may be radioactive. The radon daughters are solids and therefore may attach to dust particles or form films and sludges in equipment. Inhalation, ingestion or skin contact with radon daughters can lead to the deposition of radioactive material in the lungs, bone, blood forming organs, intestinal tract, kidney and colon. Occupational exposure to radon and radon daughters has been associated with an increased risk of lung cancer in underground uranium miners. Follow the special precautions listed in handling and storage section of this document (see section 7).
Acute effects	Breathing of high concentrations may cause dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness. May irritate and cause stomach pain, vomiting, diarrhea and nausea.
Local effects	Irritating to skin. May cause eye and respiratory tract irritation.
Sensitization	May cause eczema-like skin disorders (dermatitis). May cause photosensitization, evidenced by repeated occurrence of a dermatitic rash on exposure to sunlight.
Chronic effects	Prolonged or repeated contact with skin may cause redness, itching, irritation, eczema/chapping and oil acne. May cause damage to the liver. Contains benzene. Human epidemiology studies indicate that prolonged and/or repeated overexposure to benzene may cause damage to the blood-producing system and serious blood disorders, including leukemia. Animal tests suggest that prolonged and/or repeated overexposure to benzene may damage the embryo/fetus. The relevance 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.).
Carcinogenicity	May cause cancer. Contains benzene, a known human carcinogen, which may cause leukemia.
ACGIH Carcinogens	
Benzene (CAS 71-43-2)	A1 Confirmed human carcinogen.
Toluene (CAS 108-88-3)	A4 Not classifiable as a human carcinogen.
IARC Monographs. Overall Evaluation of Carcinogenicity	
Benzene (CAS 71-43-2)	1 Carcinogenic to humans.
Toluene (CAS 108-88-3)	3 Not classifiable as to carcinogenicity to humans.
US NTP Report on Carcinogens: Known carcinogen	
Benzene (CAS 71-43-2)	Known carcinogen.
US OSHA Specifically Regulated Substances: Cancer hazard	
Benzene (CAS 71-43-2)	Cancer hazard.
Epidemiology	Pre-existing skin conditions including dermatitis might be aggravated by exposure to this product.
Mutagenicity	Knowledge about mutagenicity is incomplete.
Reproductive effects	Knowledge about reproductive effects is incomplete.
Further information	Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia. Components of the product may be absorbed into the body through the skin.

12. Ecological Information

Ecotoxicological data

Components

Test Results

Methylcyclohexane (108-87-2)	LC50 Striped bass (<i>Morone saxatilis</i>): 5.8 mg/l 96 hours
Toluene (108-88-3)	EC50 Water flea (<i>Daphnia magna</i>): 5.46 - 9.83 mg/l 48 hours LC50 Coho salmon, silver salmon (<i>Oncorhynchus kisutch</i>): 5.5 mg/l 96 hours
n-Hexane (110-54-3)	LC50 Fathead minnow (<i>Pimephales promelas</i>): 2.101 - 2.981 mg/l 96 hours
Cyclohexane (110-82-7)	LC50 Fathead minnow (<i>Pimephales promelas</i>): 3.961 - 5.181 mg/l 96 hours
Heptane (142-82-5)	LC50 Mozambique tilapia (<i>Tilapia mossambica</i>): 375 mg/l 96 hours
3-Methylhexane (589-34-4)	LC50 Mozambique tilapia (<i>Tilapia mossambica</i>): 375 mg/l 96 hours
2-Methylhexane (591-76-4)	LC50 Mozambique tilapia (<i>Tilapia mossambica</i>): 375 mg/l 96 hours
Benzene (71-43-2)	EC50 Water flea (<i>Daphnia magna</i>): 8.76 - 15.6 mg/l 48 hours EC50 Water flea (<i>Daphnia magna</i>): 8.76 - 15.6 mg/l 48 Hours LC50 Rainbow trout, donaldson trout (<i>Oncorhynchus mykiss</i>): 5 mg/l 96 Hours

Ecotoxicity

Oil spills are generally hazardous to the environment.

Environmental effects

The product contains volatile organic compounds which have a photochemical ozone creation potential.

Aquatic toxicity

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Persistence and degradability

The degradability of the product has not been stated. The product meets the definition of the International Oil Pollution Compensation (IOPC) Fund as being a "persistent" oil.

Bioaccumulation / Accumulation

No data available on bioaccumulation.

Partition coefficient (n-octanol/water)

Not available.

Mobility in environmental media

The product is insoluble in water. It will spread on the water surface while some of the components will eventually sediment in water systems. The volatile components of the product will spread in the atmosphere.

13. Disposal Considerations

Waste codes

D001: Waste Flammable material with a flash point <140 °F

Disposal instructions

Dispose in accordance with all applicable regulations. This material and/or its container must be disposed of as hazardous waste.

Waste from residues / unused products

Follow all applicable MARPOL requirements for disposal of waste.

Contaminated packaging

Dispose of in accordance with local regulations.

14. Transport Information

DOT

Basic shipping requirements:

UN number	UN1203
Proper shipping name	Gasoline
Hazard class	3
Packing group	II
Environmental hazards	

Marine pollutant	Yes
Labels required	3

Additional information:

Special provisions	139, B33, B101, T8
Packaging exceptions	150
Packaging non bulk	202

Packaging bulk 242
ERG number 128

IATA

Basic shipping requirements:

UN number 1203
Proper shipping name Gasoline
Hazard class 3
Packing group II

IMDG

Basic shipping requirements:

UN number 1203
Proper shipping name Gasoline
Hazard class 3
Packing group II
Environmental hazards
Marine pollutant Yes
EmS No. F-E, S-E

TDG

Basic shipping requirements:

Proper shipping name Gasoline
Hazard class 3
UN number UN1203
Packing group II
Marine pollutant Yes
Additional information:
Special provisions 17



DOT



IATA



IMDG



TDG

15. Regulatory Information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

All components are on the U.S. EPA TSCA Inventory List.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

Benzene (CAS 71-43-2)	0.1 %
Cyclohexane (CAS 110-82-7)	1.0 %
n-Hexane (CAS 110-54-3)	1.0 %
Toluene (CAS 108-88-3)	1.0 %

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

Benzene (CAS 71-43-2)	Listed.
Cyclohexane (CAS 110-82-7)	Listed.
n-Hexane (CAS 110-54-3)	Listed.
Toluene (CAS 108-88-3)	Listed.

US TSCA Section 12(b) Export Notification: Export Notification requirement/De minimis concentration

2-Methylhexane (CAS 591-76-4)	1.0 % One-Time Export Notification only.
3-Methylhexane (CAS 589-34-4)	1.0 % One-Time Export Notification only.
Heptane (CAS 142-82-5)	1.0 % One-Time Export Notification only.

CERCLA (Superfund) reportable quantity (lbs)

Heptane 100
Methylcyclohexane 100
n-Hexane 100
2-Methylhexane 100
3-Methylhexane 100
Cyclohexane 100
2-Methylpentane 100
Methylcyclopentane 100
Toluene 100
3-Methylpentane 100
Ethylcyclopentane 100
Octane 100
Benzene 10

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - Yes Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - No
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Section 302 extremely hazardous substance No

Section 311 hazardous chemical No

Drug Enforcement Agency (DEA) Not controlled

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

WHMIS status Controlled

WHMIS classification B2 - Flammable/Combustible
D2A - Other Toxic Effects-VERY TOXIC
D2B - Other Toxic Effects-TOXIC

WHMIS labeling

State regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US - California Hazardous Substances (Director's): Listed substance

2-Methylhexane (CAS 591-76-4)	Listed.
2-Methylpentane (CAS 107-83-5)	Listed.
3-Methylhexane (CAS 589-34-4)	Listed.
3-Methylpentane (CAS 96-14-0)	Listed.
Benzene (CAS 71-43-2)	Listed.
Cyclohexane (CAS 110-82-7)	Listed.
Heptane (CAS 142-82-5)	Listed.
Methylcyclohexane (CAS 108-87-2)	Listed.
n-Hexane (CAS 110-54-3)	Listed.
Octane (CAS 111-65-9)	Listed.
Toluene (CAS 108-88-3)	Listed.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Benzene (CAS 71-43-2)	Listed.
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Toluene (CAS 108-88-3)	Listed.
US - California Proposition 65 - CRT: Listed date/Carcinogenic substance	
Benzene (CAS 71-43-2)	Listed: February 27, 1987 Carcinogenic.
US - California Proposition 65 - CRT: Listed date/Developmental toxin	
Benzene (CAS 71-43-2)	Listed: December 26, 1997 Developmental toxin.
Toluene (CAS 108-88-3)	Listed: January 1, 1991 Developmental toxin.
US - California Proposition 65 - CRT: Listed date/Female reproductive toxin	
Toluene (CAS 108-88-3)	Listed: August 7, 2009 Female reproductive toxin.
US - California Proposition 65 - CRT: Listed date/Male reproductive toxin	
Benzene (CAS 71-43-2)	Listed: December 26, 1997 Male reproductive toxin.
US - Massachusetts RTK - Substance: Listed substance	
2-Methylhexane (CAS 591-76-4)	Listed.
2-Methylpentane (CAS 107-83-5)	Listed.
3-Methylhexane (CAS 589-34-4)	Listed.
3-Methylpentane (CAS 96-14-0)	Listed.
Benzene (CAS 71-43-2)	Listed.
Cyclohexane (CAS 110-82-7)	Listed.
Ethylcyclopentane (CAS 1640-89-7)	Listed.
Heptane (CAS 142-82-5)	Listed.
Methylcyclohexane (CAS 108-87-2)	Listed.
Methylcyclopentane (CAS 96-37-7)	Listed.
n-Hexane (CAS 110-54-3)	Listed.
Octane (CAS 111-65-9)	Listed.
Toluene (CAS 108-88-3)	Listed.
US - New Jersey Community RTK (EHS Survey): Reportable threshold	
Benzene (CAS 71-43-2)	500 LBS
Cyclohexane (CAS 110-82-7)	500 LBS
n-Hexane (CAS 110-54-3)	500 LBS
Toluene (CAS 108-88-3)	500 LBS
US - New Jersey RTK - Substances: Listed substance	
Benzene (CAS 71-43-2)	Listed.
Ethylcyclopentane (CAS 1640-89-7)	Listed.
Heptane (CAS 142-82-5)	Listed.
US - Pennsylvania RTK - Hazardous Substances: Listed substance	
2-Methylhexane (CAS 591-76-4)	Listed.
2-Methylpentane (CAS 107-83-5)	Listed.
3-Methylhexane (CAS 589-34-4)	Listed.
3-Methylpentane (CAS 96-14-0)	Listed.
Benzene (CAS 71-43-2)	Listed.
Cyclohexane (CAS 110-82-7)	Listed.
Ethylcyclopentane (CAS 1640-89-7)	Listed.
Heptane (CAS 142-82-5)	Listed.
Methylcyclohexane (CAS 108-87-2)	Listed.
Methylcyclopentane (CAS 96-37-7)	Listed.
n-Hexane (CAS 110-54-3)	Listed.
Octane (CAS 111-65-9)	Listed.
Toluene (CAS 108-88-3)	Listed.
US - Pennsylvania RTK - Hazardous Substances: Special hazard	
Benzene (CAS 71-43-2)	Special hazard.

16. Other Information

Further information	HMIS® is a registered trade and service mark of the NPCA. B - Safety Glasses, Gloves
HMIS® ratings	Health: 1* Flammability: 4 Physical hazard: 0 Personal protection: B
NFPA ratings	Health: 1 Flammability: 4 Instability: 0
Disclaimer	This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.
Issue date	06-02-2010



4 Seasons Hydraulic Fluid AW (All Grades)

Material Safety Data Sheet

1. Product and Company Identification

Product Name: 4 Seasons Hydraulic Fluid AW (All Grades)

MSDS Number: 726500

Synonyms: Kendall 4 Seasons Hydraulic Fluid AW 32
Kendall 4 Seasons Hydraulic Fluid AW 46
Kendall 4 Seasons Hydraulic Fluid AW 68
Kendall 4 Seasons Hydraulic Fluid AW 100

Intended Use: Hydraulic Fluid

Manufacturer/Supplier: ConocoPhillips Lubricants
600 N. Dairy Ashford
Houston, Texas 77079-1175

Emergency Health and Safety Number: Chemtrec: 800-424-9300 (24 Hours)

Customer Service: 888-766-7676

Technical Information: 800-255-9556

MSDS Information: Internet: <http://w3.conocophillips.com/NetMSDS/>

2. Hazards Identification

Emergency Overview

This material is not considered hazardous according to OSHA criteria.

NFPA



Appearance: Clear and bright

Physical Form: Liquid

Odor: Petroleum

Potential Health Effects

Eye: Contact may cause mild eye irritation including stinging, watering, and redness.

Skin: Contact may cause mild skin irritation including redness and a burning sensation. Prolonged or repeated contact can defat the skin, causing drying and cracking of the skin, and possibly dermatitis (inflammation). No harmful effects from skin absorption are expected.

Inhalation (Breathing): No information available on acute toxicity.

Ingestion (Swallowing): No harmful effects expected from ingestion.

Signs and Symptoms: Effects of overexposure may include irritation of the digestive tract, nausea and diarrhea. Inhalation of oil mist or vapors at elevated temperatures may cause respiratory irritation.

Pre-Existing Medical Conditions: Conditions aggravated by exposure may include skin disorders.

See Section 11 for additional Toxicity Information.

3. Composition / Information on Ingredients

Component	CASRN	Concentration*
Lubricant Base Oil (Petroleum)	VARIOUS	>99
Additives	PROPRIETARY	<1

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First Aid Measures

Eye Contact: If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

Skin Contact: Remove contaminated shoes and clothing and cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops and persists, seek medical attention.

Inhalation (Breathing): If respiratory symptoms develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. If symptoms persist, seek medical attention.

Ingestion (Swallowing): First aid is not normally required; however, if swallowed and symptoms develop, seek medical attention.

Notes to Physician: High-pressure hydrocarbon injection injuries may produce substantial necrosis of underlying tissue despite an innocuous appearing external wound. Often these injuries require extensive emergency surgical debridement and all injuries should be evaluated by a specialist in order to assess the extent of injury.

Acute aspirations of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Inhalation exposure to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities.

5. Fire-Fighting Measures

NFPA 704 Hazard Class

Health: 0 **Flammability:** 1 **Instability:** 0 (0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

Unusual Fire & Explosion Hazards: This material may burn, but will not ignite readily. If container is not properly cooled, it can rupture in the heat of a fire.

Extinguishing Media: Dry chemical, carbon dioxide, foam, or water spray is recommended. Water or foam may cause frothing of materials heated above 212°F. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces.

Fire Fighting Instructions: For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear bunker gear. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely. Avoid spreading burning liquid with water used for cooling purposes.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of sulfur, nitrogen or phosphorus may also be formed.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

6. Accidental Release Measures

6. Accidental Release Measures

Personal Precautions: This material may burn, but will not ignite readily. Keep all sources of ignition away from spill/release. The use of explosion-proof electrical equipment is recommended. Stay upwind and away from spill/release. Notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use water sparingly to minimize environmental contamination and reduce disposal requirements. Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Center (phone number 800-424-8802).

Methods for Containment and Clean-Up: Notify relevant authorities in accordance with all applicable regulations. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal.

7. Handling and Storage

Precautions for safe handling: Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment.

High pressure injection of hydrocarbon fuels, hydraulic oils or greases under the skin may have serious consequences even though no symptoms or injury may be apparent. This can happen accidentally when using high pressure equipment such as high pressure grease guns, fuel injection apparatus or from pinhole leaks in tubing of high pressure hydraulic oil equipment.

Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

Conditions for safe storage: Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated area away from heat and all sources of ignition. Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

8. Exposure Controls / Personal Protection

Component	US-ACGIH	OSHA	Other
Lubricant Base Oil (Petroleum)	TWA: 5mg/m ³ STEL: 10 mg/m ³ as Oil Mist, if generated	TWA: 5 mg/m ³ as Oil Mist, if generated	---

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Eye/Face Protection: The use of eye protection that meets or exceeds ANSI Z.87.1 is recommended to protect against potential eye contact, irritation, or injury. Depending on conditions of use, a face shield may be necessary.

Skin/Hand Protection: The use of gloves impervious to the specific material handled is advised to prevent skin contact. Users should check with manufacturers to confirm the breakthrough performance of their products. Suggested protective materials: Nitrile.

Respiratory Protection: Where there is potential for airborne exposure above the exposure limit a NIOSH certified air purifying respirator equipped with R or P95 filters may be used.

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health (IDLH).

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

9. Physical and Chemical Properties

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

Appearance:	Clear and bright
Physical Form:	Liquid
Odor:	Petroleum
Odor Threshold:	No data
pH:	Not applicable
Vapor Pressure:	<1 mm Hg
Vapor Density (air=1):	>1
Boiling Point/Range:	No data
Melting/Freezing Point:	<-0.4°F / <-18°C
Pour Point:	<-0.4°F / <-18°C
Solubility in Water:	Negligible
Partition Coefficient (n-octanol/water) (Kow):	No data
Specific Gravity:	0.86 - 0.88 @ 60°F (15.6°C)
Bulk Density:	7.2 - 7.3 lbs/gal
Viscosity:	5 - 11 cSt @ 100°C; 30 - 110 cSt @ 40°C
Percent Volatile:	Negligible
Evaporation Rate (nBuAc=1):	<1
Flash Point:	>302°F / >150°C
Test Method:	Pensky-Martens Closed Cup (PMCC), ASTM D93, EPA 1010
LEL (vol % in air):	No data
UEL (vol % in air):	No data
Autoignition Temperature:	No data

10. Stability and Reactivity

Stability: Stable under normal ambient and anticipated conditions of use.

Conditions to Avoid: Extended exposure to high temperatures can cause decomposition.

Materials to Avoid (Incompatible Materials): Avoid contact with strong oxidizing agents and strong reducing agents.

Hazardous Decomposition Products: Not anticipated under normal conditions of use.

Hazardous Polymerization: Not known to occur.

11. Toxicological Information

Chronic Data:

Lubricant Base Oil (Petroleum)

Carcinogenicity: The petroleum base oils contained in this product have been highly refined by a variety of processes including severe hydrocracking/hydroprocessing to reduce aromatics and improve performance characteristics. All of the oils meet the IP-346 criteria of less than 3 percent PAH's and are not considered carcinogens by NTP, IARC, or OSHA.

Lubricant Base Oil (Petroleum)

Acute Data:

Component	Oral LD50	Dermal LD50	Inhalation LC50
Lubricant Base Oil (Petroleum)	>5 g/kg	>2 g/kg	No data

12. Ecological Information

Ecotoxicity: Experimental studies show that acute aquatic toxicity values are greater than 1000 mg/l. These values are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon compositions.

Mobility: Volatilization to air is not expected to be a significant fate process due to the low vapor pressure of this material. In water, base oils will float and spread over the surface at a rate dependent upon viscosity. There will be significant removal of hydrocarbons from the water by sediment adsorption. In soil and sediment, hydrocarbon components will show low mobility with adsorption to sediments being the predominant physical process. The main fate process is expected to be slow biodegradation of base oil components in soil and sediment.

Persistence and degradability: The hydrocarbons in this material are not readily biodegradable, but since they can be degraded by microorganisms, they are regarded as inherently biodegradable.

Bioaccumulation Potential: Log Kow values measured for the hydrocarbon components of this material range from 4 to over 6, and therefore regarded as having the potential to bioaccumulate. In practice, metabolic processes may reduce bioconcentration.

13. Disposal Considerations

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations.

This material, if discarded as produced, would not be a federally regulated RCRA "listed" hazardous waste and is not believed to exhibit characteristics of hazardous waste. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed in the MSDS but could affect the hazardous waste determination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste.

This material under most intended uses would become "Used Oil" due to contamination by physical or chemical impurities. Whenever possible, Recycle Used Oil in accordance with applicable federal and state or local regulations. Container contents should be completely used and containers should be emptied prior to discard.

14. Transportation Information

U.S. Department of Transportation (DOT)

Shipping Description: *Not regulated*

Note: *If shipped by land in a packaging having a capacity of 3,500 gallons or more, the provisions of 49 CFR, Part 130 apply. (Contains oil)*

International Maritime Dangerous Goods (IMDG)

Shipping Description: *Not regulated*

Note: *U.S. DOT compliance requirements may apply. See 49 CFR 171.22, 23 & 25.*

International Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)

UN/ID #: *Not regulated*

	LTD. QTY	Passenger Aircraft	Cargo Aircraft Only
Packaging Instruction #:	---	---	---
Max. Net Qty. Per Package:	---	---	---

15. Regulatory Information

CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):

This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

CERCLA/SARA - Section 311/312 (Title III Hazard Categories)

Acute Health:	No
Chronic Health:	No
Fire Hazard:	No
Pressure Hazard:	No
Reactive Hazard:	No

CERCLA/SARA - Section 313 and 40 CFR 372:

This material does not contain any chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372.

EPA (CERCLA) Reportable Quantity (in pounds):

This material does not contain any chemicals with CERCLA Reportable Quantities.

California Proposition 65:

This material does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the warning requirements of California Proposition 65.

Canadian Regulations:

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

WHMIS Hazard Class
None

National Chemical Inventories:

All components are either listed on the US TSCA Inventory, or are not regulated under TSCA.
All components are either on the DSL, or are exempt from DSL listing requirements.

U.S. Export Control Classification Number: EAR99

16. Other Information

References used in compiling safety data sheet information:

Dangerous Substances Directive 67/548/EEC

Issue Date:	19-Aug-2008
Status:	Final
Previous Issue Date:	23-Aug-2005
Revised Sections or Basis for Revision:	NFPA ratings (Sections 2&5) Composition (Section 3) Physical Properties (Section 9) Environmental hazards (Section 12) Regulatory information (Section 15)
MSDS Number:	726500

Guide to Abbreviations:

ACGIH = American Conference of Governmental Industrial Hygienists; ADR = Agreement on Dangerous Goods by Road; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); EINECS = European Inventory of Existing Commercial Chemical Substances; EPA = [US] Environmental Protection Agency; Germany-TRGS = Technical Rules for Dangerous Substances; IARC = International Agency for Research on Cancer; ICAO/IATA = International Civil Aviation Organization / International Air Transport Association; IMDG = International Maritime Dangerous Goods; Ireland-HSA = Ireland's National Health and Safety Authority; LEL = Lower Explosive Limit; N/A = Not Applicable; N/D = Not Determined; NTP = [US] National Toxicology Program; RID = Regulations Concerning the International Transport of Dangerous Goods by Rail; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value; TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; UK-EH40 = United Kingdom EH40/2005 Workplace Exposure Limits

Disclaimer of Expressed and implied Warranties:

The information presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.



(Material) Safety Data Sheet

Transport Symbol	WHMIS	NFPA	Personal Protective Equipment
Not controlled	Not controlled		

Original Preparation Date: 01-Jan-2010

Revision Date: 12-Feb-2014

Revision Number: 2

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product Name:

Linseed Oil Soap Stock

Product Code:

001299

Contact Manufacturer:

ADM Specialty Oils & Fats
126 La Grange St.
Red Wing, MN 55066
+1-651-388-7111

Use of the Substance / Preparation :

For industrial use only

Emergency response telephone number:

Chemtrec 1-800-424-9300 (CCN 1635)

2. HAZARDS IDENTIFICATION

Emergency Overview

Spontaneous combustion (fire) may result from oil soaked materials such as rags, steel wool, paper, and clothing. Place soaked materials in a sealed, metal container to prevent this.

Appearance

Brown

Physical State

Viscous liquid to Wax-like Paste

Odor

Characteristic

This product is NOT classified as hazardous according to 29 CFR 1910, amended to conform to the United Nations' Globally Harmonized System of Classification and Labelling of Chemicals (OSHA / GHS); SOR/88-66, the Canadian Controlled Products Regulations (CPR); and/or NOM-002-SCT-2003 (Mexico). However, vegetable oil (in mist form) is known to be listed as an OSHA 29 CFR 1910.1000 Air Contaminant. Occupational exposure limits are subsequently provided in section 8 of this SDS.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Family

Oil

Non-hazardous Components

Chemical Name	CAS-No	Weight %	North American Hazard Indicator
Soaps, stocks, linseed-oil	68554-72-3	100	None known

4. FIRST AID MEASURES

Description of first aid measures

General Advice When symptoms persist or in all cases of doubt seek medical advice.

Eye Contact Rinse thoroughly with plenty of water, also under the eyelids.

Skin Contact Wash off with warm water and soap.

Inhalation Move to fresh air.

Ingestion Not for human consumption. Health injuries are not known or expected under normal use.

Most important symptoms and affects, both acute and delayed

Eyes Contact with eyes may cause mild irritation.

Skin Prolonged or excessive contact with skin may result in mild irritation, however, significant health injuries are not expected under normal use.

Inhalation Excessive inhalation of mist may result in respiratory irritation. When in the form of an airborne mist, refer to section 8 of this sheet for exposure limits pertaining to "vegetable oil mist".

Ingestion Health injuries are not known or expected under normal use. Over exposure may cause: Gastrointestinal disturbance.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flammable Properties

Material may pose fire hazard because it is dispersed (or spread) by water.

Extinguishing media

Suitable Extinguishing Media Dry chemical. Dry chemical powder. Carbon dioxide (CO₂). Foam. Sand. Fog. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media Do not use a solid water stream as it may scatter and spread fire.

Special hazards arising from the substance or mixture

Hazardous Combustion Products Thermal decomposition can lead to release of irritating gases and vapors, Carbon monoxide (CO), Carbon dioxide (CO₂), Acrolein.

Specific Hazards Arising from the Chemical Risk of ignition. Rags and other materials containing this product may heat and spontaneously ignite, if exposed to air. Store wiping rags and similar materials in metal cans with tightly fitting lids. Cool closed containers exposed to fire with water spray.

Sensitivity to mechanical impact No information available.

Sensitivity to static discharge No information available.

Advice for fire-fighters

Protective Equipment and Precautions for Firefighters As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health 1

Flammability 1

Stability and Reactivity 0

Physical hazard None known



6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Avoid high pressure washing or generation of aerosols. Material can create slippery conditions.

Environmental Precautions

Prevent further leakage or spillage if safe to do so. Do not allow product to reach soil, sewage system or any water course.

Methods for Clean-up

Dam up. Soak up with inert absorbent material. Use dry spill kit material or sand, collect in appropriate containers. For disposal information see section 13. Clean contaminated surface thoroughly.

Other Information

Oil soaked materials may spontaneously combust

7. HANDLING AND STORAGE

Handling

Ensure adequate ventilation. Do not use pressure to empty drums. Keep away from open flames, hot surfaces and sources of ignition. Avoid breathing vapors or mists.

Storage

Keep in a cool sheltered place. Store in well-ventilated place. To maintain product quality, do not store in heat or direct sunlight.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits

As an airborne mist containing vegetable oil, exposure limits pertaining to "vegetable oil mist" have been provided below

Chemical Name	ACGIH TLV	OSHA PEL	MEXICO	NIOSH
vegetable oil mist	TVL: 10 mg/m ³ (3)	TWA: 5 mg/m ³ mist, respirable fraction TWA: 15 mg/m ³ mist, total	TWA: 10 mg/m ³ except irritant oils	TWA: 10 mg/m ³ total mist TWA: 5 mg/m ³ respirable mist

Engineering Measures

Ensure adequate ventilation, especially in confined areas. Apply technical measures to comply with the occupational exposure limits. However it is the duty of the user to verify this and follow given exposure limits at the workplace.

General Hygiene Considerations

Handle in accordance with good industrial hygiene and safety practice.

Personal Protective Equipment

Eye/face Protection.

If exposed to airborne mist, or if splashing is possible, appropriate safety glasses with side-shields or safety goggles are recommended.

Skin and Body Protection

Oil resistant gloves are recommended. Appropriate body protection should be selected based on activity and possible exposure. Also take into consideration the specific local conditions under which the product is used.

Respiratory Protection

In case of mist, spray or aerosol exposure wear suitable personal respiratory protection.



9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Brown

Physical State

Viscous liquid to Wax-like Paste

Odor

Characteristic

Odor Threshold

Not applicable

pH

Not applicable

Flash Point

> 99 °C / 210 °F

Autoignition Temperature

Not auto-flammable 344 °C / 651 °F

Boiling point

No information available

Melting/Freezing Point

No information available

Decomposition temperature

No information available

Oxidizing Properties

Not expected to be oxidising

Water Solubility

Insoluble

Solubility(ies)

Soluble in many organic solvents

Evaporation Rate

Nonvolatile

Vapor Pressure

No information available

Vapor Density

Nonvolatile

Partition Coefficient

No information available

(n-octanol/water)

10. STABILITY AND REACTIVITY

Stability Stable under normal conditions.

Possibility of Hazardous Reactions None under normal processing.

Conditions to Avoid Keep away from open flames, hot surfaces and sources of ignition. Rags and other materials containing this product may heat and spontaneously ignite, if exposed to air. Store wiping rags and similar materials in metal cans with tightly fitting lids.

Incompatible Materials No materials to be especially mentioned.

Hazardous Decomposition Products Thermal decomposition leads to formation of acrolein, Carbon monoxide (CO), Carbon dioxide (CO₂), Smoke, Fumes.

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity	Based on available data, no evidence of acute toxicity.
Skin corrosion/irritation	Based on available data, not, or only slightly irritating.
Serious eye damage/eye irritation	Based on available data, no evidence of serious eye damage / irritation.
Respiratory or skin sensitisation	Based on available data, not expected to be a skin or respiratory sensitiser.
Germ cell mutagenicity	Based on available data, the classification criteria are not met.
Carcinogenicity	Based on available data, no evidence of carcinogenicity.
Reproductive toxicity	Based on available data, no evidence of reproductive toxicity
STOT - single exposure	Based on available data, the classification criteria are not met.
STOT - repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Based on available data, no known aspiration hazard.

Potential health effects

Eyes

Contact with eyes may cause mild irritation.

Skin

Prolonged or excessive contact with skin may result in mild irritation, however, significant health injuries are not expected under normal use.

Inhalation

Excessive inhalation of mist may result in respiratory irritation. When in the form of an airborne mist, refer to section 8 of this sheet for exposure limits pertaining to "vegetable oil mist".

Ingestion

Health injuries are not known or expected under normal use. Over exposure may cause: Gastrointestinal disturbance.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Not classified for aquatic toxicity.

Persistence/Degradability

No information available.

Mobility

The product is insoluble and floats on water.

13. DISPOSAL CONSIDERATIONS

Whenever possible, as rules and regulations allow, please recycle or manage materials to minimize waste.

Waste Disposal Methods

Dispose of in compliance with the laws and regulations pertaining to this product in your jurisdiction. Oil soaked materials may spontaneously combust and should be properly managed to avoid ignition and heat sources or oxygen rich environments. Collect and store soaked materials in closed, metal containers to help prevent combustion.

Contaminated Packaging

Empty containers should be decontaminated and taken for local recycling, recovery or waste disposal.

14. TRANSPORT INFORMATION

Domestic transport regulations (USA)

DOT Not regulated

Domestic transport regulations (Canada)

TDG Not regulated

Domestic transport regulations (Mexico)

MEX Not regulated

International transport regulations

ICAO Not regulated

IATA Not regulated

IMDG/IMO Not regulated

15. REGULATORY INFORMATION**International Inventories**

The components of this product are reported in the following inventories:

Chemical Name	TSCA	DSL	NDSL	EINECS	ELINCS	AICS	ENCS ISHL	CHINA	PICCS	KECL	NZIoC
Soaps, stocks, linseed-oil	Yes	No	Yes	Yes 271-406-5	No	No	No	No	No	No	No

USA**Federal Regulations****Ozone Depleting Substances:**

No Class I or Class II material is known to be used in the manufacture of, or contained in, this product.

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product is not known to contain any chemicals which are subject to the reporting requirements of the Act or regulations contained in 40 CFR 372.

CERCLA/SARA 103-302

Sections 103-302 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product is not known to contain any chemicals which are subject to the reporting requirements of the Act or regulations contained in 40 CFR 103-302.

SARA 311/312 Hazardous Categorization

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 63)

This product is not known to contain any HAPS.

State Regulations**California Proposition 65**

This product is not known to contain chemicals listed under Proposition 65.

State Right-to-Know

No known components subject to "Right-To-Know" legislation in the following States.

Chemical Name	Weight %	Massachusetts	Minnesota	New Jersey	Pennsylvania
Soaps, stocks, linseed-oil	100	No	No	No	No

Canada**WHMIS Product Classification**

Not a WHMIS controlled product.

WHMIS Ingredient Disclosure List IDL

No known component is listed on the WHMIS ingredients disclosure list.

(NPRI) Canadian National Pollutant Release Inventory

No known component is listed on NPRI.

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

Mexico

Mexico - Grade

Slight risk, Grade 1

16. OTHER INFORMATION

Prepared By: ADM Oils
Original Preparation Date: 01-Jan-2010
Revision Date: 12-Feb-2014
Revision Number: 2
Reason for revision: This data sheet contains changes from the previous version in section(s) 15. This version replaces all previous versions.

Abbreviations and acronyms

ACGIH TLV - American Conference of Governmental Industrial Hygienists Threshold Limit Values

AICS - Australian Inventory of Chemical Substances (Australia)

CAS - Chemical Abstract Service

CHINA - Chinese Inventory of Existing Chemical Substances (China)

DOT - U.S. Department of Transportation

DSL - Domestic Substance List (Canada)

EINECS - European Inventory of Existing Commercial Chemical Substances (EU)

ELINCS - European List of Notified Chemical Substances (EU)

ENCS - Existing and New Chemical Substances (Japan) / ISHL - Industrial Health and Safety Law (Japan)

GHS - Globally Harmonized System of Classification and Labelling of Chemicals

IATA - International Air Transport Association Dangerous Goods Regulations

ICL - In Commerce List (Canada)

IMDG - International Maritime Dangerous Goods Code

IMO - International Maritime Organization

KECL - Korean Existing and Evaluated Chemical Substances (Korea)

LC50 - Lethal concentration that produces fatalities in 50% of a given test population

LD50 - Median lethal dose of a given test population

MEX - NOM-002-SCT/2003 List of Hazardous Substances and Materials Most Commonly Transported

MEXICO - Mexico Occupational Exposure Limits

NDSL - Non Domestic Substances List (Canada)

NFPA - National Fire Protection Association

NIOSH - National Institute of Occupational Safety and Health

NZIoC - New Zealand Inventory of Chemicals (New Zealand)

OSHA - Occupational Safety & Health Administration

OSHA PEL - Occupational Safety and Health Administration Permissible Exposure Limits

PICCS - Inventory of Chemicals and Chemical Substances (Philippines)

STOT - Specific Target Organ Toxicity

TDG - Transportation of Dangerous Goods (Transport Canada)

TSCA - Toxic Substances Control Act, Section 8(b) Inventory (USA)

TWA - Time Weighted Average: Average concentration that should not be exceeded during a work day (usually 8-hours)

WHMIS - Workplace Hazardous Materials Information System

The information provided on this (M)SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

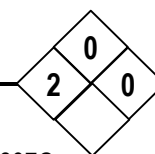
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MADISON CHEMICAL CO., INC.

3141 Clifty Drive • Madison, IN 47250

MATERIAL SAFETY DATA SHEET



NAME:

LIGHT SODA ASH

PRODUCT #

126FG

1. PRODUCT AND COMPANY IDENTIFICATION

EMERGENCY RESPONSE INFORMATION:

Company Offices:	812-273-6000	Weekdays
CHEMTREC:	800-424-9300	24-Hour Service
Steven T. Hale:	812-265-2703	Evenings and Weekends
David R. Goodman, Jr.:	812-273-6213	Evenings and Weekends

PREPARED DATE:

06-10-02

PREPARED BY:

Marjorie E. Hare

2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>COMPONENT</u>	<u>SYNONYM</u>	<u>CAS NO.</u>	<u>% BY WEIGHT</u>
Sodium Carbonate	Soda ash	497-19-8	100

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: White powder with a mild odor. May cause skin and eye irritation. May be harmful if swallowed.

POTENTIAL HEALTH EFFECTS:

EYES: Contacted areas may exhibit irritation.

SKIN: Contacted areas may exhibit irritation.

INGESTION: May be harmful if swallowed.

INHALATION: No hazard in normal industrial use.

CHRONIC EFFECTS / CARCINOGENICITY: This material contains no ingredient above de minimus concentrations known or suspected to cause cancer.

POTENTIAL ENVIRONMENTAL EFFECTS: This material contains no ingredient above de minimus concentrations known to persist in the environment.

4. FIRST AID MEASURES

EYES: Immediately flush with large quantities of cool water continuously for at least 15 minutes. Call a physician.

SKIN: No hazard in normal industrial use.

INGESTION: Do not induce vomiting. Give water. Never give anything by mouth to an unconscious person. Call a physician.

INHALATION: No specific treatment is necessary since the material is not likely to be hazardous by inhalation. If exposed to excessive levels of fume or dust, remove to fresh air and get medical attention if cough or other symptoms develop.

SIGNS AND SYMPTOMS OF EXPOSURE: Contacted areas may exhibit irritation.

PRIMARY ROUTE (S) OF ENTRY: Eyes, ingestion.



MADISON CHEMICAL CO., INC.

3141 Clifty Drive • Madison, IN 47250

NAME:

LIGHT SODA ASH

PRODUCT #

126FG

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:	FLASH POINT:	N.D.
	FLAMMABLE LIMITS:	
	LEL:	N.D.
	UEL:	N.D.
EXTINGUISHING MEDIA:	As appropriate for surrounding fire.	
FIRE FIGHTING INSTRUCTIONS:	Use NIOSH / MSHA approved positive pressure self-contained breathing apparatus when any material is involved in a fire.	

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:	Shovel up solid spills. Dispose with solid waste. See Waste Disposal Method. Flush remainder to drain with water.
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7. HANDLING AND STORAGE

PRECAUTIONS:	Store in a dry area. Store away from acids. Keep containers closed when not in use.
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8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS:	As necessary to avoid inhalation and contact.
RESPIRATORY PROTECTION:	In absence of proper environmental control, use NIOSH / MSHA approved respirator for dusts and mists where airborne exposure is excessive.
SKIN PROTECTION:	Impermeable type gloves. Other equipment as required to avoid contact.
EYE PROTECTION:	Safety eyewear to protect against unexpected splashes.
GENERAL HYGIENE CONSIDERATIONS:	Eyewash facility and emergency shower should be in close proximity.

EXPOSURE GUIDELINES:

<u>CHEMICAL IDENTITY</u>	<u>CAS NO.</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Sodium Carbonate	497-19-8	N.E.	N.E.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE & ODOR:	White powder with a mild odor.		
BOILING POINT (°F.):	N.R.	SPECIFIC GRAVITY (WATER = 1):	N.D.
VAPOR PRESSURE (mm Hg):	N.D.	PERCENT VOLATILE BY VOLUME (%):	Nil
VAPOR DENSITY (Air = 1):	N.D.	EVAPORATION RATE (WATER = 1):	N.R.
SOLUBILITY IN WATER:	Appreciable.	pH (1 oz/gallon):	11.0 – 11.5
FLASH POINT (Method used):	N.D.		
LEL:	N.D.		
UEL:	N.D.		

10. STABILITY AND REACTIVITY

STABILITY:	Material is stable.
INCOMPATIBILITY (Materials to Avoid):	Acids.
CONDITIONS TO AVOID:	No data found.
HAZARDOUS DECOMPOSITION PRODUCTS:	Carbon dioxide.
HAZARDOUS POLYMERIZATION:	Will not occur.

11. TOXICOLOGICAL INFORMATION

This material, as a whole, has not been tested. This material contains no ingredient above de minimus concentrations known or suspected to cause cancer.

N.A. = Not Available

N.D. = Not Determined

N.E. = None Established

N.R. = Not Relevant



MADISON CHEMICAL CO., INC.

3141 Clifty Drive • Madison, IN 47250

NAME:

LIGHT SODA ASH

PRODUCT #

126FG

12. ECOLOGICAL INFORMATION

This material contains no hazardous air pollutants (HAPS). This material contains no ingredient above de minimus concentrations known to persist in the environment.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Normal for alkaline wastes. May require pH adjustment for neutralization. Dispose in accordance with local, state and federal regulations.

14. TRANSPORTATION INFORMATION

DOT PROPER SHIPPING DESCRIPTION: Compound, cleaning, NOI, solid.
(This material is not a hazardous material under regulations of the U S Department of Transportation.)

FREIGHT CLASS: 55

15. REGULATORY INFORMATION

TSCA STATUS: All ingredients are listed on the TSCA inventory.

CERCLA REPORTABLE QUANTITY: None established.

SARA 311 / 312 HAZARD CLASSES:

☒	Acute Health	☐	Chronic Health
☐	Fire	☐	Reactive
☐	Sudden Release of Pressure		

SARA 312 INFORMATION: Storage of 10,000 pounds or more requires filing a Tier 2 form. This material is not an extremely hazardous substance (EHS). Threshold planning quantity is 10,000 pounds.

SARA 313 INFORMATION: This material contains the following substances subject to the reporting requirements of Section 313 of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

<u>CHEMICAL NAME</u>	<u>CATEGORY CODE</u>	<u>CAS. NO.</u>	<u>% BY WEIGHT</u>
None			

STATE REGULATORY INFORMATION:

CALIFORNIA (PROPOSITION 65): California has not identified the ingredients listed in Section 2 as known to cause cancer or reproductive toxicity.

16. OTHER INFORMATION

MSDS STATUS: Created on 06-10-02.

PRECAUTIONARY LABELING: **WARNING!** May cause skin and eye irritation.
May be harmful if swallowed.
Contains sodium carbonate.

FOR INDUSTRIAL USE ONLY – KEEP OUT OF THE REACH OF CHILDREN

MATERIAL SAFETY DATA SHEET

Thank you for your interest in, and use of, this product. This product and all others supplied by Madison Chemical Co., Inc. can be used safely with proper protective equipment and proper handling practices consistent with label instructions and the MSDS. Before using any of this product, be sure to read the complete label and the Material Safety Data Sheet.

TERMS AND ABBREVIATIONS

Listed by Section

SECTION 1 – PRODUCT AND COMPANY IDENTIFICATION

HMIS: - Hazardous Materials Identification System codes are a system developed by the National Paint and Coatings Association for rating the hazard potential of a chemical under normal workplace conditions. These risk assessments are indicated by a numerical rating given in each of three (3) hazard areas (Health / Flammability / Physical Hazard) ranging from a low of zero to a high of 4.

SECTION 2 – COMPOSITION / INFORMATION ON INGREDIENTS

Chemical substances are listed that are determined to be potential health or physical hazards based on the criteria established in the OSHA Hazard Communication Standard – 29 CFR 1910.1200.

Chemical Abstract Services (CAS) Number – A universally accepted numbering system for chemical substances.

SECTION 3 – HAZARDS IDENTIFICATION

Chronic Effects are adverse effects that are most likely to occur from repeated exposure over a long period of time. A Carcinogen is a chemical listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA) as a definite or possible human cancer causing agent.

Potential Environmental Effects: Chemicals listed in this section have a CERCLA RQ, are considered a toxic chemical listed under SARA Section 313, or have other known environmental hazards.

CERCLA – Comprehensive Environmental Response, Compensation and Liability Act of 1980. This Act designates a Reportable Quantity (RQ) for hazardous substances and provides the notification requirements for releases or spills.

SARA Section 313 – Superfund Amendments and Reauthorization Act aka Emergency Planning and Community Right to Know Act (EPCRA)

SECTION 4 – FIRST AID MEASURES

These are considered **EMERGENCY** procedures only; the exposed person should be examined by a physician as soon as possible. The Signs and Symptoms of Exposure listed here are **ACUTE** effects of the product. An Acute Effect is an adverse effect on the human body from a single exposure with symptoms developing almost immediately after exposure or within a relatively short time.

SECTION 5 – FIRE FIGHTING MEASURES

Flash Point refers to the temperature at which a liquid will give off enough flammable vapors to form an ignitable mixture with air near the surface of the liquid or within the test vessel. Flammable Limits refer to the range of gas or vapor concentration (as % by volume in air) which will burn or explode if an ignition source is present. **LEL** – Lower Explosive Limit; **UEL** – Upper Explosive Limit

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

MSHA – Mine Safety and Health Administration. **NIOSH** – National Institute for Occupational Safety and Health

The **Time Weighted Average (TWA)** is the airborne concentration at which most workers can be exposed without any expected adverse effects.

ACGIH – American Conference of Governmental Industrial Hygienists

TLV – Threshold Limit Value - A set of time weighted average exposure limits, established by **ACGIH**, for a normal 8-hour day and a 40-hour work-week.

OSHA – Occupational Safety and Health Administration

PEL – Permissible Exposure Limit – A set of time weighted average exposure values, established by **OSHA**, for a normal 8-hour day and a 40-hour work-week.

CEILING LIMIT – The concentration that should not be exceeded in the workplace during any part of the working exposure.

SKIN – Skin contact with substance can contribute to overall exposure.

STEL – Short Term Exposure Limit – Maximum concentration for a continuous 15 minute exposure period.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

All physical properties listed on MSDS are typical values not specifications!

BOILING POINT – The approximate boiling point of liquids.

VAPOR PRESSURE – This refers to the pressure (usually measured in millimeters of mercury) of a vapor in equilibrium with its liquid form.

VAPOR DENSITY – This refers to the relative weight of a vapor or gas compared with an equal volume of air. As compared with air which is set at 1, vapors with less density or weight will rise and those with greater density or weight will sink.

SOLUBILITY IN WATER – A description of the amount of the product capable of dissolving in water.

SPECIFIC GRAVITY – This refers to the ratio of the density of the material to the density of water where water = 1.

PERCENT VOLATILE BY VOLUME – The percent of a liquid that evaporates at 65°F. to 75°F.

EVAPORATION RATE – Refers to the rate of change from the liquid state to the vapor state at ambient temperature and pressure in comparison to a given substance (e.g. water).

pH – A value representing the acidity or alkalinity of an aqueous solution (Highly Acidic pH = 1; Neutral pH = 7; Highly Alkaline pH = 14).

SECTION 10 – STABILITY AND REACTIVITY

STABILITY – This is to indicate stability under reasonably foreseeable conditions of storage, use or misuse.

INCOMPATIBILITY – Keep product away from listed substances or conditions to prevent hazardous reactions.

CONDITIONS TO AVOID – List of conditions that should be avoided for reasons of safety and performance.

HAZARDOUS DECOMPOSITION PRODUCTS – Breakdown products expected to be produced upon product decomposition by extreme heat or fire.

HAZARDOUS POLYMERIZATION – This indicates the tendency of the product's molecules to combine with themselves in a chemical reaction releasing excess pressure and heat.

SECTION 11 – TOXICOLOGICAL INFORMATION

Listed are any known chronic or carcinogenic data on specific ingredients.

SECTION 12 – ECOLOGICAL INFORMATION

Listed are any ingredients that have a CERCLA RQ and any ingredients that are listed under the Clean Air Act Amendments of 1990. The Act required EPA to establish regulations setting emission standards for **Hazardous Air Pollutants (HAPS)**. If the product contains an ingredient listed under SARA Section 313 that is also stated here.

SECTION 14 – TRANSPORTATION INFORMATION

DOT (Department of Transportation) shipping description for the product.

SECTION 15 – REGULATORY INFORMATION

TSCA Status – Toxic Substances Control Act – A federal law requiring all commercial chemical substances to appear on an inventory maintained by the EPA.

CERCLA Reportable Quantity – The amount of the specific ingredient that, when released into the environment must be reported to the National Response Center, and other regulatory agencies.

SARA 311 / 312 Hazard Classes – The appropriate characteristics have an X in front of all that apply.

SARA 312 INFORMATION – All storage of 10,000 pounds or greater of non-Extremely Hazardous Substances (EHS) requires filing a Tier 2 form. Substances which are designated in SARA Title III to be Extremely Hazardous Substances will have a much lower threshold planning quantity. These reports go to emergency planning agencies.

SARA 313 INFORMATION – An ingredient listed in this section is subject to the reporting requirements of Section 313 of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. (Code of Federal Regulations).

SECTION I: IDENTIFICATION OF PRODUCT

COMPANY: **Diversity Technologies Corp.** DATE: **April 16, 2015**
8750 - 53rd Ave. PHONE: **780-440-4923**
Edmonton, AB T6E 5G2 FAX: **780-469-1899**

PRODUCT NAME: **SYNVIS D**

PRODUCT USE: Drilling fluid additive.
CHEMICAL FAMILY: Anionic water soluble polymer CAS #: Not Available

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

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

TRANSPORTATION OF DANGEROUS GOODS (TDG)

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

SECTION II: HAZARDOUS INGREDIENTS

INGREDIENT	% (w/w)	CAS NUMBER	LD ₅₀ Oral-Rat	LC ₅₀ Inhal-Rat	ACGIH-TLV
Contains no WHMIS controlled ingredients.					

SECTION III: HEALTH HAZARDS

ROUTE OF ENTRY: ☐ EYE CONTACT ☐ SKIN CONTACT ☐ INHALATION ☐ INGESTION
EYE CONTACT: May cause mechanical irritation.
SKIN CONTACT: Prolonged contact may cause slight irritation or dermatitis in some individuals.
INGESTION: No adverse effects expected. LD₅₀ (oral, rat) > 5000 mg/kg.
INHALATION: Dust may cause upper respiratory tract irritation.
CARCINOGENICITY: No information available.
TERATOGENICITY: No information available.
REPRODUCTIVE TOXICITY: No information available.
MUTAGENICITY: No information available.
SYNERGISTIC PRODUCTS: No information available.

SECTION IV: FIRST AID MEASURES

SKIN CONTACT:	Immediately wash with plenty of soap and water. If irritation persists obtain medical attention. Remove contaminated clothing and shoes and clean before reuse.
EYE CONTACT:	Flush eyes with gently flowing warm water until particle(s) are removed. If irritation persists, obtain medical attention.
INGESTION:	Do not induce vomiting. Dilute by giving two glasses of water. Obtain medical attention. Never give anything by mouth to an unconscious or convulsing person.
INHALATION:	Move to fresh air. Apply oxygen or artificial respiration if required. If breathing difficulties or distress continues, obtain medical attention

SECTION V: PHYSICAL DATA

APPEARANCE AND ODOUR:	White granular solid: slight odour
SPECIFIC GRAVITY:	Not available
BOILING POINT (°C):	Not available
MELTING POINT (°C):	Not applicable
SOLUBILITY IN WATER:	Soluble pH: Not available
PERCENT VOLATILE BY VOLUME:	Not available
EVAPORATION RATE:	Not available
VAPOUR PRESSURE (mmHg):	Not available
VAPOUR DENSITY (air = 1):	Not available
BULK DENSITY:	~0.80 kg/L

SECTION VI: FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:	Not applicable
FLAMMABLE LIMITS:	Not applicable
EXTINGUISHING MEDIA:	Dry chemical, foam, CO ₂ , alcohol foam, universal foam, and water spray.
SPECIAL FIRE FIGHTING PROCEDURES:	Self-contained breathing apparatus required for fire-fighting personnel.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Will burn under fire conditions. If dusted this product may be an explosion hazard.
HAZARDOUS COMBUSTION PRODUCTS:	Oxides of nitrogen and oxides of carbon on combustion.

SECTION VII: REACTIVITY DATA

STABILITY:

☒ STABLE☐ UNSTABLE

INCOMPATIBILITY (CONDITIONS TO AVOID):

Avoid contact with strong oxidizing agents. Avoid dusting conditions in presence of ignition sources.

CONDITIONS OF REACTIVITY:

Not available.

HAZARDOUS DECOMPOSITION PRODUCTS:

Not available.

HAZARDOUS POLYMERIZATION:

☒ WILL NOT OCCUR☐ MAY OCCUR**SECTION VIII: PREVENTIVE MEASURES****SPECIAL PROTECTION INFORMATION**

RESPIRATORY PROTECTION:

Suggest NIOSH/MESA approved dust mask. Use approved respirator with dust cartridge if TLV is exceeded.

VENTILATION:

Use local exhaust, process enclosure or other engineering controls to maintain dust level below TLV.

PROTECTIVE GLOVES:

Suggest plastic or rubber.

EYE PROTECTION:

Safety glasses or goggles should be worn when handling this material.

OTHER PROTECTIVE EQUIPMENT (SPECIFY):

Suggest rubber apron. Ensure eyewash station and emergency shower are available.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid breathing dusts. Avoid direct or prolonged contact with skin and eyes. Use nonsparking tools and ground/bonded equipment and containers when transferring. Avoid creating dusts, as this product is pyrophoric in powder form. Any containers or equipment used should be decontaminated immediately after use. Store in a cool, dry area away from oxidizers and ignition sources.

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

Use appropriate safety equipment. Eliminate ignition sources. Sweep up and place in an appropriate closed container. Collect uncontaminated material for repackaging. Collect contaminated material in approved containers for disposal. Clean up residual material by washing area with water.

WASTE DISPOSAL METHOD

Dispose/incinerate in accordance with federal, provincial and local regulations. This product may be suitable for disposal by land fill; check with local operator. It is the responsibility of the end-user to determine if material meets the criteria of hazardous waste at the time of disposal.

SECTION IX: PREPARATION

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

DATE ISSUED: **April 16, 2015**
SUPERSEDES: None
BY: Regulatory Affairs
PHONE: 780-440-4923

SAFETY DATA SHEET

DIESEL FUEL

000003000395



Version 5.1

Revision Date 2019/11/05

Print Date 2019/11/20

SECTION 1. IDENTIFICATION

Product name : DIESEL FUEL

Synonyms : Seasonal Diesel, #2 Diesel, #1 Diesel, #2 Heating Oil, #1 Heating Oil, OSX, D50, Arctic Diesel, Farm Diesel, Marine Diesel, Low Sulphur Diesel, LSD, Ultra Low Sulphur Diesel, ULSD, Mining Diesel, Naval Distillate, Dyed Diesel, Marked Diesel, Coloured Diesel, Furnace special, Biodiesel blend, B1, B2, B5, Diesel Low Cloud (LC), Marine Gas Oil, Marine Gas Oil Dyed.

Product code : 102907, 102762, 102763, 102755, 102302, 102744, 101801, 100678, 100677, 101802, 100107, 100668, 100658, 100911, 100663, 100652, 100460, 100065, 101796, 101793, 101795, 101792, 101794, 101791, 100768, 100643, 100642, 100103, 101798, 101800, 101797, 101788, 101789, 101787, 102531, 100734, 100733, 100640, 100997, 100995, 100732, 100731, 100994

Manufacturer or supplier's details
Petro-Canada
P.O. Box 2844, 150 - 6th Avenue South-West
Calgary Alberta T2P 3E3
Canada

Emergency telephone number
Suncor Energy: +1 403-296-3000;
Canutec Transportation: 1-888-226-8832 (toll-free) or 613-996-6666;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : Diesel fuels are distillate fuels suitable for use in high and medium speed internal combustion engines of the compression ignition type. Mining diesels, marine diesels, MDO and naval distillates may have a higher flash point requirement.

Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	Bright oily liquid.
Colour	Clear to yellow (This product may be dyed red for taxation purposes)
Odour	Mild petroleum oil like.

SAFETY DATA SHEET

DIESEL FUEL

000003000395



Version 5.1

Revision Date 2019/11/05

Print Date 2019/11/20

GHS Classification

Flammable liquids	: Category 3
Acute toxicity (Inhalation)	: Category 4
Skin irritation	: Category 2
Carcinogenicity	: Category 2
Specific target organ toxicity - single exposure	: Category 3 (Central nervous system)
Specific target organ toxicity - repeated exposure	: Category 2 (Liver, thymus, Bone)
Aspiration hazard	: Category 1

GHS label elements

Hazard pictograms	:			
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Signal word	: Danger
-------------	----------

Hazard statements	: Flammable liquid and vapour. May be fatal if swallowed and enters airways. Causes skin irritation. Harmful if inhaled. May cause drowsiness or dizziness. Suspected of causing cancer. May cause damage to organs (Liver, thymus, Bone) through prolonged or repeated exposure.
-------------------	---

Precautionary statements	: Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use explosion-proof electrical/ ventilating/ lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. Wash skin thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/ protective clothing/ eye protection/ face protection. Response: IF SWALLOWED: Immediately call a POISON CENTER/doctor. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
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SAFETY DATA SHEET

DIESEL FUEL

000003000395



Version 5.1

Revision Date 2019/11/05

Print Date 2019/11/20

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
IF exposed or concerned: Get medical advice/ attention.

Do NOT induce vomiting.

If skin irritation occurs: Get medical advice/ attention.

Take off contaminated clothing and wash it before reuse.

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage:

Store in a well-ventilated place. Keep container tightly closed.

Store in a well-ventilated place. Keep cool.

Store locked up.

Disposal:

Dispose of contents/ container to an approved waste disposal plant.

Potential Health Effects

Primary Routes of Entry : Eye contact
Ingestion
Inhalation
Skin contact

Aggravated Medical Condition : None known.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration
Kerosine (petroleum), hydrodesulfurized; Kerosine -unspecified	64742-81-0	70 - 100 %
Kerosine (petroleum); Straight run kerosine	8008-20-6	
Fuels, diesel; Gasoil -unspecified	68334-30-5	
Alkanes, C10-20-branched and linear	928771-01-1	0 - 30 %
Fatty acids, C16-18 and C18-unsatd., Me esters	67762-38-3	0 - 20 %

All above concentrations are in percent by weight.

SECTION 4. FIRST AID MEASURES

If inhaled : Move to fresh air.
Artificial respiration and/or oxygen may be necessary.
Seek medical advice.

In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

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	Wash skin thoroughly with soap and water or use recognized skin cleanser. Wash clothing before reuse. Seek medical advice.
In case of eye contact	: Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.
If swallowed	: Rinse mouth with water. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Seek medical advice.
Most important symptoms and effects, both acute and delayed	: Harmful if inhaled. Respiratory, skin and eye irritation; nausea; cancer.
Notes to physician	: Treat symptomatically. For specialist advice physicians should contact the Poisons Information Service.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	: Dry chemical Carbon dioxide (CO ₂) Water fog. Foam
Unsuitable extinguishing media	: Do NOT use water jet.
Specific hazards during fire-fighting	: Cool closed containers exposed to fire with water spray.
Hazardous combustion products	: Carbon oxides (CO, CO ₂), nitrogen oxides (NO _x), sulphur oxides (SO _x), smoke and irritating vapours as products of incomplete combustion.
Further information	: Prevent fire extinguishing water from contaminating surface water or the ground water system.
Special protective equipment for firefighters	: Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: For personal protection see section 8. Ensure adequate ventilation. Evacuate personnel to safe areas. Material can create slippery conditions.
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- Environmental precautions : If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Prevent further leakage or spillage if safe to do so.
Remove all sources of ignition.
Soak up with inert absorbent material.
Non-sparking tools should be used.
Ensure adequate ventilation.
Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Use only with adequate ventilation.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity.
Avoid contact with skin, eyes and clothing.
Do not ingest.
Keep away from heat and sources of ignition.
Keep container closed when not in use.
- Conditions for safe storage : Store in original container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
To maintain product quality, do not store in heat or direct sunlight.
Ensure the storage containers are grounded/bonded.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Kerosine (petroleum), hydrosulfurized; Kerosine - unspecified	64742-81-0	TWA	200 mg/m ³ (As total hydrocarbon vapour)	ACGIH
		TWA	200 mg/m ³ (total hydrocarbon vapor)	CA AB OEL
		TWA	525 mg/m ³	CA ON OEL
		TWA	200 mg/m ³ (As total hydrocarbon vapour)	ACGIH

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		TWA	200 mg/m3 (total hydrocarbon vapor)	ACGIH
Kerosine (petroleum); Straight run kerosine	8008-20-6	TWA	200 mg/m3 (total hydrocarbon vapor)	CA BC OEL
		TWA	200 mg/m3 (total hydrocarbon vapor)	CA AB OEL
		TWA	200 mg/m3 (total hydrocarbon vapor)	ACGIH
Fuels, diesel; Gasoil - unspecified	68334-30-5	TWA	100 mg/m3 (total hydrocarbons)	CA AB OEL
		TWA (Vapour and inhalable aerosols)	100 mg/m3 (total hydrocarbons)	CA BC OEL
		TWA (Inhalable fraction and vapor)	100 mg/m3 (total hydrocarbons)	ACGIH

Engineering measures : Adequate ventilation to ensure that Occupational Exposure Limits are not exceeded.
Use only in well-ventilated areas.
Ensure that eyewash station and safety shower are proximal to the work-station location.

Personal protective equipment

Respiratory protection : Concentration in air determines protection needed.
Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type : organic vapour cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection
Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R). Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns. It should be realized that eventually any material regardless of their imperviousness, will get permeated by chemicals. Therefore, protective gloves should be regularly checked for wear and tear. At the first signs of hardening and cracks, they

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should be changed.

Remarks	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Eye protection	: Wear face-shield and protective suit for abnormal processing problems.
Skin and body protection	: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Protective measures	: Wash contaminated clothing before re-use.
Hygiene measures	: Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Bright oily liquid.
Colour	: Clear to yellow (This product may be dyed red for taxation purposes)
Odour	: Mild petroleum oil like.
Odour Threshold	: No data available
pH	: No data available
Melting point	: No data available
Boiling point/boiling range	: 150 - 371 °C (302 - 700 °F)
Decomposition temperature	No data available
Flash point	: > 40 °C (104 °F) Method: closed cup
Auto-Ignition Temperature	: 225 °C (437 °F)
Evaporation rate	: No data available
Flammability	: Flammable in presence of open flames, sparks and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. This product can accumulate static charge and ignite.
Upper explosion limit	: 6 %(V)
Lower explosion limit	: 0.7 %(V)

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Vapour pressure	: 7.5 mmHg (20 °C / 68 °F)
Relative vapour density	: 4.5
Relative density	: 0.8 - 0.88
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 1.3 - 4.1 cSt (40 °C / 104 °F)

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: Stable at normal ambient temperature and pressure.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: Hazardous polymerisation does not occur.
Conditions to avoid	: Extremes of temperature and direct sunlight.
Incompatible materials	: Reactive with oxidising agents and acids.
Hazardous decomposition products	: May release CO _x , NO _x , SO _x , smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Eye contact
Ingestion
Inhalation
Skin contact

Acute toxicity

Product:

Acute oral toxicity	: Remarks: No data available
Acute inhalation toxicity	: Acute toxicity estimate: 1.2 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Calculation method

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Acute dermal toxicity : Remarks: No data available

Components:

Kerosine (petroleum), hydrodesulfurized; Kerosine -unspecified:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg,

Acute inhalation toxicity : LC50 (Rat): > 5.2 mg/l
Exposure time: 4 hrs
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg,

Kerosine (petroleum); Straight run kerosine:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg,

Acute inhalation toxicity : LC50 (Rat): > 5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg,

Fuels, diesel; Gasoil -unspecified:

Acute oral toxicity : LD50 (Rat): 7,500 mg/kg,

Acute inhalation toxicity : LC50 (Rat): 4.1 mg/l
Exposure time: 4 h
Test atmosphere: vapour

Acute dermal toxicity : LD50 (Mouse): 24,500 mg/kg,

Skin corrosion/irritation

Product:

Remarks: Causes skin irritation.

Serious eye damage/eye irritation

Product:

Remarks: No data available

Respiratory or skin sensitisation

Product:

Remarks: Based on available data, the classification criteria are not met.

Germ cell mutagenicity

Product:

Genotoxicity in vitro

Remarks: No data available

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Genotoxicity in vivo

Remarks: No data available

Carcinogenicity

Product:

Carcinogenicity - Assessment

Suspected of causing cancer.

Reproductive toxicity

Product:

Effects on fertility

Remarks: Based on available data, the classification criteria are not met.

STOT - single exposure

Product:

Remarks: May cause drowsiness or dizziness.

STOT - repeated exposure

Product:

Remarks: May cause damage to organs through prolonged or repeated exposure.

No data available

Aspiration toxicity

Product:

May be fatal if swallowed and enters airways.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish

:

Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates

:

Remarks: No data available

Toxicity to algae

:

Remarks: No data available

Toxicity to bacteria

:

Remarks: No data available

Persistence and degradability

Product:

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Biodegradability : Remarks: No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Offer surplus and non-recyclable solutions to a licensed disposal company.
Waste must be classified and labelled prior to recycling or disposal.
Send to a licensed waste management company.
Dispose of as hazardous waste in compliance with local and national regulations.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

UN/ID No. : UN 1202
Proper shipping name : Diesel fuel
Class : 3
Packing group : III
Labels : Class 3 - Flammable Liquid
Packing instruction (cargo aircraft) : 366

IMDG-Code

UN number : UN 1202
Proper shipping name : DIESEL FUEL

Class : 3
Packing group : III
Labels : 3
EmS Code : F-E, S-E
Marine pollutant : no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

National Regulations

TDG

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UN number	: UN 1202
Proper shipping name	: DIESEL FUEL
Class	: 3
Packing group	: III
Labels	: 3
ERG Code	: 128
Marine pollutant	: no

SECTION 15. REGULATORY INFORMATION

This product has been classified according to the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all of the information required by the HPR.

The components of this product are reported in the following inventories:

DSL On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

For Copy of SDS : Internet: www.petro-canada.ca/msds
Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228
For Product Safety Information: 1 905-804-4752

Prepared by : Product Safety: +1 905-804-4752

Revision Date : 2019/11/05

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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GASOLINE, UNLEADED



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SECTION 1. IDENTIFICATION

Product name : GASOLINE, UNLEADED

Synonyms : Regular, Unleaded Gasoline (US Grade), Mid-Grade, Plus, Super, WinterGas, SummerGas, Supreme, SuperClean, SuperClean WinterGas, RegularClean, PlusClean, Premium, marked or dyed gasoline, TQRUL, transitional quality regular unleaded, BOB, Blendstock for Oxygenate Blending, Conventional Gasoline, RUL, MUL, SUL, PUL.

Product code : 100127, 100126, 101823, 100507, 101811, 101814, 100141, 101813, 101810, 101812, 100063, 101822, 100138, 101821, 100064, 101820, 101819, 100506, 101818, 101816, 101817, 100488

Manufacturer or supplier's details
Petro-Canada
P.O. Box 2844, 150 - 6th Avenue South-West
Calgary Alberta T2P 3E3
Canada

Emergency telephone number
Suncor Energy: +1 403-296-3000;
Canutec Transportation: 1-888- 226-8832 (toll-free) or 613-996-6666;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : Unleaded gasoline is used in spark ignition engines including motor vehicles, inboard and outboard boat engines, small engines such as chain saws and lawn mowers, and recreational vehicles.

Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	Clear liquid.
Colour	Clear to slightly yellow or green, undyed liquid. May be dyed red for taxation purposes.
Odour	Gasoline

GHS Classification

Flammable liquids : Category 1

Skin irritation : Category 2

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Germ cell mutagenicity	: Category 1B
Carcinogenicity	: Category 1A
Reproductive toxicity	: Category 2
Specific target organ toxicity - single exposure	: Category 3 (Central nervous system)
Specific target organ toxicity - repeated exposure	: Category 1
Aspiration hazard	: Category 1

GHS label elements

Hazard pictograms	:			
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Signal word	: Danger
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Hazard statements	: Extremely flammable liquid and vapour. May be fatal if swallowed and enters airways. Causes skin irritation. May cause drowsiness or dizziness. May cause genetic defects. May cause cancer. Suspected of damaging the unborn child. Causes damage to organs () through prolonged or repeated exposure.
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Precautionary statements	: Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ ventilating/ lighting/ equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/ protective clothing/ eye protection/ face protection. Response: IF SWALLOWED: Immediately call a POISON CENTER/doctor. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove person to fresh air and keep comfortable
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for breathing. Call a POISON CENTER/doctor if you feel unwell.
IF exposed or concerned: Get medical advice/ attention.
Do NOT induce vomiting.
If skin irritation occurs: Get medical advice/ attention.
Take off contaminated clothing and wash before reuse.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage:

Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal:

Dispose of contents/ container to an approved waste disposal plant.

Potential Health Effects

Primary Routes of Entry	: Eye contact Ingestion Inhalation Skin contact
Target Organs	: Blood Immune system
Inhalation	: Inhalation may cause central nervous system effects. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.
Skin	: Causes skin irritation.
Eyes	: May irritate eyes.
Ingestion	: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Aspiration hazard if swallowed - can enter lungs and cause damage.
Chronic Exposure	: Chronic exposure to benzene may result in increased risk of leukemia and other blood disorders.
Aggravated Medical Condition	: None known.

Other hazards

None known.

IARC

Group 1: Carcinogenic to humans

Benzene

71-43-2

OSHA

OSHA specifically regulated carcinogen

Benzene

71-43-2

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NTP

Known to be human carcinogen

Benzene

71-43-2

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration
gasoline, natural	8006-61-9	95 - 100 %
toluene	108-88-3	1 - 40 %
benzene	71-43-2	0.5 - 1.5 %
ethanol	64-17-5	0.1 - 0.3 %

SECTION 4. FIRST AID MEASURES

- If inhaled : Artificial respiration and/or oxygen may be necessary.
Move to fresh air.
Seek medical advice.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash clothing before reuse.
Seek medical advice.
- In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.
- If swallowed : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Seek medical advice.
- Most important symptoms and effects, both acute and delayed : None known.
- Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing
It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

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SECTION 5. FIREFIGHTING MEASURES

- | | |
|---------------------------------------|--|
| Suitable extinguishing media | : Dry chemical
Carbon dioxide (CO ₂)
Water fog.
Foam |
| Unsuitable extinguishing media | : Do NOT use water jet. |
| Specific hazards during fire-fighting | : Cool closed containers exposed to fire with water spray. |
| Hazardous combustion products | : Carbon oxides (CO, CO ₂), nitrogen oxides (NO _x), polynuclear aromatic hydrocarbons, phenols, aldehydes, ketones, smoke and irritating vapours as products of incomplete combustion. |
| Further information | : Prevent fire extinguishing water from contaminating surface water or the ground water system. |

SECTION 6. ACCIDENTAL RELEASE MEASURES

- | | |
|---|---|
| Personal precautions, protective equipment and emergency procedures | : Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Material can create slippery conditions. |
| Environmental precautions | : If the product contaminates rivers and lakes or drains inform respective authorities. |
| Methods and materials for containment and cleaning up | : Prevent further leakage or spillage if safe to do so.
Remove all sources of ignition.
Soak up with inert absorbent material.
Non-sparking tools should be used.
Ensure adequate ventilation.
Contact the proper local authorities. |

SECTION 7. HANDLING AND STORAGE

- | | |
|-------------------------|--|
| Advice on safe handling | : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Use only with adequate ventilation.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity.
Avoid contact with skin, eyes and clothing.
Do not ingest.
Keep away from heat and sources of ignition.
Keep container closed when not in use. |
|-------------------------|--|

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Conditions for safe storage : Store in original container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
To maintain product quality, do not store in heat or direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
gasoline, natural	8006-61-9	TWA	300 ppm 900 mg/m ³	OSHA P0
		STEL	500 ppm 1,500 mg/m ³	OSHA P0
		TWA	500 ppm 2,000 mg/m ³	OSHA Z-1
		STEL	500 ppm 1,500 mg/m ³	CAL PEL
		PEL	300 ppm 900 mg/m ³	CAL PEL
toluene	108-88-3	TWA	20 ppm	ACGIH
		TWA	100 ppm 375 mg/m ³	NIOSH REL
		ST	150 ppm 560 mg/m ³	NIOSH REL
		TWA	200 ppm	OSHA Z-2
		CEIL	300 ppm	OSHA Z-2
		Peak	500 ppm (10 minutes)	OSHA Z-2
		TWA	100 ppm 375 mg/m ³	OSHA P0
		STEL	150 ppm 560 mg/m ³	OSHA P0
		PEL	10 ppm 37 mg/m ³	CAL PEL
		C	500 ppm	CAL PEL
		STEL	150 ppm 560 mg/m ³	CAL PEL
benzene	71-43-2	TWA	0.5 ppm	ACGIH
		STEL	2.5 ppm	ACGIH
		TWA	0.1 ppm	NIOSH REL
		ST	1 ppm	NIOSH REL
		TWA	10 ppm	OSHA Z-2
		CEIL	25 ppm	OSHA Z-2
		Peak	50 ppm (10 minutes)	OSHA Z-2
		PEL	1 ppm	OSHA CARC
		STEL	5 ppm	OSHA CARC

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		PEL	1 ppm	CAL PEL
		STEL	5 ppm	CAL PEL
ethanol	64-17-5	TWA	1,000 ppm 1,900 mg/m ³	NIOSH REL
		TWA	1,000 ppm 1,900 mg/m ³	OSHA Z-1
		TWA	1,000 ppm 1,900 mg/m ³	OSHA P0
		STEL	1,000 ppm	ACGIH
		PEL	1,000 ppm 1,900 mg/m ³	CAL PEL

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sam-pling time	Permissible concentra-tion	Basis
Toluene	108-88-3	Toluene	In blood	Prior to last shift of work-week	0.02 mg/l	ACGIH BEI
		Toluene	Urine	End of shift (As soon as possible after exposure ceases)	0.03 mg/l	ACGIH BEI

Engineering measures : Use only in well-ventilated areas.
Ensure that eyewash station and safety shower are proximal to the work-station location.

Personal protective equipment

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type : A NIOSH-approved air-purifying respirator with an organic vapour cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection
Material : polyvinyl alcohol (PVA), Viton(R). Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns. It should be realized that eventually any material regardless of their imperviousness,

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will get permeated by chemicals. Therefore, protective gloves should be regularly checked for wear and tear. At the first signs of hardening and cracks, they should be changed.

Remarks	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Eye protection	: Wear face-shield and protective suit for abnormal processing problems.
Skin and body protection	: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Protective measures	: Wash contaminated clothing before re-use.
Hygiene measures	: Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Clear liquid.
Colour	: Clear to slightly yellow or green, undyed liquid. May be dyed red for taxation purposes.
Odour	: Gasoline
Odour Threshold	: No data available
pH	: No data available
Pour point	: No data available
Boiling point/boiling range	: 25 - 225 °C (77 - 437 °F)
Flash point	: -50 - -38 °C (-58 - -36 °F) Method: Tagliabue.
Auto-Ignition Temperature	: 257 °C (495 °F)
Evaporation rate	: No data available
Flammability	: Extremely flammable in presence of open flames, sparks, shocks, and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. Rapid escape of vapour may generate static charge causing ignition. May accumulate in confined spaces.
Upper explosion limit	: 7.6 %(V)

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Lower explosion limit	: 1.3 %(V)
Vapour pressure	: < 802.5 mmHg (20 °C / 68 °F)
Relative vapour density	: 3
Relative density	: 0.685 - 0.8
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Containers may explode in heat of fire. Vapours may form explosive mixtures with air.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	: Extremes of temperature and direct sunlight.
Incompatible materials	: Reactive with oxidising agents, acids and interhalogens.
Hazardous decomposition products	: May release CO _x , NO _x , phenols, polycyclic aromatic hydrocarbons, aldehydes, ketones, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Eye contact
Ingestion
Inhalation
Skin contact

Acute toxicity

Product:

Acute oral toxicity	: Remarks: No data available
Acute inhalation toxicity	: Remarks: No data available
Acute dermal toxicity	: Remarks: No data available

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GASOLINE, UNLEADED



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Components:

toluene:

Acute oral toxicity : LD50 (Rat): 5,580 mg/kg,
Acute inhalation toxicity : LC50 (Rat): 7585 ppm
Exposure time: 4 h
Test atmosphere: dust/mist
Acute dermal toxicity : LD50 (Rabbit): 12,125 mg/kg,

benzene:

Acute oral toxicity : LD50 (Rat): 2,990 mg/kg,
Acute inhalation toxicity : LC50 (Rat): 13700 ppm
Exposure time: 4 h
Test atmosphere: dust/mist
Acute dermal toxicity : LD50 (Rabbit): > 8,240 mg/kg,

ethanol:

Acute oral toxicity : LD50 (Rat): 7,060 mg/kg,
Acute inhalation toxicity : LC50 (Rat): > 32380 ppm
Exposure time: 4 h
Test atmosphere: vapour

Skin corrosion/irritation

Product:

Remarks: No data available

Serious eye damage/eye irritation

Product:

Remarks: No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

SAFETY DATA SHEET

GASOLINE, UNLEADED



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STOT - repeated exposure

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Offer surplus and non-recyclable solutions to a licensed disposal company.
Waste must be classified and labelled prior to recycling or disposal.
Send to a licensed waste management company.
Dispose of as hazardous waste in compliance with local and national regulations.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

Contaminated packaging : Do not re-use empty containers.

SAFETY DATA SHEET

GASOLINE, UNLEADED



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Revision Date 2017/04/20

Print Date 2017/04/20

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

UN/ID No. : UN 1203
Proper shipping name : Gasoline
Class : 3
Packing group : II
Labels : Class 3 - Flammable Liquid
Packing instruction (cargo aircraft) : 364

IMDG-Code

UN number : UN 1203
Proper shipping name : GASOLINE

Class : 3
Packing group : II
Labels : 3
EmS Code : F-E, S-E
Marine pollutant : no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

National Regulations

49 CFR

UN/ID/NA number : UN 1203
Proper shipping name : Gasoline

Class : 3
Packing group : II
Labels : Class 3 - Flammable Liquid
ERG Code : 128
Marine pollutant : no

SECTION 15. REGULATORY INFORMATION

The components of this product are reported in the following inventories:

DSL

On the inventory, or in compliance with the inventory

TSCA

All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.

EINECS

On the inventory, or in compliance with the inventory

SAFETY DATA SHEET

GASOLINE, UNLEADED



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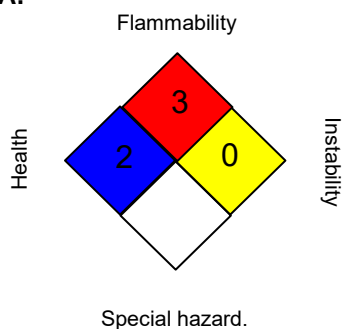
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SECTION 16. OTHER INFORMATION

Further information

NFPA:



HMIS III:

HEALTH	3*
FLAMMABILITY	3
PHYSICAL HAZARD	0
PERSONAL PROTECTION	H

0 = not significant, 1 = Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

For Copy of SDS

: Internet: www.petro-canada.ca/msds
Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228
For Product Safety Information: 1 905-804-4752

Prepared by

: Product Safety: +1 905-804-4752

Revision Date

: 2017/04/20

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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JET A/A-1 AVIATION TURBINE FUEL



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SECTION 1. IDENTIFICATION

Product name : JET A/A-1 AVIATION TURBINE FUEL

Synonyms : Jet A-1; Jet A-1-DI; Aviation Turbine Kerosene (ATK); JP-8; NATO F-34; Jet F-34; Aviation Turbine Fuel, Kerosene Type (CAN/CGSB 3.23 & CAN/CGSB 3.24)

Product code : 101851, 100123

Manufacturer or supplier's details
Petro-Canada
P.O. Box 2844, 150 - 6th Avenue South-West
Calgary Alberta T2P 3E3
Canada

Emergency telephone number : Suncor Energy: +1 403-296-3000;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : Used as aviation turbine fuel. May contain a fuel system icing inhibitor. In the arctic, Jet A-1 may also be used as diesel fuel (if it contains a lubricity additive) and heating oil.

Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	Clear liquid.
Colour	Clear and colourless
Odour	Kerosene-like.

GHS Classification

Flammable liquids : Category 3

Skin irritation : Category 2

Reproductive toxicity : Category 2

Specific target organ toxicity - single exposure : Category 3 (Central nervous system)

Aspiration hazard : Category 1

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GHS label elements

Hazard pictograms



Signal word

: Danger

Hazard statements

: Flammable liquid and vapour.
May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause drowsiness or dizziness.
Suspected of damaging fertility or the unborn child.

Precautionary statements

: **Prevention:**
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ eye protection/ face protection.
Use personal protective equipment as required.
Response:
IF SWALLOWED: Immediately call a POISON CENTER/doctor.
IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
IF exposed or concerned: Get medical advice/ attention.
Do NOT induce vomiting.
If skin irritation occurs: Get medical advice/ attention.
Take off contaminated clothing and wash before reuse.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
Storage:
Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Potential Health Effects

Primary Routes of Entry

: Eye contact
Ingestion
Inhalation

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Skin contact

- Inhalation : Inhalation may cause central nervous system effects. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.
- Skin : May irritate skin.
- Eyes : May irritate eyes.
- Ingestion : Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Aspiration hazard if swallowed - can enter lungs and cause damage.

Aggravated Medical Condition : None known.

Other hazards

None known.

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

OSHA No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration
kerosine (petroleum)	8008-20-6	90 - 100 %
2-(2-methoxyethoxy)ethanol	111-77-3	0 - 0.2 %

SECTION 4. FIRST AID MEASURES

If inhaled : Move to fresh air.
Artificial respiration and/or oxygen may be necessary.
Seek medical advice.

In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing

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- and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash clothing before reuse.
Seek medical advice.
- In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.
- If swallowed : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Seek medical advice.
- Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Dry chemical
Carbon dioxide (CO₂)
Water fog.
Foam
- Unsuitable extinguishing media : Do NOT use water jet.
- Specific hazards during fire-fighting : Cool closed containers exposed to fire with water spray.
- Hazardous combustion products : Carbon oxides (CO, CO₂), nitrogen oxides (NO_x), sulphur oxides (SO_x), smoke and irritating vapours as products of incomplete combustion.
- Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.
- Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Material can create slippery conditions.
- Environmental precautions : If the product contaminates rivers and lakes or drains inform respective authorities.

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Methods and materials for containment and cleaning up : Prevent further leakage or spillage if safe to do so.
Remove all sources of ignition.
Soak up with inert absorbent material.
Non-sparking tools should be used.
Ensure adequate ventilation.
Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Use only with adequate ventilation.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity.
Avoid contact with skin, eyes and clothing.
Do not ingest.
Keep away from heat and sources of ignition.
Keep container closed when not in use.

Conditions for safe storage : Store in original container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
To maintain product quality, do not store in heat or direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
kerosine (petroleum)	8008-20-6	TWA	100 mg/m ³	NIOSH REL
		TWA	500 ppm 2,000 mg/m ³	OSHA Z-1
		TWA	200 mg/m ³ (total hydrocarbon vapor)	ACGIH
		TWA	400 ppm 1,600 mg/m ³	OSHA P0

Engineering measures : Use only in well-ventilated areas.
Ensure that eyewash station and safety shower are proximal to the work-station location.

Personal protective equipment

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Respiratory protection	: Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Filter type	: A NIOSH-approved air-purifying respirator with an organic vapour cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.
Hand protection Material	: polyvinyl alcohol (PVA), Viton(R). Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns. It should be realized that eventually any material regardless of their imperviousness, will get permeated by chemicals. Therefore, protective gloves should be regularly checked for wear and tear. At the first signs of hardening and cracks, they should be changed.
Remarks	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Eye protection	: Wear face-shield and protective suit for abnormal processing problems.
Skin and body protection	: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Protective measures	: Wash contaminated clothing before re-use.
Hygiene measures	: Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Clear liquid.
Colour	: Clear and colourless
Odour	: Kerosene-like.
Odour Threshold	: No data available

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JET A/A-1 AVIATION TURBINE FUEL



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pH	: No data available
Pour point	: -51 °C (-60 °F) No data available
Boiling point/boiling range	: 140 - 300 °C (284 - 572 °F)
Flash point	: > 38 °C (100 °F) Method: Tagliabue
Auto-Ignition Temperature	: 210 °C (410 °F)
Evaporation rate	: No data available
Flammability	: Flammable in presence of open flames, sparks and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. This product can accumulate static charge and ignite. May accumulate in confined spaces.
Upper explosion limit	: 5 %(V)
Lower explosion limit	: 0.7 %(V)
Vapour pressure	: 5.25 mmHg (20 °C / 68 °F)
Relative vapour density	: 4.5
Relative density	: 0.775 - 0.84 (15 °C / 59 °F)
Solubility(ies)	
Water solubility	: No data available
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 1.0 - 1.9 cSt (40 °C / 104 °F)
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Containers may explode in heat of fire.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	: Extremes of temperature and direct sunlight.

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Incompatible materials	: Reactive with oxidising agents, acids and alkalis.
Hazardous decomposition products	: May release CO _x , NO _x , SO _x , aldehydes, acids, ketones, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Eye contact
Ingestion
Inhalation
Skin contact

Acute toxicity

Product:

Acute oral toxicity	: Remarks: No data available
Acute inhalation toxicity	: Remarks: No data available
Acute dermal toxicity	: Remarks: No data available

Components:

kerosine (petroleum):

Acute oral toxicity	: LD50 (Rat): > 5,000 mg/kg,
Acute inhalation toxicity	: LC50 (Rat): > 5 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	: LD50 (Rabbit): > 2,000 mg/kg,

Skin corrosion/irritation

Product:

Remarks: No data available

Serious eye damage/eye irritation

Product:

Remarks: No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

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JET A/A-1 AVIATION TURBINE FUEL

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Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Offer surplus and non-recyclable solutions to a licensed disposal company.
Waste must be classified and labelled prior to recycling or disposal.
Send to a licensed waste management company.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

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JET A/A-1 AVIATION TURBINE FUEL

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Version 2.0

Revision Date 2016/07/20

Print Date 2016/07/20



Contaminated packaging : Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

UN/ID No. : UN 1863
Proper shipping name : Fuel, aviation, turbine engine
Class : 3
Packing group : III
Labels : Class 3 - Flammable Liquid
Packing instruction (cargo aircraft) : 366

IMDG-Code

UN number : UN 1863
Proper shipping name : FUEL, AVIATION, TURBINE ENGINE

Class : 3
Packing group : III
Labels : 3
EmS Code : F-E, S-E
Marine pollutant : no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

National Regulations

49 CFR

UN/ID/NA number : UN 1863
Proper shipping name : Fuel, aviation, turbine engine

Class : 3
Packing group : III
Labels : Class 3 - Flammable Liquid
ERG Code : 128
Marine pollutant : no

SECTION 15. REGULATORY INFORMATION

The components of this product are reported in the following inventories:

DSL

On the inventory, or in compliance with the inventory

TSCA

All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.

EINECS

On the inventory, or in compliance with the inventory

SAFETY DATA SHEET

JET A/A-1 AVIATION TURBINE FUEL

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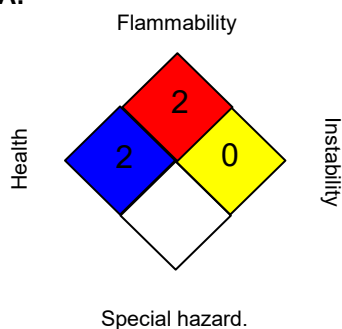
Print Date 2016/07/20



SECTION 16. OTHER INFORMATION

Further information

NFPA:



HMIS III:

HEALTH	2*
FLAMMABILITY	2
PHYSICAL HAZARD	0
PERSONAL PROTECTION	H

0 = not significant, 1 = Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

For Copy of (M)SDS

: Internet: www.petro-canada.ca/msds
Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228
For Product Safety Information: 1 905-804-4752

Prepared by

: Product Safety: +1 905-804-4752

Revision Date

: 2016/07/20

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Universal Antifreeze/Coolant

SECTION 1. IDENTIFICATION

Product Identifier	Universal Antifreeze/Coolant
Other Means of Identification	16-242, 16-244, 16-245, 26-248, 26-248-1000, 26-248PC, 35-249FS, 36-241SO, 36-244APREXP, 36-244AX, 36-244AXEXP, 36-244C, 36-244CHR, 36-244CQ, 36-244E, 36-244FEDEXP, 36-244FS, 36-244PC, 36-244PM, 36-244PMEXP, 36-244PPEXP, 36-244PROFEXP, 36-244RAD, 36-244SO, 36-244SP, 36-244SPROEXP, 36-244STP, 36-244STPEXP, 36-244TH, 36-244TOT, 36-244U/N, 36-244UFA, 36-244UG, 36-245UFA, 36-249AXEXP, 36-249CHR, 36-249E, 36-249SPROEXP, 36-254SO, 86-244-PRO, 86-244SY, 86-249, 86-249-1000, BULK-16245, BULK-86245, BULK-TRUCK26429
Recommended Use	Please refer to Product label.
Restrictions on Use	None known.
Manufacturer / Supplier	Recochem Inc., 850 Montee de Liesse, Montreal, QC, H4T 1P4, Compliance and Regulatory Department, 905-878-5544, www.recochem.com
Emergency Phone No.	CANUTEC, 613-996-6666, 24 Hours
SDS No.	1552

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Acute toxicity (Oral) - Category 4; Reproductive Toxicity - Category 1B; Specific target organ toxicity (repeated exposure) - Category 2

GHS Label Elements



Signal Word:
Danger

Hazard Statement(s):

H302	Harmful if swallowed.
H360	May damage fertility or the unborn child.
H373	May cause damage to organs (kidneys) through prolonged or repeated exposure following skin contact and/or if swallowed.

Prevention:

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe fume, mist, vapours, spray.
P264	Wash hands and skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response:

P301 + P312 IF SWALLOWED: Call a POISON CENTRE/doctor if you feel unwell.
P330 Rinse mouth.
P308 + P313 IF exposed or concerned: Get medical advice/attention.
P314 Get medical advice/attention if you feel unwell.

Storage:

Store in a well ventilated place. Keep cool. Keep container tightly closed. Store locked up.

Disposal:

Dispose of contents/container in accordance with applicable regional, national and local laws and regulations.

Note:

0.1-1

% of the mixture consists of ingredient(s) of unknown acute toxicity.

Other Hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture:

Chemical Name	CAS No.	%	Other Identifiers
Ethylene glycol	107-21-1	60-100	
Sodium Salt of Boron Acid	CBI*		

Notes

The specific chemical identity and/or exact percentage of composition (concentration) has been withheld as a trade secret.

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Remove source of exposure or move to fresh air. Call a Poison Centre or doctor if you feel unwell or are concerned.

Skin Contact

Take off contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Wash gently and thoroughly with lukewarm, gently flowing water and mild soap for 5 minutes. Call a Poison Centre or doctor if you feel unwell or are concerned. Clean clothing, shoes and leather goods.

Eye Contact

If eye irritation persists, get medical advice/attention. Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open.

Ingestion

Rinse mouth with water. Call a Poison Centre or doctor if you feel unwell or are concerned.

Most Important Symptoms and Effects, Acute and Delayed

If swallowed: There are 3 stages of effects, which can overlap. Early symptoms can include upset stomach, slurred speech, clumsiness, drowsiness, and convulsions. Second stage symptoms can include rapid heartbeat and breathing, bluish lips and skin, fluid in the lungs and heart failure. In the last stage, there can be kidney stones and kidney damage with lower back pain, and increased then decreased urine production. There may be delayed nervous system effects such as paralysis of the face, clumsiness, impaired hearing and blurred vision. Death can occur at any stage.

Product Identifier: Universal Antifreeze/Coolant

SDS No.: 1552

Date of Preparation: October 01, 2015

Immediate Medical Attention and Special Treatment

Target Organs

Digestive system, nervous system, heart, digestive system, kidneys, skin.

Special Instructions

The signs and symptoms in ethylene glycol poisoning are those of metabolic acidosis, central nervous system depression and kidney injury. Clinical chemistry may reveal anion-gap metabolic acidosis and uremia. Treatment with ethanol to inhibit the metabolism of glycol to oxalate. Early administration of ethanol may counter the toxic effects of ethylene glycol (cardiopulmonary effects attributed to metabolic acidosis and renal damage).

Hemodialysis or peritoneal dialysis have been of benefit. Pre-existing respiratory and skin disorders may be aggravated by over-exposure to this product. Treat symptomatically and supportively.

Medical Conditions Aggravated by Exposure

Dermatitis.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Carbon dioxide, dry chemical powder or appropriate foam.

Unsuitable Extinguishing Media

None known.

Specific Hazards Arising from the Chemical

Can ignite if strongly heated.

In a fire, the following hazardous materials may be generated: irritating chemicals.

Special Protective Equipment and Precautions for Fire-fighters

Review Section 6 (Accidental Release Measures) for important information on responding to leaks/spills.

See Skin Protection in Section 8 (Exposure Controls/Personal Protection) for advice on suitable chemical protective materials.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

Use the personal protective equipment recommended in Section 8 of this safety data sheet.

Environmental Precautions

Do not allow into any sewer, on the ground or into any waterway.

Methods and Materials for Containment and Cleaning Up

Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling

Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any

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other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Conditions for Safe Storage

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Chemical Name	ACGIH TLV®		OSHA PEL		AIHA WEEL	
	TWA	STEL	TWA	Ceiling	8-hr TWA	TWA
Ethylene glycol	10 mg/m3	100 mg/m3	Not established	50 ppm		
Sodium Salt of Boron Acid	Not established	Not established	Not established	Not established		

Appropriate Engineering Controls

The hazard potential of this product is relatively low. General ventilation is usually adequate. Use local exhaust ventilation, if general ventilation is not adequate to control amount in the air.

Individual Protection Measures

Eye/Face Protection

Not required but it is good practice to wear safety glasses or chemical safety goggles.

Skin Protection

Wear chemical protective clothing e.g. gloves, aprons, boots.

Nitrile rubber.

Respiratory Protection

Not normally required if product is used as directed. For non-routine or emergency situations: wear a NIOSH approved air-purifying respirator with an appropriate cartridge.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Clear green liquid.
Odour	Not available
Odour Threshold	Not available
pH	Not available
Melting Point/Freezing Point	-13 °C (9 °F) (Ethylene glycol) (melting); -13 °C (9 °F) (Ethylene glycol) (freezing)
Initial Boiling Point/Range	197 °C (387 °F)
Flash Point	111 °C (232 °F) (closed cup) (Ethylene glycol)
Evaporation Rate	< 0.01
Flammability (solid, gas)	Not applicable
Upper/Lower Flammability or Explosive Limit	21.6 - 22.0% (Ethylene glycol) (upper); 3.2% (Ethylene glycol) (lower)
Vapour Pressure	0.090 mm Hg (0.012 kPa) at 20 °C (Ethylene glycol)
Vapour Density (air = 1)	2.14 (estimated)
Relative Density (water = 1)	1.12 - 1.15 at 20 °C (Ethylene glycol)

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Solubility	Not available in water; Soluble in all proportions in ketones (e.g. acetone).
Partition Coefficient, n-Octanol/Water (Log Kow)	-1.36 at 20 °C (Ethylene glycol)
Auto-ignition Temperature	398 °C (748 °F) (Ethylene glycol)
Decomposition Temperature	Not available
Viscosity	18.86 mm ² /s at 20 °C (estimated) (kinematic); 21 mPa.s at 20 °C (estimated) (dynamic)
Other Information	
Physical State	Liquid
Molecular Weight	Not available

SECTION 10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions of use.

Chemical Stability

Normally stable.

Possibility of Hazardous Reactions

None known.

Conditions to Avoid

High temperatures. Open flames, sparks, static discharge, heat and other ignition sources. Temperatures above 111.0 °C (231.8 °F)

Incompatible Materials

Slightly reactive or incompatible with the following materials: oxidizing agents (e.g. peroxides), strong acids (e.g. hydrochloric acid), strong bases (e.g. sodium hydroxide).

Not corrosive to metals.

Hazardous Decomposition Products

Very toxic carbon monoxide, carbon dioxide.

SECTION 11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Skin contact; ingestion.

Acute Toxicity

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
Ethylene glycol	2725 mg/m ³ (rat) (4-hour exposure)	4700 mg/kg (rat)	9530 mg/kg (rabbit)
Sodium Salt of Boron Acid	Not available	Not available	Not available

LC50: Not applicable.

LD50 (oral): Not applicable.

LD50 (dermal): Not applicable.

Skin Corrosion/Irritation

May cause moderate or severe irritation based on information for closely related materials. Symptoms include pain, redness, and swelling.

Serious Eye Damage/Irritation

May cause serious eye irritation based on information for closely related materials. Symptoms include sore, red eyes, and tearing.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

At high concentrations vapour may cause lung injury, nose and throat irritation. Symptoms may include coughing, shortness of breath, difficult breathing and tightness in the chest. Symptoms may include headache, nausea, dizziness, drowsiness and confusion.

Skin Absorption

At high concentrations may cause Symptoms may include redness, rash, swelling and itching.

Ingestion

Toxic, can cause death based on information for closely related materials. depression of the central nervous system, and effects on the heart and kidneys. In some cases, there may be delayed effects on the nervous system. There are 3 stages of effects, which can overlap. Early symptoms can include upset stomach, slurred speech, clumsiness, drowsiness, and convulsions. Second stage symptoms can include rapid heartbeat and breathing, bluish lips and skin, fluid in the lungs and heart failure. In the last stage, there can be kidney stones and kidney damage with lower back pain, and increased then decreased urine production. There may be delayed nervous system effects such as paralysis of the face, clumsiness, impaired hearing and blurred vision. Death can occur at any stage.

Aspiration Hazard

Not known to be an aspiration hazard.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

May cause dermatitis. Symptoms may include dry, red, cracked skin (dermatitis).

May cause Following skin contact and/or if swallowed: harmful effects on the kidneys.

Respiratory and/or Skin Sensitization

Not known to be a respiratory sensitizer. Not known to be a skin sensitizer.

Carcinogenicity

Chemical Name	IARC	ACGIH®	NTP	OSHA
Ethylene glycol	Not Listed	A4	Not Listed	Not Listed
Sodium Salt of Boron Acid	Not Listed	A4	Not Listed	Not Listed

Reproductive Toxicity

Development of Offspring

If swallowed: at high concentrations animal studies show effects on the offspring. Known to cause: decreased weight. Embryotoxic (late resorptions) teratogenic(external, soft tissue and skeletal defects) may harm the unborn child. (Sodium Salt of Boron Acid)

Sexual Function and Fertility

May cause effects on sexual function and/or fertility. (Sodium Salt of Boron Acid)

Effects on or via Lactation

No information was located.

Germ Cell Mutagenicity

Not known to be a mutagen.

Interactive Effects

No information was located.

Other Information

TOXIC SUBSTANCE: KEEP AWAY FROM ANIMALS AND SMALL CHILDREN.

SECTION 12. ECOLOGICAL INFORMATION

Toxicity

Acute Aquatic Toxicity

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Chemical Name	LC50 Fish	EC50 Crustacea	ErC50 Aquatic Plants	ErC50 Algae
Ethylene glycol	18500 mg/L (Oncorhynchus mykiss (rainbow trout); 96-hour; fresh water)	74000 mg/L (Daphnia magna (water flea); 24 hr)		
Sodium Salt of Boron Acid	Not available	Not available		

Chronic Aquatic Toxicity

Chemical Name	NOEC Fish	EC50 Fish	NOEC Crustacea	EC50 Crustacea
Ethylene glycol	39140 mg/L (Oncorhynchus mykiss (rainbow trout))		24000 mg/L (Daphnia magna (water flea))	
Sodium Salt of Boron Acid	Not available	Not available		

Persistence and Degradability

No information was located.

Bioaccumulative Potential

This product and its degradation products are not expected to bioaccumulate.

Mobility in Soil

No information was located.

Other Adverse Effects

There is no information available.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14. TRANSPORT INFORMATION

Not regulated under Canadian TDG Regulations.

Regulation	UN No.	Proper Shipping Name	Transport Hazard Class(es)	Packing Group
US DOT	3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID (Ethylene glycol)	9	III

Environmental Hazards Not applicable (Ethylene glycol)

Special Precautions for User Please note: In single containers of 5000 lbs capacity or less this product is exempt from DOT regulations (non regulated). Does not require label or placards. Regulated Quantity (RQ)= 5000 lbs (2268 kg) (as ethylene glycol) For bulk shipments equal to or greater than Regulated Quantity (RQ), please adhere to classification as outlined in DOT Classification section.

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

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SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Canada

Domestic Substances List (DSL) / Non-Domestic Substances List (NDSL)

All ingredients are listed on the DSL/NDSL.

USA

Toxic Substances Control Act (TSCA) Section 8(b)

All ingredients are listed on the TSCA Inventory.

Additional USA Regulatory Lists

California Proposition 65:

WARNING: This product contains chemicals known to the State of California to cause birth defects.

WARNING: This product contains chemicals known to the State of California to cause Reproductive Toxicity.

SECTION 16. OTHER INFORMATION

SDS Prepared By Compliance and Regulatory Department

Phone No. 905-878-5544

Date of Preparation October 01, 2015

Additional Information We are committed to uphold the Industry Consumer Ingredient Communication Voluntary Initiative.

Please send us your request by visiting our website at www.recochem.com.

Ingredients present (intentionally added ingredients) at a concentration of greater than one percent (1%) shall be listed in descending order of predominance. Ingredients present at a concentration of not more than one percent shall be listed but may be disclosed without respect to order of predominance.

Disclaimer

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

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Section 1: IDENTIFICATION

Synonyms: LPG (Liquefied Petroleum Gas); LP-Gas.

Product 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.

Restrictions on Use: Not available.

Manufacturer/Supplier: Superior Propane
Suite 400, 6750 Century Avenue
Mississauga, ON L5N 2V8

Phone Number: 1-877-873-7467

Emergency Phone: CANUTEC 1-888-CAN-UTEC (226-8832) or 613-996-6666 or *666 on a cellular phone

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Section 2: HAZARD(S) IDENTIFICATION**GHS INFORMATION**

Classification: Flammable Gases, Category 1
Gases Under Pressure - Compressed Gas
Simple Asphyxiant

LABEL ELEMENTS**Hazard****Pictogram(s):****Signal Word:** Danger

Hazard Statements: Extremely flammable gas.
Contains gas under pressure; may explode if heated.
May displace oxygen and cause rapid suffocation.

Precautionary Statements

Prevention: Keep away from heat, sparks, open flames, and hot surfaces. No smoking.

Response: Leaking gas fire: Do not extinguish unless leak can be stopped safely.
Eliminate all ignition sources if safe to do so.

Storage: Store in a well ventilated place.

Disposal: Not applicable.

Hazards Not Otherwise Classified: Not applicable.

Ingredients with Unknown Toxicity: None.

This material is considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200). This material is considered hazardous by the Hazardous Products Regulations.

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredient(s)	Common name /	CAS No.	% vol./vol.
Propane	Not available.	74-98-6	90 - 99
Ethane	Not available.	74-84-0	0 - 5
1-Propene	Propylene	115-07-1	0 - 5
Butane	Not available.	106-97-8	0 - 2.5

Section 4: FIRST-AID MEASURES

Inhalation:	Call a poison center or doctor if you feel unwell. Acute and delayed symptoms and effects: May displace oxygen and cause rapid suffocation. May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.
Eye Contact:	Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if needed. Continue rinsing. Immediately call a poison center or doctor. Acute and delayed symptoms and effects: Contact with rapidly expanding or liquefied gas may cause irritation and/or frostbite. The pain after contact with liquid can quickly subside. Permanent eye damage or blindness could result. May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.
Skin Contact:	Contact with rapidly expanding or liquefied gas may cause irritation and/or frostbite. If on skin: Wash with plenty of water. Get immediate medical advice/attention. Thaw frosted parts with lukewarm water. Do not rub affected area. Remove non-adhering contaminated clothing. Do not remove adherent material or clothing. Acute and delayed symptoms and effects: Contact with rapidly expanding or liquefied gas may cause irritation and/or frostbite. Symptoms of frostbite include change in skin colour to white or grayish-yellow. The pain after contact with liquid can quickly subside. May cause skin irritation. Signs/symptoms may include localized redness, swelling, and itching.
Ingestion:	Not a normal route of exposure. Acute and delayed symptoms and effects: Not a normal route of exposure.
General Advice:	In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).
Note to Physicians:	Symptoms may not appear immediately.

Section 5: FIRE-FIGHTING MEASURES

FLAMMABILITY AND EXPLOSION INFORMATION

Extremely flammable gas. Contains gas under pressure; may explode if heated. Will be easily ignited by heat, sparks or flames. Will form explosive mixtures with air. Vapors from liquefied gas are initially heavier than air and spread along ground. Vapors may travel to source of ignition and flash back. Cylinders exposed to fire may vent and release flammable gas through

pressure relief devices. Containers may explode when heated. Ruptured cylinders may rocket. DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.

If a 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.

Fire involving Tanks: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Do not direct water at source of leak or safety devices; icing may occur. Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

Sensitivity to Mechanical Impact: This material is not sensitive to mechanical impact.

Sensitivity to Static Discharge: This material is sensitive to static discharge.

MEANS OF EXTINCTION

Suitable Extinguishing Media: Small Fire: Dry chemical or CO₂.

Large Fire: Water spray or fog. Move containers from fire area if you can do it without risk.

Unsuitable Extinguishing Media: Not available.

Products of Combustion: Oxides of carbon.

Protection of Firefighters: Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so. Vapors may cause dizziness or asphyxiation without warning. Some may be irritating if inhaled at high concentrations. Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite. Fire may produce irritating and/or toxic gases. Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection. Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

Section 6: ACCIDENTAL RELEASE MEASURES

Emergency Procedures: As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks). Keep out of low areas. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded.

Personal Precautions: Do not touch or walk through spilled material. Use personal protection recommended in Section 8.

Environmental Precautions: Not normally required.

Methods for Containment: Stop leak if you can do it without risk. If possible, turn leaking containers so that gas escapes rather than liquid. Use water spray

to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material. Do not direct water at spill or source of leak.

Methods for Clean-Up:

Prevent spreading of vapors through sewers, ventilation systems and confined areas. Isolate area until gas has dispersed.
CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

Other Information:

See Section 13 for disposal considerations.

Section 7: HANDLING AND STORAGE**Handling:**

Avoid breathing gas. Keep away from heat, sparks, open flames, and hot surfaces. No smoking. Pressurized container: Do not pierce or burn, even after use. See Section 8 for information on Personal Protective Equipment.

Storage:

Store in a well-ventilated place. Store away from incompatible materials. See Section 10 for information on Incompatible Materials. Keep out of the reach of children.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION**Exposure Guidelines****Component**

Propane [CAS No. 74-98-6]

ACGIH: Asphyxia

OSHA: 1000 ppm (TWA), 1800 mg/m³ (TWA);

Ethane [CAS No. 74-84-0]

ACGIH: Asphyxia

OSHA: No PEL established.

Propylene [CAS No. 115-07-1]

ACGIH: 500 ppm (TWA); A4 (2005)

OSHA: No PEL established.

Butane [CAS No. 106-97-8]

ACGIH: 1000 ppm (TWA); (2012)

OSHA: 800 ppm (TWA) [Vacated];

PEL: Permissible Exposure Limit

TWA: Time-Weighted Average

C: Ceiling

Engineering Controls:

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapour, gas, etc.) below recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Eye/Face Protection:	Safety glasses are required. Use equipment for eye protection that meets the standards referenced by CSA Standard CAN/CSA-Z94.3-92 and OSHA regulations in 29 CFR 1910.133 for Personal Protective Equipment.
Hand Protection:	Wear protective gloves. Wear cold insulating gloves. Consult manufacturer specifications for further information.
Skin and Body Protection:	Wear protective clothing.
Respiratory Protection:	If engineering controls and ventilation are not sufficient to control exposure to below the allowable limits then an appropriate NIOSH/MSHA approved air-purifying respirator that meets the requirements of CSA Standard CAN/CSA-Z94.4-11, or self-contained breathing apparatus must be used. Supplied air breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators.
General Hygiene Considerations:	Handle according to established industrial hygiene and safety practices. Consult a competent industrial hygienist to determine hazard potential and/or the PPE manufacturers to ensure adequate protection.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Liquefied gas.
Colour:	Colourless.
Odour:	Odourless, unless odourized with ethyl mercaptan (skunky odour, similar to boiling cabbage).
Odour Threshold:	4800 ppm
Physical State:	Gas.
pH:	Not available.
Melting Point / Freezing Point:	-188 °C (-306.4 °F)
Initial Boiling Point:	-42.2 °C (-44 °F)
Boiling Point:	-42 °C (-43.6 °F)
Flash Point:	-103.4 °C (-154.1 °F) (Closed Cup)
Evaporation Rate:	Rapid.
Flammability (solid, gas):	Extremely flammable gas.
Lower Flammability Limit:	2.1%

Upper Flammability Limit:	9.5%
Vapor Pressure:	1435 kPa (maximum) at 37.8 °C (100 °F)
Vapor Density:	1.52 (Air = 1)
Relative Density:	0.51 (Water = 1)
Solubilities:	Slight, 6.1% by volume @ 17.8°C (64 °F)
Partition Coefficient: n-Octanol/Water:	Not available.
Auto-ignition Temperature:	432 °C (809.6 °F)
Decomposition Temperature:	Not available.
Viscosity:	Not available.
Percent Volatile, wt. %:	Not available.
VOC content, wt. %:	Not available.
Density:	Not available.
Coefficient of Water/Oil Distribution:	Not available.

Section 10: STABILITY AND REACTIVITY

Reactivity:	Contact with incompatible materials. Sources of ignition. Exposure to heat.
Chemical Stability:	Stable under normal storage conditions.
Possibility of Hazardous Reactions:	Gas explodes spontaneously when mixed with chloride dioxide.
Conditions to Avoid:	Contact with incompatible materials. Sources of ignition. Exposure to heat.
Incompatible Materials:	Oxidizers. Chlorine dioxide.
Hazardous Decomposition Products:	Carbon dioxide. Carbon monoxide.

Section 11: TOXICOLOGICAL INFORMATION

EFFECTS OF ACUTE EXPOSURE

Product Toxicity

Oral:	Not available.
Dermal:	Not available.
Inhalation:	Not available.

Component Toxicity

Component	CAS No.	LD ₅₀ oral	LD ₅₀ dermal	LC ₅₀
Propane	74-98-6	Not available.	Not available.	Not available.
Ethane	74-84-0	Not available.	Not available.	Not available.
Propylene	115-07-1	Not available.	Not available.	86000 mg/m ³ (rat); 4H
Butane	106-97-8	Not available.	Not available.	658000 mg/m ³ (rat); 4H

Likely Routes of Exposure: Eye contact. Skin contact. Inhalation.**Target Organs:** Skin. Eyes. Respiratory system. Central nervous system.**Symptoms (including delayed and immediate effects)****Inhalation:** May displace oxygen and cause rapid suffocation. May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.**Eye:** Contact with rapidly expanding or liquefied gas may cause irritation and/or frostbite. The pain after contact with liquid can quickly subside. Permanent eye damage or blindness could result. May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.**Skin:** Contact with rapidly expanding or liquefied gas may cause irritation and/or frostbite. Symptoms of frostbite include change in skin colour to white or grayish-yellow. The pain after contact with liquid can quickly subside. May cause skin irritation. Signs/symptoms may include localized redness, swelling, and itching.**Ingestion:** Not a normal route of exposure.**Skin Sensitization:** Not available.**Respiratory Sensitization:** Not available.**Medical Conditions** Not available.**Aggravated By Exposure:****EFFECTS OF CHRONIC EXPOSURE (from short and long-term exposure)****Target Organs:** Skin. Eyes. Respiratory system. Central nervous system.**Chronic Effects:** Not available.**Carcinogenicity:** Product is not classified as a carcinogen. See Component Carcinogenicity table below for information on individual components.**Component Carcinogenicity**

Component	ACGIH	IARC	NTP	OSHA	Prop 65
Propylene	A4	Group 3	Not listed.	Not listed.	Not listed.

Mutagenicity: Not available.**Reproductive Effects:** Not available.**Developmental Effects****Teratogenicity:** Not available.**Embryotoxicity:** Not available.**Toxicologically Synergistic Materials:** Not available.**Section 12: ECOLOGICAL INFORMATION****Ecotoxicity:** Not available.**Persistence / Degradability:** Not available.**Bioaccumulation / Accumulation:** Not available.**Mobility in Environment:** Not available.

Other Adverse Effects: Not available.**Section 13: DISPOSAL CONSIDERATIONS**

Disposal Instructions: Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

Section 14: TRANSPORT INFORMATION**U.S. Department of Transportation (DOT)****Proper Shipping Name:** UN1075, LIQUEFIED PETROLEUM GASES, 2.1**Class:** 2.1**UN Number:** UN1075**Packing Group:** Not applicable.**Label Code:****Canada Transportation of Dangerous Goods (TDG)****Proper Shipping Name:** UN1075, LIQUEFIED PETROLEUM GASES, 2.1**Class:** 2.1**UN Number:** UN1075**Packing Group:** Not applicable.**Label Code:****Section 15: REGULATORY INFORMATION****Chemical Inventories****US (TSCA)**

The components of this product are in compliance with the chemical notification requirements of TSCA.

Canada (DSL)

The components of this product are in compliance with the chemical notification requirements of the NSN Regulations under CEPA, 1999.

Federal Regulations**United States**

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III

Component	Section 302 (EHS) TPQ (lbs.)	Section 304 EHS RQ (lbs.)	CERCLA RQ (lbs.)	Section 313	RCRA CODE	CAA 112(r) TQ (lbs.)
Propane	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.	10000
Ethane	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.	10000

**SAFETY DATA SHEET**

Propane

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Propylene	Not listed.	Not listed.	Not listed.	313	Not listed.	10000
Butane	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.	10000

State Regulations**Massachusetts**

US Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

Component	CAS No.	RTK List
Propane	74-98-6	Listed.
Ethane	74-84-0	Listed.
Propylene	115-07-1	Listed.
Butane	106-97-8	Listed.

New Jersey

US New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

Component	CAS No.	RTK List
Propane	74-98-6	SHHS
Ethane	74-84-0	SHHS
Propylene	115-07-1	SHHS
Butane	106-97-8	SHHS

Note: SHHS = Special Health Hazard Substance

Pennsylvania

US Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

Component	CAS No.	RTK List
Propane	74-98-6	Listed.
Ethane	74-84-0	Listed.
Propylene	115-07-1	E
Butane	106-97-8	Listed.

Note: E = Environmental Hazard

California Prop 65: This product does not contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Section 16: OTHER INFORMATION**Disclaimer:**

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for their own particular use.

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