



# **Spill Contingency Plan**

## **Version 1.0 (v1.0)**

Effective date: June 2025

**Let's Plant Trees North Ltd. – Tłıchq Government Reforestation  
Project: Preserving Our Land Preparing for the Future**

**Tłıchq Land Agreement and Communities**

Prepared by:

Spectrum Resource Group  
1960 Robertson Road  
Prince George, BC  
V2N 1X6

April 2025

## Table of Contents

Revision History	3
Glossary and Abbreviations	4
Introduction & Project Details	5
Effective Date	5
Purpose and Scope	6
Environmental Policy	6
Reforestation Project Location Description	6
Planting Camp Location Description	7
Hazardous Materials and Handling	11
Existing Preventative Measures	11
Spill Response Organization	12
Reporting in the event of spill	12
Potential Spill Scenarios and Risks	13
Spill Response Action Plan	13
Spill Response Equipment and Training	17
Spill Reporting Contacts	17
Other Resources	18
Figure 1: <i>TGRP Overview map</i>	8
Figure 2: <i>TGRP Camp Location Overview Map</i>	9
Figure 3: <i>TGRP Camp Layout Map</i>	10
Figure 4: Flow Chart of Spill Response	16
Table 1 All hazardous materials proposed to be used	11
Table 2: Methods to transfer hazardous materials	11
Table 3: Spill scenarios - examples	13
Appendix A: Spill Report Form	19
Appendix B: Reportable Spill Quantities	22
Appendix C: Safety Data Sheets	24



## Revision History

<b>Revision Date</b>	<b>Section(s)</b>	<b>Revision</b>
April 11, 2025	All Sections	Version 1.0 - Initial Submission Review

## Glossary and Abbreviations

Acronym - Abbreviation	Definition
ERP	Emergency Response Plan
GNWT	Government of Northwest Territories
ha	Hectares
INAC	Indigenous and Northern Affairs Canada
L	Litre
LPTN	Let's Plant Trees North Ltd.
LUP	Land Use Permit
MVLWB	Mackenzie Valley Land and Water Boards
NEEC	National Environmental Emergencies Center
NWT or NT	Northwest Territories
Plan or plan	Spill Contingency Plan
PWNHC	Prince of Wales Northern Heritage Center
SDS	Safety Data Sheet(s)
SPC	Spill Contingency Plan
SRG	Wright Canada Holdings Ltd. operating as Spectrum Resource Group
TBD	To Be Determined
TG	Tłı̨chǫ Government
UTV	Utility task vehicle, ATV, quad
WLWB	Wek'èezhii Land & Water Board
WRRB	Wek'èezhii Renewable Resources Board
YKDFN	Yellowknives Dene First Nation



## Let's Plant Trees North Ltd.

# Contingency Plan for Material Spills at Planting Camp and Field Operations

April 2025

## Introduction and Project Details

LPTN has developed this SCP to cover its activities during the Tłıchq Government Reforestation Project: Preserving Our Land Preparing for the Future.

The plan is designed so that a coordinated response to spills will occur, and any spill will be dealt with in a timely and efficient manner. All personnel handling fuel or chemicals shall be made familiar with the plan and the plan will be part of the introduction to new personnel to the reforestation project.

This SCP was prepared by Spectrum Resource Group (SRG) and approved by LPTN. Additional information or copies are available from SRG at (250) 564-0383.

## Company Name and Mailing address:

**Let's Plant Trees North Ltd.**

Mailing address: 436 Lands' End Road, North Saanich, BC, V8L 5L9

Tel: 778.679.6926

Website: [www.letsplanttrees.ca](http://www.letsplanttrees.ca)

email: [tonken@icrossroads.com](mailto:tonken@icrossroads.com)

Attention: David Tonken

**Effective date of spill contingency plan: June 2025**

**Last revisions to spill contingency plan: April 2025**

## Distribution List

The plan and any recent revisions have been distributed to:

David Tonken, President and CEO, LPTN.  
Crawford Young RPF, Silvarado Silviculture Ltd.  
Chris Babkirk, Senior Manager, Tłıchq Investment Corporation.  
Dominic Doctor, Owner, Dehk'e Enterprise  
Joshua Quaitte, Reforestation Division Manager, SRG.  
Tom Cooper, Project Planting Camp Supervisor, SRG,  
Wek' èezhii Land and Water Board (WLWB)  
Tłıchq Government (TG)  
TBD, Project personnel, SRG

## Purpose and Scope

This SCP is developed in accordance with the Indigenous and Northern Affairs Canada (INAC) Guidelines for Spill Contingency Planning (2007) and relevant Northwest Territories (NWT or NT) and WLWB regulations. It outlines prevention, response, and management procedures for fuel and hazardous material spills during tree planting operations by LPTN and SRG. The objective is to minimize environmental impact and ensure compliance with regulatory frameworks.

### Company & Site Information

- Company Name(s): Let's Plant Trees North Ltd. and Spectrum Resource Group
- Project Camp Location: Russell Lake, Tłıchq Agreement Lands, NWT.
- Number of Workers on the Project: ~90 for 45 days
- Primary Activities: tree planting, camp operations, fuel handling

## Company Environmental Policy

LPTN and SRG are committed to the protection of the environment through incorporating the best possible practices throughout our operations.

### Objectives

- To conduct our business in compliance with applicable environmental laws and regulations.
- To provide customers with systematic services in a manner that protects the environment by
- assessing the individual sensitivity of the worksite and the impact our operation may have (i.e.,
- slope, runoff, drift, water bodies, soil porosity and wildlife).
- To continually improve our environmental management systems and corporate performance.
- To promote sustainable management of forest lands while protecting water quality, fish
- and wildlife habitat, soil productivity, and cultural, historical and aesthetic values.
- To lead by example in our practice of environmental stewardship.
- To reduce pollution and conserve natural resources through recycling and waste reduction.

The SCP is to be distributed to LPTN and SRG's site managers and contractors. The SCP will apply to all project locations. Training will be provided during orientation to ensure all personnel understand the SCP procedures to follow in the event of a spill. Personnel will be made aware of spill kit contents and trained in using the spill equipment and performing the spill response. The SCP is to remain posted in the camp office and in the camp dining area and will be posted at any future camps. The locations of the SCP and where spill kits are located will be made known to all employees and contractors.

## Reforestation Project Location Description

The LPTN tree planting work on the Tłıchq Government Reforestation Project (TGRP) will be split between the two geographically distinct areas of Behchokq and west of James Lake with the gross area of the project at approximately 1400 hectares altogether (refer to Figure 1 reforestation project overview map).



West James Lake planting area will be accessed by helicopter from the camp near Behchokq. The camp and planting near Behchokq will be accessed by existing road and highway with some helicopter assistance.

## **Planting Camp Location Description**

The proposed LPTN camp location is at the sandpit near Russell Lake lying approximately 300 meters south of Russell Lake and 300 meters west of the Spiritual Gathering Place (62°51'12"N, 115°58'42"W).

The camp will accommodate 90 personnel from across Canada, as well as community members, offering lodging and meals. The Russell Lake sand pit has been identified as an ideal location for this project. The pit provides a large, open space suitable for tents and trailers, easy access to planting sites, and proximity to water for camp supplies and worker leisure. Both LPTN and SRG are committed to respecting the area throughout the camp's duration, ensuring that no trace of the camp will remain after its removal. Camp closure will be completed to the satisfaction of the municipal government as confirmed by an email from them agreeing with the provided site inspection.

All planting activities will be carried out with the highest regard for the environment with safety being prioritized for all workers and stakeholders. LPTN will report to the Tłıchq Government on the environmental state of the site. An environmental monitoring system will be established, and an environmental monitor will be assigned to conduct inspections/audits of the planting site on a regular basis.

Activities related to the set-up, operation, and take down of the tree planting camp will not exceed the level of disturbance that has already historically occurred. The footprint for the camp is ~4.33 ha. All camp infrastructure will be located within the Russell Lake sand pit. Figure 2 TGRP camp location overview provides the general location of the project camp and Figure 3 TGRP camp layout map provides a detailed view of the campsite including the location of fuel storage areas, office, kitchen, etc., and surrounding water bodies.

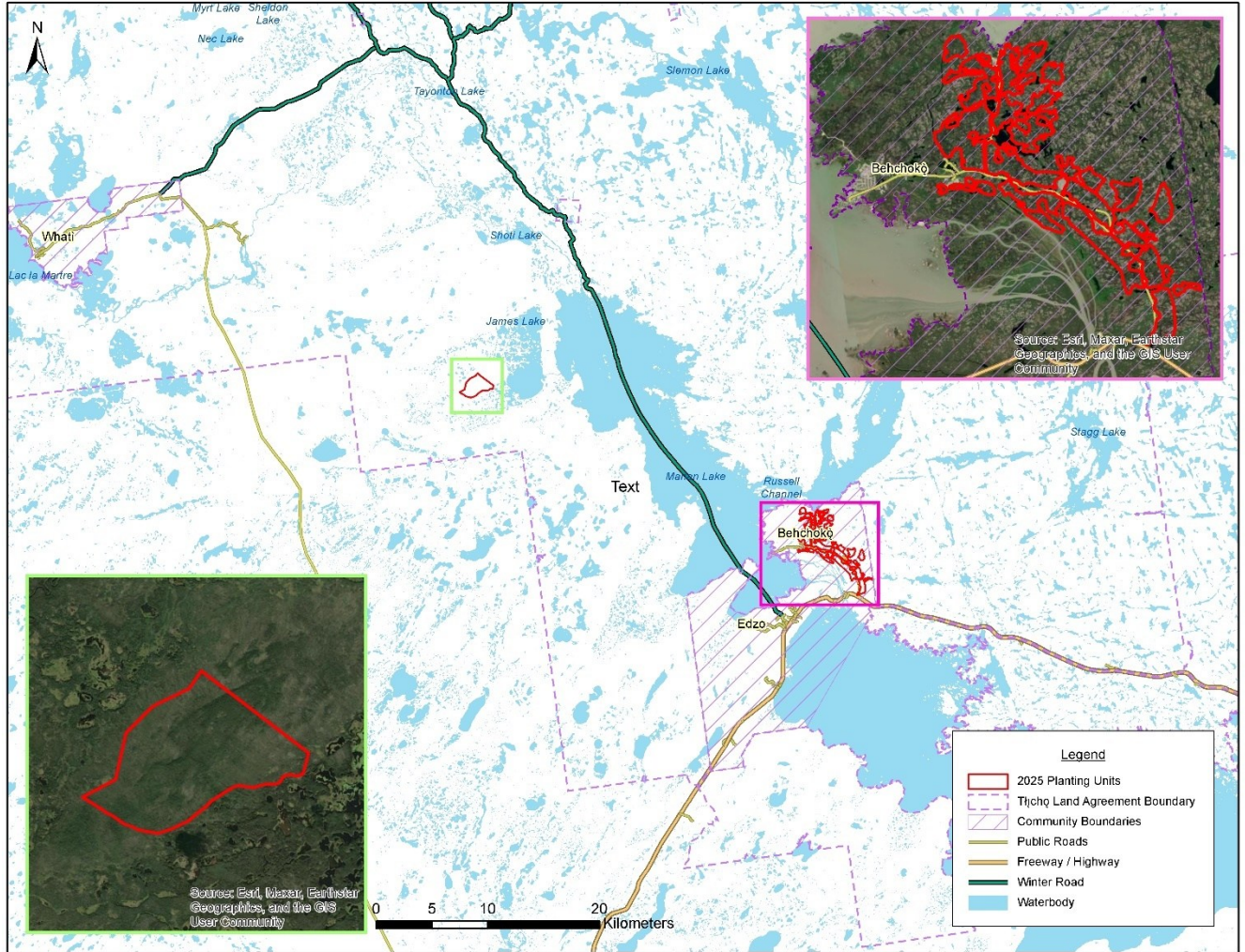


Figure 1: TGRP Overview map



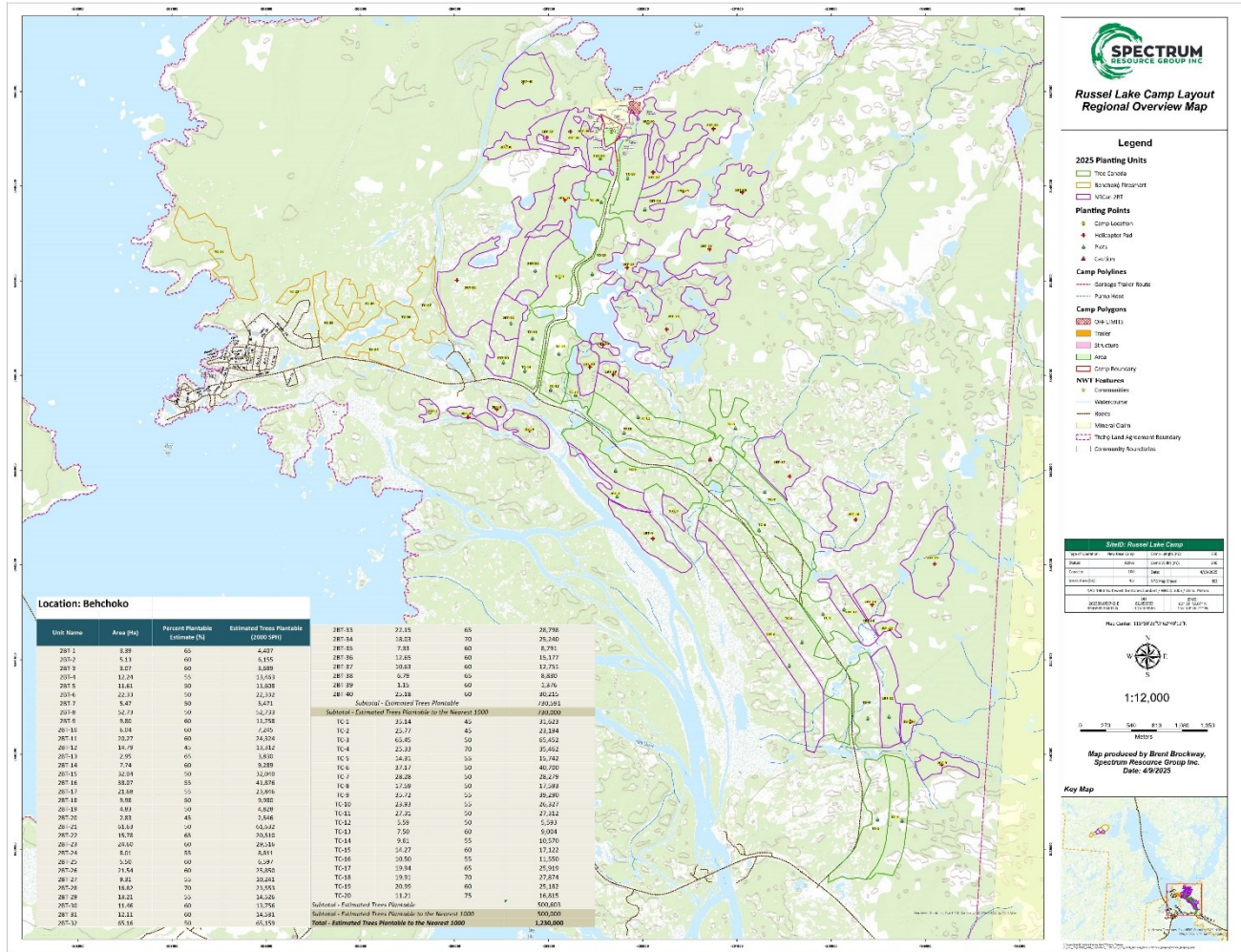


Figure 2: TGRP Camp Location Overview Map

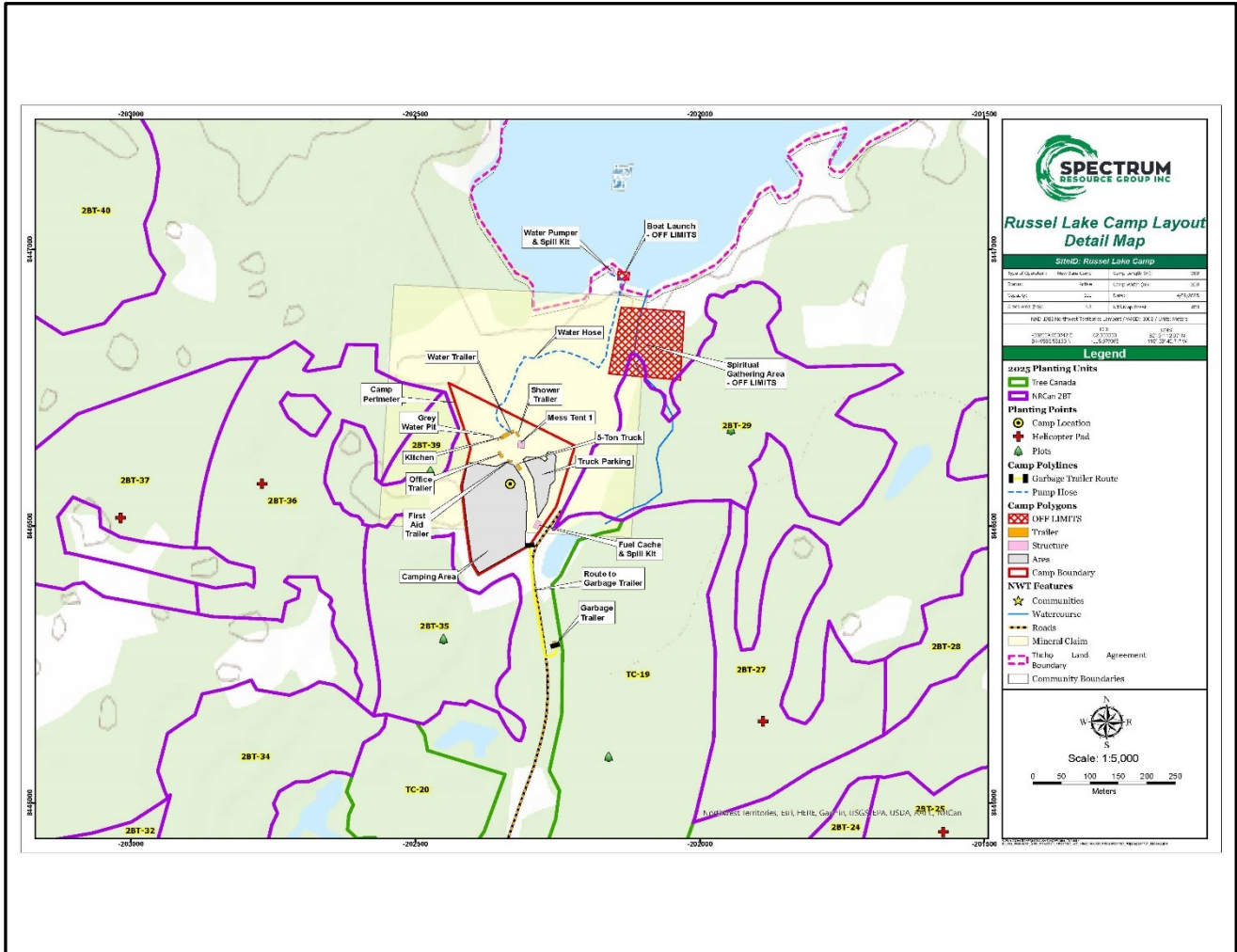


Figure 3: TGRP Camp Layout Map

## List of Hazardous Materials and Handling

Table 1. All hazardous materials proposed to be used

Type	Number of containers	Capacity of containers (e.g., litres, pounds)	Type of container (e.g., barrel, tank, tidy-tank)	Proposed storage or staging location(s)
Diesel:	1	100L	Tidy Tank	Secured to utility truck
Gasoline:	1	450L	Tank	Entrance to camp
Aviation Fuel:	1	5000L	Truck	North end of camp
Propane:	10	100lbs	Pressurized Tank	Secured to trailers
Gasoline	20	20L	Plastic Container/Jerry-can	Trucks or fuel cache
Calcium Hydroxide				

Table 2. Methods to transfer hazardous materials

Type	Method:
Diesel:	Electric pump – From slip tank to jerry-can or equipment
Gasoline:	Electric pump – from Tank to trucks or jerry cans.
Aviation Fuel:	Electric pump – from truck to helicopter
Propane:	No transfer of propane in camp
Gasoline	Hand pouring from Jerry-can. Spill kit present. 50m from water sources.
Calcium Hydroxide	Manual Tool dispersal

Safety Data Sheets (SDS) for all hazardous materials are kept at camp site for reference, should they be required. Should any fuel products be required in other areas within the claim block area appropriate amendments to the Land Use Permit will be applied for and fuel products will be stored and handled at the specific site in accordance with applicable guidelines.

Safety Data Sheets for each hazardous material are included in Appendix C.

## Existing Preventative Measures

To minimize the risk of spills, the following **preventive measures** are in place at all project locations:

### Spill Prevention

- All hazardous substances, including chemical wastes, are to be managed in a way that prevents release. The following general requirements are to be followed:
- Hazardous product containers must be in good condition and compatible with the materials stored within.
- Secure containers appropriately during transportation.
- When transferring chemicals from larger to smaller containers use a funnel.
- Close hazardous product containers when not in use

- Use drip pans or other collection devices to contain drips or leaks from dispensing containers or equipment.
- Immediately clean up and properly manage all small spills or leaks.
- Periodically inspect equipment storage areas to ensure leaks or spills are not occurring.
- Keep all work areas and hazardous product storage areas clean

### Equipment Maintenance & Leak Prevention

- Routine maintenance and pre-work inspections for all equipment using fuel, oil, or hydraulic fluid.
- Immediate repair or replacement of leaking equipment components.
- Use of drip trays under parked equipment to catch minor leaks.

### Worker Training & Safe Handling Practices

- Mandatory spill prevention and response training for all field personnel.
- Regular refresher courses on fuel handling, storage, and emergency response.
- Clear site-specific fueling procedures posted at fueling locations.

### Emergency Preparedness & Monitoring

- Spill kits stationed at key areas (trucks, refueling stations, camp equipment).
- Daily monitoring of fuel usage and storage levels to detect anomalies.
- Weather-dependent handling protocols to prevent spills in wet or windy conditions.

### Spill Response Organization

A chain of command is crucial for effective spill response. Below is a structured flow outlining response roles:

1. **First Responder (Crew Member)** → Identifies spill, stops source (if safe), and alerts crew leader.
2. **Crew Leader/Site Supervisor** → Assesses severity, initiates containment measures, and notifies Spill Coordinator (camp supervisor).
3. **On-Site Spill Response Coordinator** → Implements full response, contacts regulatory bodies, and oversees containment and cleanup.
4. **External Emergency Contacts** (Government of NWT (GNWT) Environmental Protection, First Nations Authorities, etc.) → Notified as required based on severity and location.

### Reporting in the event of spill

If a spill of reportable size (see Appendix B) has occurred, an NWT Spill Report needs to be filled out (see Appendix A). The information is available for the public to view upon request by contacting the NWT Spill Line or by viewing the GNWT Hazardous Materials Spills Database online at <https://www.gov.nt.ca/ecc/en/services/report-spill>

## Potential Spill Scenarios and Risks

To align with the INAC Guidelines for Spill Contingency Planning, the following table outlines potential spill scenarios, including estimated spill volumes, potential environmental impacts, and containment measures.

Table 3. Spill scenarios - examples

Spill Type	Potential Source	Worst-Case Volume	Environmental Impact	Containment & Mitigation Measures
Gasoline Tank	Tank rupture, hose failure	500L	Soil contamination, potential water infiltration	Use absorbents, deploy containment booms, excavate contaminated soil if necessary
Gasoline container	Jerry can spill, refueling mishandling	20L	Rapid evaporation, risk of fire/explosion	Immediate ignition control, absorbents, secure fuel storage practices
Aviation Fuel	Drum puncture, improper handling	159L	Water contamination, air toxicity risk	Use spill trays, absorbents, deploy booms if near water
Propane	Valve leak, mishandling	(gas release)	Fire/explosion risk, localized air contamination	Evacuate area, shut off valves, allow controlled venting
Calcium hydroxide	Powder Spill	50lbs	The pH of hydrated lime solutions is high. Danger to organisms.	Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container.

## Spill Response Action Plan

### Be Prepared for a Spill

- Know the location of the ERP, Spill Plan and the appropriate spill kit
- Have first aid supplies appropriate to the requirements on the Safety Data Sheet for the product you are using.
- If you must use a first aid kit or eye wash station, make sure that supplies are replaced as soon as practicable.
- Secure the use of a proper shop-vac with HEPA filter if using calcium hydroxide products.

## If a Spill Occurs

### Assess the hazards of the situation

- Do not take any action that puts you in danger, such as crossing traffic, or descending an embankment.
- Use precautions based on the spilled substance, does it require special PPE, is it flammable?
- Warn people in the immediate area
- Consult the Safety Data Sheet on what precautions are required when handling the specific product.

### Stop the flow of product

- Act quickly and use common sense
- Wear protective equipment including gloves, safety glasses, rubber boots, coveralls, etc.
- Shut off pumps, close valves, etc.
- Shut off ignition sources

### Stop work, notify supervisor

- Spill response takes priority over work tasks
- Certain work tasks may make the spill more serious or harder to control
- The supervisor may have other knowledge or resources to assist with.
- Take the cautionary measures such as enforcing “NO SMOKING” and extinguishing any flames
- To ensure timely and effective containment, the following estimated response times apply to different spill scenarios:

### Contain the Spill

- Block off drains, culverts, ditches
- Prevent spill from entering any water bodies
- Surround the spill with earth, peat, straw, sand, commercial absorbents, wood, vacuum (calcium hydroxide)

### Notification

- Report the spill to your project manager and/or supervisor first
- Project manager will notify the Spectrum Office and the client for spills between 5 and 100 litres
- Project Manager will notify the NWT 24-HourSpill Report Line at 867-920-8130 for **ANY spills greater than the Immediately Reportable Spill Quantities** – from INAC Guidelines for Spill Contingency Appendix B3 Immediately Reportable Spill Quantities

### **Obtain Assistance**

- Gather additional assistance from workers, RCMP, fire department, public workers, etc.

### **Recovery, Clean- up, Restorative Action**

- Remove the contaminated soil, rocks, vegetation, equipment or gear
- Clean up procedures, specifications and resources may be available from the client
- The Ministry of Environment or other agency may need to be referred to

### **Reporting**

- With the project manager, supervisor or client representative complete a detailed Incident Report
- Complete all forms required by the client or government agencies
- Submit copies of all forms to the SRG (Wright Canada Holdings Ltd.) Safety Department as soon as possible.

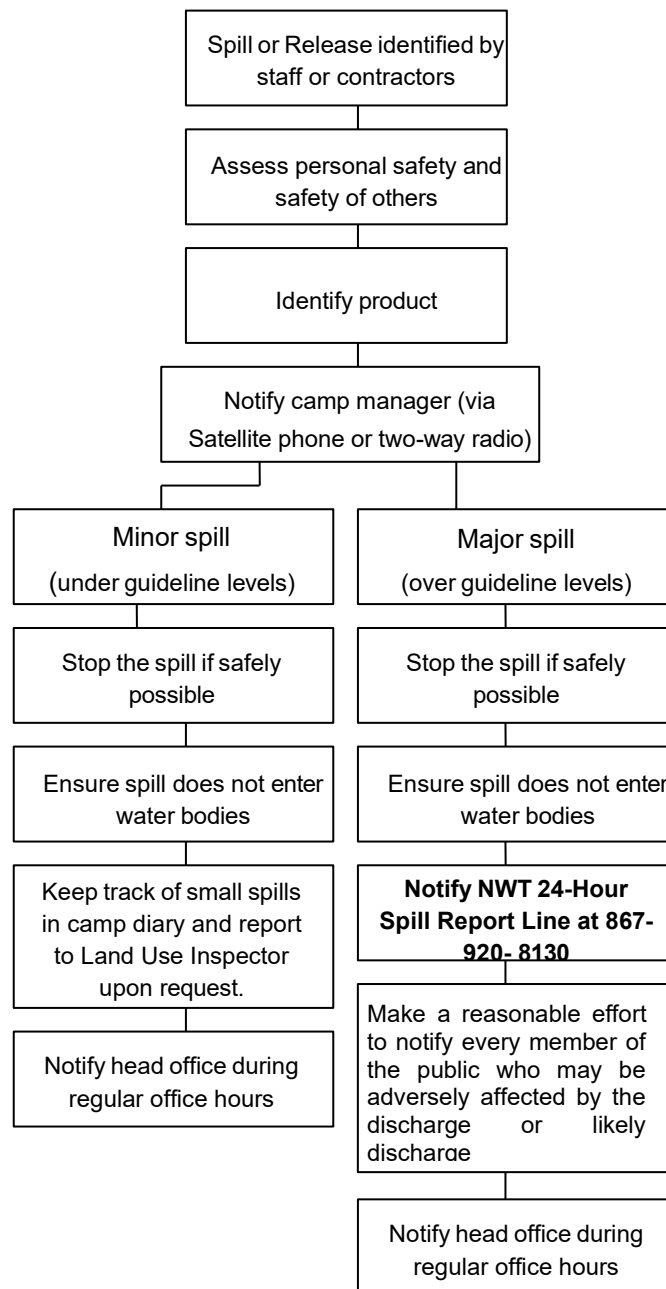


Figure 4. Flow chart of Spill Response

An immediately reportable spill is defined as a release of a substance that is likely to be an imminent environmental or human health hazard or meets or exceeds the volumes outlined in Appendix B. It must be reported to the NWT 24-Hour Spill Report Line at 867-920-8130. If there is any doubt that the quantity spilled exceeds reportable levels, the spill will be reported to the NWT 24-Hour Spill Report Line.



## Spill Response Equipment and Training

To enhance preparedness, all training sessions include post-training assessments to evaluate effectiveness. These assessments consist of:

- **Scenario-based spill drills** where participants are graded on response time and correct containment methods.
- **Written knowledge assessments** to ensure understanding of spill procedures and equipment use.
- **Performance reviews** where supervisors provide feedback and identify areas for improvement.

Assessment results are documented and used to refine future training sessions, ensuring continuous improvement in spill response capabilities.

Equipment Inventory (Available at Spill Response Stations):

- Absorbent pads
- Shovels, Pulaski tools, and containment bags
- Spill containment trays and secondary barriers
- PPE: Chemical-resistant gloves, safety glasses, coveralls

## Spill Reporting Contacts

Report spill immediately to the Project Manager, who will determine if spill is to be reported to the NWT 24- Hour Spill Line at 867-920-8130.

The spill kit, as well as Project Manager, will have copies of the NWT Spill Report form to be filled out (see Appendix A). Fill out and fax or email the Spill Report to the staff of the NWT 24-Hour Spill Line. Also fax or email the report to the head office.

NWT 24-Hour Spill Line Tel: 867-920-8130

NWT 24-Hour Spill Line Fax: 867-873-6924

NWT 24-Hour Spill Line Email: [spills@gov.nt.ca](mailto:spills@gov.nt.ca)

Tłı̄chq Government, Department of Culture and Lands Protection, Tel: 867-392-6381 ext. 1357

Head office, SRG., Tel: 250-564-0380

Head Office, LPTN, Tel: 778-679-6926

The Project Manager is responsible under the ENVIRONMENTAL PROTECTION ACT R.S.N.W.T. 1988, c.E-7, Section 5.1(c) to *“make a reasonable effort to notify every member of the public who may be adversely affected by the discharge or likely discharge”*.



Where a spill occurs on land the Project Manager shall make a reasonable effort to have the surrounding areas affected or potentially affected investigated and notify any member of the public occupying such an area.

Where a spill occurs on or near water the Project Manager shall make a reasonable effort to have the immediate water body and downstream water courses affected or potentially affected investigated and notify any member of the public occupying such areas.

## **Other Resources**

All the contacts listed below could reach the site in 2 hours at a minimum. However, realistically government officials would not be able to reach the site until the next business day, depending on the severity of the spill.

GNWT – Department of Lands Inspector 867-767-9188 or (c) 867-446-0769

Environment Canada (Emergency) Yellowknife 867-669-4730

National Environmental Emergencies Center (NEEC) 1-866-283-2333 add this agency and number

GNWT Environmental Protection Division 867-873-7654, 867-767-9236 ext. 53187

Email: [protectedareas@gov.nt.ca](mailto:protectedareas@gov.nt.ca)

GNWT Environmental Health Office 867-669-8979

RCMP (Yellowknife) 867-669-1111

Medivac (Yellowknife) 867-669-4115

Air Tindi (Yellowknife)

867-669-8218 or 669-8200

---

**This plan is reviewed annually to ensure compliance with evolving regulations and best practices.**

---





---

**Appendix A – Spill Report Form**

---

Example:

NT-NU Spill Report Form

				<b>NT-NU SPILL REPORT</b> OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS		<b>NT-NU 24-HOUR SPILL REPORT LINE</b> TEL: (867) 920-8130 FAX: (867) 873-6924 EMAIL: spills@gov.nt.ca	
<b>REPORT LINE USE ONLY</b>							
<b>A</b>	REPORT DATE: MONTH - DAY - YEAR			REPORT TIME		<input type="checkbox"/> ORIGINAL SPILL REPORT, OR <input type="checkbox"/> UPDATE # _____ TO THE ORIGINAL SPILL REPORT	<b>REPORT NUMBER</b> _____
	<b>B</b>	OCCURRENCE DATE: MONTH - DAY - YEAR			OCCURRENCE TIME		
<b>C</b>		LAND USE PERMIT NUMBER (IF APPLICABLE)			WATER LICENCE NUMBER (IF APPLICABLE)		
<b>D</b>	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION				REGION		
					<input type="checkbox"/> NWT <input type="checkbox"/> NUNAVUT <input type="checkbox"/> ADJACENT JURISDICTION OR OCEAN		
<b>E</b>	LATITUDE			LONGITUDE			
	DEGREES	MINUTES	SECONDS	DEGREES	MINUTES	SECONDS	
<b>F</b>	RESPONSIBLE PARTY OR VESSEL NAME			RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION			
<b>G</b>	ANY CONTRACTOR INVOLVED			CONTRACTOR ADDRESS OR OFFICE LOCATION			
<b>H</b>	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	
<b>I</b>	SPILL SOURCE			SPILL CAUSE		AREA OF CONTAMINATION IN SQUARE METRES	
<b>J</b>	FACTORS AFFECTING SPILL OR RECOVERY			DESCRIBE ANY ASSISTANCE REQUIRED		HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT	
<b>K</b>	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS						
<b>L</b>	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE		
	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE		
<b>REPORT LINE USE ONLY</b>							
<b>N</b>	RECEIVED AT SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLED	REPORT LINE NUMBER		
		STATION OPERATOR		YELLOWKNIFE, NT	(867) 920-8130		
LEAD AGENCY <input type="checkbox"/> EC <input type="checkbox"/> CCG <input type="checkbox"/> GNWT <input type="checkbox"/> GN <input type="checkbox"/> ILA <input type="checkbox"/> INAC <input type="checkbox"/> NEB <input type="checkbox"/> TC				SIGNIFICANCE <input type="checkbox"/> MINOR <input type="checkbox"/> MAJOR <input type="checkbox"/> UNKNOWN		FILE STATUS <input type="checkbox"/> OPEN <input type="checkbox"/> CLOSED	
AGENCY	CONTACT NAME		CONTACT TIME		REMARKS		
LEAD AGENCY							
FIRST SUPPORT AGENCY							
SECOND SUPPORT AGENCY							
THRD SUPPORT AGENCY							

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

This form can be filled out electronically and faxed to the spill line at 867-873-6924. Commencing on January 2, 2007, the form can also be e-mailed as an attachment to [spills@gov.nt.ca](mailto:spills@gov.nt.ca). Until further notice, please verify receipt of e-mail transmissions with a follow-up telephone call. Spills can still be phoned in by calling collect at 867-920-8130.

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



---

## Appendix B – Reportable Spill Quantities

---

## Immediately Reportable Spill Quantities

TDG Class	Substance for NWT 24 Hour Spill Line	Immediately Reportable Quantities
1 2.3 2.4 6.2 7 None	Explosives Compressed gas (toxic) Compressed gas (corrosive) Infectious substances Radioactive Unknown substance	Any amount
2.1 2.2	Compressed gas (flammable) Compressed gas (non-corrosive, non-flammable)	Any amount of gas from containers with a capacity greater than 100 L
3.1 3.2 3.3	Flammable liquids	> 100 L
4.1 4.2 4.3	Flammable solids Spontaneously combustible solids Water reactant	> 25 kg
5.1 9.1	Oxidizing substances Miscellaneous products or substances excluding PCB mixtures	> 50 L or 50 kg
5.2 9.2	Organic peroxides Environmentally hazardous	> 1 L or 1 kg
6.1 8 9.3	Poisonous substances Corrosive substances Dangerous wastes	> 5 L or 5 kg
9.1	PCB mixtures of 5 or more ppm	> 0.5 L or 0.5 kg
None	Other contaminants (e.g. crude oil, drilling fluid, produced water, waste or spent chemicals, used or waste oil, vehicle fluids, waste water, etc.)	> 100 L or 100 kg
None	Sour natural gas (i.e. contains H <sub>2</sub> S) Sweet natural gas	Uncontrolled release or sustained flow of 10 minutes or more

In addition, all releases of harmful substances, regardless of quantity, are to be reported to the NWT spill line if the release is near or into a water body, is near or into a designated sensitive environment or sensitive wildlife habitat, poses imminent threat to human health or safety, poses imminent threat to a listed species at risk or its critical habitat, or is uncontrollable.



---

## Appendix C – Safety Data Sheets

---



# Safety Data Sheet



## SECTION 1 CHEMICAL IDENTIFIER AND COMPANY IDENTIFICATION

### Chevron and Texaco Unleaded Gasolines (All Grades)

**Recommended Use of the Chemical and Restrictions on Use:** Fuel

**Synonyms:** Automotive; Calco Mid-Grade Unleaded Gasoline; Calco Premium Gasoline; Calco Regular Unleaded Gasoline; CHEVRON and TEXACO MID-GRADE UNLEADED GASOLINES; CHEVRON and TEXACO PREMIUM UNLEADED GASOLINES; CHEVRON and TEXACO REGULAR UNLEADED GASOLINES; Chevron Mid-Grade Unleaded Gasoline; Chevron Plus Unleaded Gasoline; Chevron Premium Unleaded Gasoline; Chevron Regular Unleaded Gasoline; Chevron Supreme Plus Unleaded Gasoline; Chevron Supreme Unleaded Gasoline; Chevron UL/CQ Gasoline; GASOLINE (GENERIC); Gasolines; Texaco Power Plus Gasoline; Texaco Power Premium Unleaded Gasoline; Texaco Unleaded Gasoline; UNLEADED GASOLINE FOR EXPORT

#### Company Identification

Chevron Products Company  
5001 Executive Parkway, Suite 200  
San Ramon, CA 94583  
United States of America

#### Transportation Emergency Response

CHEMTREC: (800) 424-9300 or (703) 527-3887

#### Health Emergency

Chevron Emergency & Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623

#### Product Information

Product Information: (800) 582-3835  
SDS Requests: [lubemsds@chevron.com](mailto:lubemsds@chevron.com)

SPECIAL NOTES: This SDS applies to: all motor gasoline.

## SECTION 2 HAZARDS IDENTIFICATION

#### CLASSIFICATION:

- Flammable liquid: Category 1.
- Aspiration toxicant: Category 1.
- Carcinogen: Category 1B.
- Eye irritation: Category 2A.
- Germ Cell Mutagen: Category 1B.
- Reproductive toxicant (developmental): Category 2.
- Skin irritation: Category 2.
- Target organ toxicant (central nervous system): Category 3.
- Target organ toxicant (repeated exposure): Category 2.
- Acute aquatic toxicant: Category 2.
- Chronic aquatic toxicant: Category 2.



**Signal Word:** Danger

**Physical Hazards:**

- Extremely flammable liquid and vapour (H224).

**Health Hazards:**

- May be fatal if swallowed and enters airways (H304).
- Causes skin irritation (H315).
- Causes serious eye irritation (H319).
- May cause drowsiness or dizziness (H336).
- May cause genetic defects (H340).
- May cause cancer (H350).
- Suspected of damaging the unborn child (H361D).
- May cause damage to organs (Blood/Blood Forming Organs) through prolonged or repeated exposure (H373).

**Environmental Hazards:**

- Toxic to aquatic life with long lasting effects (H411).

**PRECAUTIONARY STATEMENTS:**

**General:**

- Keep out of reach of children (P102).
- Read label before use (P103).

**Prevention:**

- Obtain special instructions before use (P201).
- Do not handle until all safety precautions have been read and understood (P202).
- Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking (P210).
- Keep container tightly closed (P233).
- Keep cool (P235).
- Ground and bond container and receiving equipment (P240).
- Use explosion-proof electrical/ventilating/lighting/equipment (P241).
- Use non-sparking tools (P242).
- Take action to prevent static discharge (P243).
- Do not breathe dust/fume/gas/mist/vapours/spray (P260).
- Wash thoroughly after handling (P264).
- Use only outdoors or in a well-ventilated area (P271).
- Avoid release to the environment (P273).
- Wear protective gloves/protective clothing/eye protection/face protection (P280).

**Response:**

- IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician (P301+P310).
- IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower (P303+P361+P353).
- IF INHALED: Remove person to fresh air and keep comfortable for breathing (P304+P340).
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing (P305+P351+P338).
- IF exposed or concerned: Get medical advice/attention (P308+P313).
- Specific treatment (see Notes to Physician on this label) (P321).
- Do NOT induce vomiting (P331).
- If skin irritation occurs: Get medical advice/attention (P332+P313).

- If eye irritation persists: Get medical advice/attention (P337+P313).
- Wash contaminated clothing before reuse (P363).
- In case of fire: Use media specified in the SDS to extinguish (P370+P378).
- Collect spillage (P391).

**Storage:**

- Store in a well-ventilated place. Keep container tightly closed (P403+P233).
- Store locked up (P405).

**Disposal:**

- Dispose of contents/container in accordance with applicable local/regional/national/international regulations (P501).

**SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS**

This material is a mixture.

COMPONENTS	CAS NUMBER	AMOUNT
Gasoline	86290-81-5	100 %volume
Toluene	108-88-3	1 - 35 %volume
Pentane, 2,2,4-trimethyl-	540-84-1	10 - 15 %volume
Xylene	1330-20-7	1 - 15 %volume
Trimethylbenzene (3 isomers: 1,2,3-; 1,2,4-; 1,3,5-isomer)	25551-13-7	5 - 10 %volume
Pentane isomers (pentanes)	Mixture	1 - 13 %volume
Butane	106-97-8	1 - 12 %volume
Ethanol	64-17-5	0 - 10 %volume
Hexane	110-54-3	1 - 5 %volume
Benzene	71-43-2	0.1 - 5 %volume
Heptane	142-82-5	1 - 4 %volume
Cyclohexane	110-82-7	1 - 3 %volume
Ethylbenzene	100-41-4	0.1 - 3 %volume
Methylcyclohexane	108-87-2	1 - 2 %volume
Naphthalene	91-20-3	0.1 - 2 %volume

Motor gasoline is considered a mixture by EPA under the Toxic Substances Control Act (TSCA). The refinery streams used to blend motor gasoline are all on the TSCA Chemical Substances Inventory. The appropriate CAS number for refinery blended motor gasoline is 86290-81-5. The product specifications of motor gasoline sold in your area will depend on applicable Federal and State regulations.

**SECTION 4 FIRST AID MEASURES**

**Eye:** Flush eyes with water immediately while holding the eyelids open. Remove contact lenses, if worn, after initial flushing, and continue flushing for at least 15 minutes. Get immediate medical attention.

**Skin:** Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

**Ingestion:** If swallowed, get immediate medical attention. Do not induce vomiting. Never give anything by mouth to an unconscious person.

**Inhalation:** Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue or if any other symptoms develop.

**Note to Physicians:** Ingestion of this product or subsequent vomiting may result in aspiration of light hydrocarbon liquid, which may cause pneumonitis.

## SECTION 5 FIRE FIGHTING MEASURES

**EXTINGUISHING MEDIA:** Dry Chemical, CO<sub>2</sub>, Aqueous Film Forming Foam (AFFF) or alcohol resistant foam.

**Unusual Fire Hazards:** See Section 7 for proper handling and storage.

**UNSUITABLE EXTINGUISHING MEDIA:** No data available

### PROTECTION OF FIRE FIGHTERS:

**Fire Fighting Instructions:** For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

**Combustion Products:** Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

## SECTION 6 ACCIDENTAL RELEASE MEASURES

### Personal Precautions, Protective Equipment, and Emergency Procedures:

Eliminate all sources of ignition in the vicinity of the spill or released vapor. If this material is released into the work area, evacuate the area immediately. Monitor area with combustible gas indicator.

### Environmental Precautions:

Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater.

### Methods and Material For Containment and Cleaning Up:

Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

### Reporting:

Report spills to local authorities as appropriate or required.

## SECTION 7 HANDLING AND STORAGE PRECAUTIONS

**General Handling Information:** Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

**Precautionary Measures:** This product presents an extreme fire hazard. Liquid very quickly evaporates, even at low temperatures, and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Never siphon gasoline by mouth.

Do not store in open or unlabeled containers. READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL. Use only as a motor fuel. Do not use for cleaning, pressure appliance fuel, or any other such use. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Do not breathe vapor or fumes. Wash thoroughly after handling. Keep out of the reach of children.

**Static Hazard:** Improper filling of portable gasoline containers creates danger of fire. Only dispense gasoline into approved and properly labeled gasoline containers. Always place portable containers on the ground. Be sure pump nozzle is in contact with the container while filling. Do not use a nozzle's lock-open device. Do not fill portable containers that are inside a vehicle or truck/trailer bed.

Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.

**Container Warnings:** Container is not designed to contain pressure. Do not use pressure to empty

container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

**General Storage Information:** DO NOT USE OR STORE near heat, sparks, flames, or hot surfaces . USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.

## SECTION 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

### GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the workplace when designing engineering controls and selecting personal protective equipment (PPE). If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, refer to PPE information below.

Factors that affect PPE include, but are not limited to: properties of the chemical, other chemicals which may contact the same PPE, physical requirements (fit & sizing, cut/puncture protection, dexterity, thermal protection, etc.), and potential allergic reactions to the PPE material. It is the responsibility of the user to read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances. Refer to appropriate CEN standards.

### ENGINEERING CONTROLS:

Use general ventilation, local exhaust ventilation, or a combination of both.

### PERSONAL PROTECTIVE EQUIPMENT

**Eye/Face Protection:** Wear protective equipment to prevent eye contact. Selection of protective equipment may include safety glasses, chemical goggles, face shields, or a combination depending on the work operations conducted.

**Skin Protection:** Wear chemical personal protective equipment (PPE) to prevent skin contact. Selection of chemical protective clothing should be performed by an Occupational Hygienist or Safety Professional and be based upon applicable standards (ASTM F739 or EN 374). Using chemical PPE depends upon operations conducted and may include chemical gloves, boots, chemical apron, chemical suit, and complete facial protection. Refer to PPE manufacturers to obtain breakthrough time information to determine how long PPE can be used before it needs to be replaced. Unless specific glove manufacturer data indicates otherwise, the below table is based upon available industry data to assist in the glove selection process and is intended to be used as reference only.

Chemical Glove Material	Thickness (mm)	Typical Breakthrough Time (minutes)
Butyl	0.7	7
Neoprene	0.61	7
Nitrile	0.8	60
Nitrile	0.23	2
Polyvinyl Chloride (PVC)	1.1	2
Viton Butyl	0.3	120

**Respiratory Protection:** Determine if airborne concentrations are below the recommended occupational exposure limits for jurisdiction of use. If airborne concentrations are above the acceptable limits, wear an approved respirator that provides adequate protection from this material, such as: Air-Purifying Respirator for Organic Vapors. When used as a fuel, this material can produce carbon monoxide in the exhaust. Determine if airborne concentrations are below the occupational exposure limit for carbon

monoxide. If not, wear an approved positive-pressure air-supplying respirator. Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

**Occupational Exposure Limits:**

Component	Country/ Agency	Form	TWA	STEL	Ceiling	Notation
Gasoline	ACGIH	Vapor	300 ppm	500 ppm	--	A3
Gasoline	ACGIH	--	300 ppm	500 ppm	--	--
Toluene	ACGIH	--	20 ppm	--	--	--
Toluene	JSOH	--	188 mg/m3	--	--	Skin
Pentane, 2,2,4-trimethyl-	ACGIH	--	300 ppm	--	--	--
Pentane, 2,2,4-trimethyl-	JSOH	--	1400 mg/m3	--	--	--
Xylene	ACGIH	--	20 ppm	--	--	--
Xylene	JSOH	--	217 mg/m3	--	--	--
Trimethylbenzene (3 isomers: 1,2,3-; 1,2,4-; 1,3,5- isomer)	ACGIH	--	10 ppm	--	--	--
Butane	ACGIH	--	--	1000 ppm	--	--
Butane	JSOH	--	1200 mg/m3	--	--	--
Ethanol	ACGIH	--	1000 ppm	1000 ppm	--	A4
Hexane	ACGIH	--	50 ppm	--	--	Skin
Hexane	JSOH	--	140 mg/m3	--	--	Skin
Benzene	ACGIH	Vapor	0.50 ppm	2.50 ppm	--	--
Benzene	ACGIH	--	0.05 ppm	2.50 ppm	--	Skin
Benzene	CVX	Vapor	0.50 ppm	2.50 ppm	--	--
Heptane	ACGIH	--	400 ppm	500 ppm	--	--
Heptane	JSOH	--	820 mg/m3	--	--	--
Cyclohexane	ACGIH	--	100 ppm	--	--	--
Cyclohexane	JSOH	--	520 mg/m3	--	--	--
Ethylbenzene	ACGIH	Vapor	100 ppm	--	--	--
Ethylbenzene	ACGIH	--	20 ppm	--	--	--
Ethylbenzene	JSOH	--	87 mg/m3	--	--	Skin
Methylcyclohexane	ACGIH	--	400 ppm	--	--	--
Methylcyclohexane	JSOH	--	1600 mg/m3	--	--	--
Naphthalene	ACGIH	Vapor	10 ppm	15 ppm	--	A4 Skin
Naphthalene	ACGIH	--	10 ppm	--	--	Skin

Consult local authorities for appropriate values.

**SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES**

**Attention: the data below are typical values and do not constitute a specification.**

**Color:** Colorless to yellow

**Physical State:** Liquid

**Odor:** Petroleum odor

**Odor Threshold:** No data available

**pH:** Not Applicable

**Vapor Pressure:** 5 psi - 15.50 psi (Typical) @ 37.8 °C (100 °F)

**Relative Vapor Density:** 3 - 4 (Typical)

**Particle Characteristics:** No data available

**Boiling Point:** 27.2°C (81°F) - 52.8°C (127°F) (Typical)

**Solubility:** Negligible  
**Freezing Point:** Not Applicable  
**Melting Point:** Not Applicable  
**Specific Gravity:** 0.70 g/ml - 0.80 g/ml @ 15.6°C (60.1°F) (Typical)  
**Density:** No data available  
**Viscosity:** <1 SUS @ 37.8°C (100°F)  
**Evaporation Rate:** No data available  
**n-Octanol/Water Partition Coefficient:** 2 - 7  
**Combustion Characteristics (Solids/Gases):** No data available  
**Decomposition Temperature:** No data available  
**Boiling Range:** No data available

#### **FLAMMABLE PROPERTIES:**

**Flashpoint:** (Tagliabue Closed Cup ASTM D56) < -45 °C (< -49 °F)

**Autoignition:** > 280 °C (> 536 °F)

**Flammability (solid, gas):** Not Applicable

**Flammability (Explosive) Limits (% by volume in air):** Lower: 1.4 Upper: 7.6

### **SECTION 10 STABILITY AND REACTIVITY**

**Reactivity:** May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

**Chemical Stability:** This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

**Incompatibility With Other Materials:** Not applicable

**Hazardous Decomposition Products:** None known (None expected)

**Hazardous Polymerization:** Hazardous polymerization will not occur.

### **SECTION 11 HAZARD INFORMATION**

#### **IMMEDIATE HEALTH EFFECTS**

**Eye:** Contact with the eyes causes severe irritation. Symptoms may include pain, tearing, reddening, swelling and impaired vision.

**Eye Irritation:** This material causes serious eye irritation. The product has not been tested. The statement is based on evaluation of data for product components.

**Skin:** Contact with the skin causes irritation. Skin contact may cause drying or defatting of the skin. Symptoms may include pain, itching, discoloration, swelling, and blistering. Contact with the skin is not expected to cause an allergic skin response.

**Acute Dermal Toxicity:** LD50: >3.75 g/kg (rabbit).

**Skin Irritation:** For a 4-hour exposure, the Primary Irritation Index (PII) in rabbits is: 4.8/8.0.

**Skin Sensitization:** This material did not cause skin sensitization reactions in a Buehler guinea pig test.

**Ingestion:** Highly toxic; may be fatal if swallowed. Because of its low viscosity, this material can directly enter the lungs, if swallowed, or if subsequently vomited. Once in the lungs it is very difficult to remove and can cause severe injury or death. May be irritating to mouth, throat, and stomach. Symptoms may include pain, nausea, vomiting, and diarrhea.

**Acute Oral Toxicity:** LD50: >5 ml/kg (rat).

**Inhalation:** Excessive or prolonged breathing of this material may cause central nervous system effects. Central nervous system effects may include headache, dizziness, nausea, vomiting, weakness, loss of coordination, blurred vision, drowsiness, confusion, or disorientation. At extreme exposures, central nervous system effects may include respiratory depression, tremors or convulsions, loss of

consciousness, coma or death.

**Acute Inhalation Toxicity:** 4 hour(s) LD50: >20000 mg/m<sup>3</sup> (rat).

**Acute Toxicity Estimate:** Not Determined

**DELAYED OR OTHER HEALTH EFFECTS:**

**Reproductive Toxicity:** Contains material that may cause harm to the unborn child if inhaled above the recommended exposure limit. This material is suspected of damaging the unborn child. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

**Carcinogenicity:** Prolonged or repeated exposure to this material may cause cancer. Gasoline has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Whole gasoline exhaust has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains benzene, which has been classified as a carcinogen by the National Toxicology Program (NTP) and a Group 1 carcinogen (carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains naphthalene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Contains ethylbenzene which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

This material may cause cancer. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

**Germ Cell Mutagenicity:** This material may cause genetic defects. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

**Target Organs:** Contains material that may cause damage to the following organ(s) following repeated inhalation at concentrations above the recommended exposure limit: Blood/Blood Forming Organs

**Specific Target Organ Toxicity - Single Exposure:** This material may cause drowsiness or dizziness. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

**Specific Target Organ Toxicity - Repeated Exposure:** This material may cause damage to organs through prolonged or repeated exposure. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

**Aspiration Hazard:** This material is considered an aspiration hazard based on the kinematic viscosity of the material.

**ADDITIONAL TOXICOLOGY INFORMATION:**

This product contains naphthalene.

**GENERAL TOXICITY:** Exposure to naphthalene has been reported to cause methemoglobinemia and/or hemolytic anemia, especially in humans deficient in the enzyme glucose-6-phosphate dehydrogenase.

Laboratory animals given repeated oral doses of naphthalene have developed cataracts.

**REPRODUCTIVE TOXICITY AND BIRTH DEFECTS:** Naphthalene did not cause birth defects when administered orally to rabbits, rats, and mice during pregnancy, but slightly reduced litter size in mice at dose levels that were lethal to the pregnant females. Naphthalene has been reported to cross the human placenta.

**GENETIC TOXICITY:** Naphthalene caused chromosome aberrations and sister chromatid exchanges in Chinese hamster ovary cells, but was not a mutagen in several other in-vitro tests.

**CARCINOGENICITY:** In a study conducted by the National Toxicology Program (NTP), mice exposed to 10 or 30 ppm of naphthalene by inhalation daily for two years had chronic inflammation of the nose and lungs and increased incidences of metaplasia in those tissues. The incidence of benign lung tumors (alveolar/bronchiolar adenomas) was significantly increased in the high-dose female group but not in the male groups. In another two-year inhalation study conducted by NTP, exposure of rats to 10, 30,



and 60 ppm naphthalene caused increases in the incidences of a variety of nonneoplastic lesions in the nose. Increases in nasal tumors were seen in both sexes, including olfactory neuroblastomas in females at 60 ppm and adenomas of the respiratory epithelium in males at all exposure levels. The relevance of these effects to humans has not been established. No carcinogenic effect was reported in a 2-year feeding study in rats receiving naphthalene at 41 mg/kg/day.

This product contains cyclohexane.

Cyclohexane primarily affects the central nervous systems of laboratory animals and humans. Acute or prolonged inhalation of cyclohexane at levels below the recommended exposure limits does not result in toxic effects while acute exposures to levels above these recommended limits can cause reversible central nervous system depression. Prolonged exposures of laboratory animals to high levels (up to low thousands of parts per million) have also caused reversible effects which included hyperactivity, diminished response to stimuli, and adaptive liver changes while very high levels (high thousands of parts per million) were fatal. No developmental effects were seen in rats or rabbits following exposures of up to 7000 ppm cyclohexane. No reproductive effects occurred in rats, although postnatal pup growth was reduced at 7000 ppm in a similar manner as observed in the parental animals. Cyclohexane has not been shown to be mutagenic in several in vitro and in vivo assays and has not produced tumors in several dermal application long-term bioassays. Based on these results and the lack of any mutagenic or genotoxic metabolites, cyclohexane is not expected to be mutagenic or genotoxic. Following dermal exposure, cyclohexane is rapidly absorbed, metabolized, and excreted.

This product contains butane.

An atmospheric concentration of 100,000 ppm (10%) butane is not noticeably irritating to the eyes, nose or respiratory tract, but will produce slight dizziness in a few minutes of exposure. No chronic systemic effect has been reported from occupational exposure.

This product contains benzene.

**GENETIC TOXICITY/CANCER:** Repeated or prolonged breathing of benzene vapor has been associated with the development of chromosomal damage in experimental animals and various blood diseases in humans ranging from aplastic anemia to leukemia (a form of cancer). All of these diseases can be fatal. In some individuals, benzene exposure can sensitize cardiac tissue to epinephrine which may precipitate fatal ventricular fibrillation.

**REPRODUCTIVE/DEVELOPMENTAL TOXICITY:** No birth defects have been shown to occur in pregnant laboratory animals exposed to doses not toxic to the mother. However, some evidence of fetal toxicity such as delayed physical development has been seen at such levels. The available information on the effects of benzene on human pregnancies is inadequate but it has been established that benzene can cross the human placenta.

**OCCUPATIONAL:** The OSHA Benzene Standard (29 CFR 1910.1028) contains detailed requirements for training, exposure monitoring, respiratory protection and medical surveillance triggered by the exposure level. Refer to the OSHA Standard before using this product.

This product contains n-hexane.

**TARGET ORGAN TOXICITY:** Prolonged or repeated ingestion, skin contact or breathing of vapors of n-hexane has been shown to cause peripheral neuropathy. Recovery ranges from no recovery to complete recovery depending upon the severity of the nerve damage. Exposure to 1000 ppm n-hexane for 18 hr/day for 61 days has been shown to cause testicular damage in rats. However, when rats were exposed to higher concentrations for shorter daily periods (10,000 ppm for 6 h/day, 5 days/wk for 13 weeks), no testicular lesions were seen.

**CARCINOGENICITY:** Chronic exposure to commercial hexane (52% n-hexane) at a concentration of 9000ppm was not carcinogenic to rats or to male mice, but did result in an increased incidence of liver tumors in female mice. No carcinogenic effects were observed in female mice exposed to 900 or 3000 ppm hexane or in male mice. The relevance for humans of these hexane-induced mouse liver tumors is questionable.

**GENETIC TOXICITY:** n-Hexane caused chromosome aberrations in bone marrow of rats, but was

negative in the AMES and mouse lymphoma tests.

This product contains ethanol (ethyl alcohol).

Chronic ingestion of ethanol can damage the liver, nervous system and heart. Chronic heavy consumption of alcoholic beverages has been associated with an increased risk of cancer. Ingestion of ethanol during pregnancy can cause human birth defects such as fetal alcohol syndrome.

Gasolines are highly volatile and can produce significant concentrations of vapor at ambient temperatures. Gasoline vapor is heavier than air and at high concentrations may accumulate in confined spaces to present both safety and health hazards. When vapor exposures are low, or short duration and infrequent, such as during refueling and tanker loading/unloading, neither total hydrocarbon nor components such as benzene are likely to result in any adverse health effects. In situations such as accidents or spills where exposure to gasoline vapor is potentially high, attention should be paid to potential toxic effects of specific components. Information about specific components in gasoline can be found in Sections 2/3, 8 and 15 of this SDS. More detailed information on the health hazards of specific gasoline components can be obtained calling the Chevron Emergency Information Center (see Section 1 for phone numbers).

Pathological misuse of solvents and gasoline, involving repeated and prolonged exposure to high concentrations of vapor is a significant exposure on which there are many reports in the medical literature. As with other solvents, persistent abuse involving repeated and prolonged exposures to high concentrations of vapor has been reported to result in central nervous system damage and eventually, death. In a study in which ten human volunteers were exposed for 30 minutes to approximately 200, 500 or 1000 ppm concentrations of gasoline vapor, irritation of the eyes was the only significant effect observed, based on both subjective and objective assessments.

Lifetime inhalation of wholly vaporized unleaded gasoline at 2056 ppm has caused increased liver tumors in female mice and kidney cancer in male rats. In their 1988 review of carcinogenic risk from gasoline, The International Agency for Research on Cancer (IARC) noted that, because published epidemiology studies did not include any exposure data, only occupations where gasoline exposure may have occurred were reviewed. These included gasoline service station attendants and automobile mechanics. IARC also noted that there was no opportunity to separate effects of combustion products from those of gasoline itself. Although IARC allocated gasoline a final overall classification of Group 2B, i.e. possibly carcinogenic to humans, this was based on limited evidence in experimental animals plus supporting evidence including the presence in gasoline of benzene. The actual evidence for carcinogenicity in humans was considered inadequate.

**MUTAGENICITY:** Gasoline was not mutagenic, with or without activation, in the Ames assay (*Salmonella typhimurium*), *Saccharomyces cerevisiae*, or mouse lymphoma assays. In addition, point mutations were not induced in human lymphocytes. Gasoline was not mutagenic when tested in the mouse dominant lethal assay. Administration of gasoline to rats did not cause chromosomal aberrations in their bone marrow cells. **EPIDEMIOLOGY:** To explore the health effects of workers potentially exposed to gasoline vapors in the marketing and distribution sectors of the petroleum industry, the American Petroleum Institute sponsored a cohort mortality study (Publication 4555), a nested case-control study (Publication 4551), and an exposure assessment study (Publication 4552). Histories of exposure to gasoline were reconstructed for cohort of more than 18,000 employees from four companies for the time period between 1946 and 1985. The results of the cohort mortality study indicated that there was no increased mortality from either kidney cancer or leukemia among marketing and marine distribution employees who were exposed to gasoline in the petroleum industry, when compared to the general population. More importantly, based on internal comparisons, there was no association between mortality from kidney cancer or leukemia and various indices of gasoline exposure. In particular, neither duration of employment, duration of exposure, age at first exposure, year of first exposure, job category, cumulative exposure, frequency of peak exposure, nor average intensity of exposure had any effect on kidney cancer or leukemia mortality. The results of the nested case-control study confirmed the findings of the original cohort study. That is, exposure to gasoline at the levels experienced by this cohort of distribution workers is not a significant risk factor for leukemia (all cell types), acute myeloid leukemia, kidney cancer or multiple myeloma.

This product contains ethylbenzene.

**BIRTH DEFECTS AND REPRODUCTION:** Ethylbenzene is not expected to cause birth defects or other developmental effects based on well-conducted studies in rabbits and rats sponsored by NIOSH. Other studies in rats and mice which reported urinary tract malformations have many deficiencies and have limited usefulness in evaluating human risk. Reproductive effects are not expected based on a NIOSH study of fertility, and lack of effects observed for sperm counts and motility, estrous cycle and pathology of reproductive organs following repeated exposures. **HEARING:** Statistically significant losses in outer hair cells (OHCs) were observed in rats exposed to  $\geq 200$  ppm ethylbenzene, 6 hours/day, 6 days/week for 13 weeks, after an 8-week recovery period. Following longer exposure, inner hair cells losses were also observed in rats exposed to  $\geq 600$  ppm ethylbenzene, but only occasionally in rats exposed to 400 ppm. The Lowest Observed Adverse Effect Level in rats (LOAEL) was 200 ppm for losses of OHCs. Guinea pigs exposed to ethylbenzene at 2,500 ppm, 6 hours/day for 5 days did not show auditory deficits or losses in OHCs. The concentration of ethylbenzene used in the JP-8 study was approximately 10 ppm. **GENETIC TOXICITY:** Ethylbenzene tested negative in the bacterial mutation test, Chinese Hamster Ovary (CHO) cell in vitro assay, sister chromatid exchange assay and an unscheduled DNA synthesis assay. Conflicting results have been reported for the mouse lymphoma cell assay. Increased micronuclei were reported in an in vitro Syrian hamster embryo cell assay; however, two in vivo micronuclei studies in mice were negative. In Syrian hamster embryo cells in vitro, cell transformation was observed at 7 days of incubation but not at 24 hours. Based on these results, ethylbenzene is not expected to be mutagenic or clastogenic. **CARCINOGENICITY:** In studies conducted by the National Toxicology Program, rats and mice were exposed to ethylbenzene at 25, 250 and 750 ppm for six hours per day, five days per week for 103 weeks. In rats exposed to 750 ppm, the incidence of kidney tubule hyperplasia and tumors was increased. Testicular tumors develop spontaneously in nearly all rats if allowed to complete their natural life span; in this study, the development of these tumors appeared to be enhanced in male rats exposed to 750 ppm. In mice, the incidences of lung tumors in males and liver tumors in females exposed to 750 ppm were increased as compared to control mice but were within the range of incidences observed historically in control mice. Other liver effects were observed in male mice exposed to 250 and 750 ppm. The incidences of hyperplasia were increased in the pituitary gland in female mice at 250 and 750 ppm and in the thyroid in male and female mice at 750 ppm.

This product contains toluene.

**GENERAL TOXICITY:** The primary effects of exposure to toluene in animals and humans are on the central nervous system. Solvent abusers, who typically inhale high concentrations (thousands of ppm) for brief periods of time, in addition to experiencing respiratory tract irritation, often suffer permanent central nervous system effects that include tremors, staggered gait, impaired speech, hearing and vision loss, and changes in brain tissue. Death in some solvent abusers has been attributed to cardiac arrhythmias, which appear to have been triggered by epinephrine acting on solvent sensitized cardiac tissue. Although liver and kidney effects have been seen in some solvent abusers, results of animal testing with toluene do not support these as primary target organs.

**HEARING:** Humans who were occupationally exposed to concentrations of toluene as low as 100 ppm for long periods of time have experienced hearing deficits. Hearing loss, as demonstrated using behavioral and electrophysiological testing as well as by observation of structural damage to cochlear hair cells, occurred in experimental animals exposed to toluene. It also appears that toluene exposure and noise may interact to produce hearing deficits.

**COLOR VISION:** In a single study of workers exposed to toluene at levels under 50 ppm, small decreases in the ability to discriminate colors in the blue-yellow range have been reported for female workers. This effect, which should be investigated further, is very subtle and would not likely have been noticed by the people tested.

**REPRODUCTIVE/DEVELOPMENTAL TOXICITY:** Toluene may also cause mental and/or growth retardation in the children of female solvent abusers who directly inhale toluene (usually at thousands of ppm) when they are pregnant. Toluene caused growth retardation in rats and rabbits when administered at doses that were toxic to the mothers. In rats, concentrations of up to 5000 ppm did not cause birth defects. No effects were observed in the offspring at doses that did not intoxicate the pregnant animals. The exposure level at which no effects were seen (No Observed Effect Level, NOEL) is 750 ppm in the

rat and 500 ppm in the rabbit.

This product contains xylene.

**ACUTE TOXICITY:** The primary effects of exposure to xylene in animals and humans are on the central nervous system. In addition, in some individuals, xylene exposure can sensitize cardiac tissue to epinephrine which may precipitate fatal ventricular fibrillation. **DEVELOPMENTAL TOXICITY:** Xylene has been reported to cause developmental toxicity in rats and mice exposed by inhalation during pregnancy. The effects noted consisted of delayed development and minor skeletal variations. In addition, when pregnant mice were exposed by ingestion to a level that killed nearly one-third of the test group, lethality (resorptions) and malformations (primarily cleft palate) occurred. Since xylene can cross the placenta, it may be appropriate to prevent exposure during pregnancy. **GENETIC TOXICITY/CARCINOGENICITY:** Xylene was not genotoxic in several mutagenicity testing assays including the Ames test. In a cancer study sponsored by the National Toxicology Program (NTP), technical grade xylene gave no evidence of carcinogenicity in rats or mice dosed daily for two years. **HEARING:** Mixed xylenes have been shown to cause measurable hearing loss in rats exposed to 800 ppm in the air for 14 hours per day for six weeks. Exposure to 1450 ppm xylene for 8 hours caused hearing loss while exposure to 1700 ppm for 4 hours did not. Although no information is available for lower concentrations, other chemicals that cause hearing loss in rats at relatively high concentrations do not cause hearing loss in rats at low concentrations. Worker exposure to xylenes at the permissible exposure limit (100 ppm, time-weighted average) is not expected to cause hearing loss.

## **SECTION 12 ECOLOGICAL INFORMATION**

### **ECOTOXICITY**

Gasoline studies have been conducted in the laboratory under a variety of test conditions with a range of fish and invertebrate species. An even more extensive database is available on the aquatic toxicity of individual aromatic constituents. The majority of published studies do not identify the type of gasoline evaluated, or even provide distinguishing characteristics such as aromatic content or presence of lead alkyls. As a result, comparison of results among studies using open and closed vessels, different ages and species of test animals and different gasoline types, is difficult.

The bulk of the available literature on gasoline relates to the environmental impact of monoaromatic (BTEX) and diaromatic (naphthalene, methylnaphthalenes) constituents. In general, non-oxygenated gasoline exhibits some short-term toxicity to freshwater and marine organisms, especially under closed vessel or flow-through exposure conditions in the laboratory. The components which are the most prominent in the water soluble fraction and cause aquatic toxicity, are also highly volatile and can be readily biodegraded by microorganisms.

This material is expected to be toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

48 hour(s) LC50: 3.0 mg/l (Daphnia magna)  
96 hour(s) LC50: 1.8 mg/l (Mysidopsis bahia)  
96 hour(s) LC50: 8.3 mg/l (Cyprinodon variegatus)  
96 hour(s) LC50: 2.7 mg/l (Oncorhynchus mykiss)

### **MOBILITY IN SOIL**

No data available.

### **PERSISTENCE AND DEGRADABILITY**

This material is expected to be readily biodegradable. Following spillage, the more volatile components of gasoline will be rapidly lost, with concurrent dissolution of these and other constituents into the water. Factors such as local environmental conditions (temperature, wind, mixing or wave action, soil type, etc), photo-oxidation, biodegradation and adsorption onto suspended sediments, can contribute to the

weathering of spilled gasoline.

The aqueous solubility of non-oxygenated unleaded gasoline, based on analysis of benzene, toluene, ethylbenzene+xylenes and naphthalene, is reported to be 112 mg/l. Solubility data on individual gasoline constituents also available.

The product has not been tested. The statement has been derived from the properties of the individual components.

#### **POTENTIAL TO BIOACCUMULATE**

Bioconcentration Factor: No data available.  
Octanol/Water Partition Coefficient: 2 - 7

#### **ADVERSE EFFECTS FOR OZONE LAYER:**

No data available.

### **SECTION 13 NOTES ON DISPOSAL**

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by international, country, or local laws and regulations.

### **SECTION 14 TRANSPORT INFORMATION**

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

**UN Shipping Description:** UN1203, GASOLINE, 3, II

**IMO/IMDG Shipping Description:** UN1203, GASOLINE, 3, II, FLASH POINT SEE SECTION 9, MARINE POLLUTANT (GASOLINE)

**ICAO/IATA Shipping Description:** UN1203, GASOLINE, 3, II

#### **Domestic Regulatory Information**

**Land Regulatory Information:** subject to the provisions of the Fire Service Act

**Maritime Regulatory Information:** subject to the provisions of the Ship Safety Act

**Aviation Regulatory Information:** subject to the provisions of the Civil Aeronautics Act

### **SECTION 15 REGULATORY INFORMATION**

#### **REGULATORY LISTS SEARCHED:**

- 01-1=IARC Group 1
- 01-2A=IARC Group 2A
- 01-2B=IARC Group 2B
- 02-1=PRTR (Pollutant Release and Transfer Register) Class 1
- 02-2=PRTR (Pollutant Release and Transfer Register) Class 2
- 03-1=Industrial Safety and Health Law (Harmful Substances, etc., Prohibited for Manufacture)
- 03-2=Industrial Safety and Health Law (Harmful Substances Subject to Obtaining Permission for Manufacturing)
- 03-3=Industrial Safety and Health Law (Harmful Substances Whose Names, etc., are to Be Indicated)
- 03-4=Industrial Safety and Health Law (Notifiable Substances)
- 04-1=Poisonous and Deleterious Substances Control Law (Poisonous substance)
- 04-2=Poisonous and Deleterious Substances Control Law (Deleterious substance)

The following components of this material are found on the regulatory lists indicated.

Gasoline	01-2B
Toluene	02-1, 03-3, 03-4, 04-2
Pentane, 2,2,4-trimethyl-	02-2, 03-3
Xylene	02-1, 03-3, 03-4, 04-2
Trimethylbenzene (3 isomers: 1,2,3-; 1,2,4-; 1,3,5-isomer)	02-1, 03-3, 03-4
Butane	03-3, 03-4
Ethanol	01-1, 03-3, 03-4
Hexane	02-1, 03-3, 03-4
Benzene	01-1, 02-1, 03-1, 03-3, 03-4
Heptane	02-1, 03-3, 03-4
Cyclohexane	02-1, 03-3, 03-4
Ethylbenzene	01-2B, 02-1, 03-3, 03-4
Methylcyclohexane	03-3, 03-4
Naphthalene	01-1, 01-2B, 02-1, 03-3, 03-4

**JAPANESE FIRE LAW:** Group 4, Class 1 Petroleum

**CHEMICAL INVENTORIES:**

All components comply with the following chemical inventory requirements: AIC (Australia), DSL (Canada), EINECS (European Union), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan).

**SECTION 16 OTHER INFORMATION**

**REVISION STATEMENT:** SECTION 08 - Engineering Control Measures information was modified.  
SECTION 08 - General Considerations information was modified.  
SECTION 08 - Occupational Exposure Limit Table information was modified.  
SECTION 08 - Personal Protective Equipment List information was deleted.  
SECTION 08 - Personal Protective Equipment information was added.  
SECTION 08 - Skin Protection information was modified.  
SECTION 15 - Regulatory Information information was modified.

**Revision Date:** 2023/03/01

**ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:**

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	SDS - Safety Data Sheet
CVX - Chevron	NFPA - National Fire Protection Association (USA)
	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	

Prepared according to JIS Z 7253:2019 / JIS Z 7252:2019 by Chevron Technical Center, 6001 Bollinger Canyon Road, San Ramon, CA 94583.

**The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is**

furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

# SAFETY DATA SHEET

## DIESEL FUEL

000003000395

Version 6.1

Revision Date 2021/05/05

Print Date 2021/08/26



### SECTION 1. IDENTIFICATION

Product name : DIESEL FUEL

Synonyms : Seasonal Diesel, #2 Diesel, #1 Diesel, #2 Heating Oil, #1 Heating Oil, OSX, D50, Arctic Diesel, Farm Diesel, Marine Diesel, Low Sulphur Diesel, LSD, Ultra Low Sulphur Diesel, ULSD, Mining Diesel, Naval Distillate, Dyed Diesel, Marked Diesel, Coloured Diesel, Furnace special, Biodiesel blend, B1, B2, B5, Renewable Diesel blend (RX where X is 2- 50, X is representative of volume %), Diesel Low Cloud (LC), Marine Gas Oil, Marine Gas Oil Dyed.

Product code : 103204, 103180, 103179, 103193, 103178, 103136, 103135, 103134, 103133, 103132, 103131, 101799, 102907, 102762, 102763, 102755, 102302, 102744, 101801, 100678, 100677, 101802, 100107, 100668, 100658, 100911, 100663, 100652, 100460, 100065, 101796, 101793, 101795, 101792, 101794, 101791, 100768, 100643, 100642, 100103, 101798, 101800, 101797, 101788, 101789, 101787, 102531, 100734, 100733, 100640, 100997, 100995, 100732, 100731, 100994

Manufacturer or supplier's details  
Petro-Canada  
P.O. Box 2844, 150 - 6th Avenue South-West  
Calgary Alberta T2P 3E3  
Canada, Telephone: 1-866-786-2671

Emergency telephone number : CHEMTREC: 1-800-424-9300 (toll free) or +1 703-527-3887;  
Suncor Energy: +1 403-296-3000

#### Recommended use of the chemical and restrictions on use

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

Prepared by : Product Safety

### SECTION 2. HAZARDS IDENTIFICATION

#### Emergency Overview

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

#### GHS Classification

Flammable liquids : Category 3



# SAFETY DATA SHEET

## DIESEL FUEL

000003000395



Version 6.1

Revision Date 2021/05/05

Print Date 2021/08/26

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

### GHS label elements

Hazard pictograms



Signal word

: Danger

Hazard statements

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

Precautionary statements

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

# SAFETY DATA SHEET

## DIESEL FUEL

000003000395

Version 6.1

Revision Date 2021/05/05

Print Date 2021/08/26



Do NOT induce vomiting.  
If skin irritation occurs: Get medical advice/ attention.  
Take off contaminated clothing and wash it before reuse.  
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

**Storage:**

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

**Disposal:**

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

**Potential Health Effects**

Primary Routes of Entry : Eye contact  
Ingestion  
Inhalation  
Skin contact

Aggravated Medical Condition : None known.

**Other hazards**

None known.

---

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

**Hazardous components**

Chemical name	CAS-No.	Concentration
Kerosine (petroleum), hydrodesulfurized; Kerosine — unspecified	64742-81-0	48 - 100 %
Kerosine (petroleum); Straight run kerosine	8008-20-6	
Fuels, diesel; Gasoil — unspecified	68334-30-5	
Alkanes, C10-20-branched and linear	928771-01-1	0 - 50 %
Fatty acids, C16-18 and C18-unsatd., Me esters	67762-38-3	0 - 20 %

All above concentrations are in percent by weight.

---

### SECTION 4. FIRST AID MEASURES

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

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

# SAFETY DATA SHEET

## DIESEL FUEL

000003000395



Version 6.1

Revision Date 2021/05/05

Print Date 2021/08/26

If swallowed	: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention. : 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 <sub>2</sub> ) 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 <sub>2</sub> ), nitrogen oxides (NO <sub>x</sub> ), sulphur oxides (SO <sub>x</sub> ), smoke and irritating vapours as products of incomplete combustion.
Further information	: Prevent fire extinguishing water from contaminating surface water or the ground water system.
Special protective equipment for firefighters	: Wear self-contained breathing apparatus for firefighting if necessary.

---

### SECTION 6. ACCIDENTAL RELEASE MEASURES

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

---

### SECTION 7. HANDLING AND STORAGE

# SAFETY DATA SHEET

## DIESEL FUEL

000003000395



Version 6.1

Revision Date 2021/05/05

Print Date 2021/08/26

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

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Kerosine (petroleum), hydrodesulfurized; Kerosine — unspecified	64742-81-0	TWA	200 mg/m <sup>3</sup> (As total hydrocarbon vapour)	ACGIH
		TWA	200 mg/m <sup>3</sup> (total hydrocarbon vapor)	CA AB OEL
		TWA	525 mg/m <sup>3</sup>	CA ON OEL
		TWA	200 mg/m <sup>3</sup> (As total hydrocarbon vapour)	ACGIH
		TWA	200 mg/m <sup>3</sup> (total hydrocarbon vapor)	ACGIH
Kerosine (petroleum); Straight run kerosine	8008-20-6	TWA	200 mg/m <sup>3</sup> (total hydrocarbon vapor)	CA BC OEL
		TWA	200 mg/m <sup>3</sup> (total hydrocarbon vapor)	CA AB OEL
		TWA	200 mg/m <sup>3</sup> (total hydrocarbon vapor)	ACGIH
Fuels, diesel; Gasoil — unspecified	68334-30-5	TWA	100 mg/m <sup>3</sup> (total hydrocarbons)	CA AB OEL
		TWA (Va-	100 mg/m <sup>3</sup>	CA BC OEL

# SAFETY DATA SHEET

## DIESEL FUEL

000003000395



Version 6.1

Revision Date 2021/05/05

Print Date 2021/08/26

		pour and inhalable aerosols)	(total hydrocarbons)	
		TWA (Inhalable fraction and vapor)	100 mg/m3 (total hydrocarbons)	ACGIH

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

**Personal protective equipment**

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

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

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

Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye protection : Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Protective measures : Wash contaminated clothing before re-use.  
Hygiene measures : Remove and wash contaminated clothing and gloves, including the inside, before re-use.  
Wash face, hands and any exposed skin thoroughly after handling.

# SAFETY DATA SHEET

## DIESEL FUEL

000003000395

Version 6.1

Revision Date 2021/05/05

Print Date 2021/08/26



### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Bright oily liquid.
Colour	: Clear to yellow (This product may be dyed red for taxation purposes)
Odour	: Mild petroleum oil like.
Odour Threshold	: No data available
pH	: No data available
Melting point	: No data available
Boiling point/boiling range	: 150 - 371 °C (302 - 700 °F)
Decomposition temperature	No data available
Flash point	: > 40 °C (104 °F) Method: closed cup
Auto-Ignition Temperature	: 204 °C (399 °F)
Evaporation rate	: No data available
Flammability	: Flammable in presence of open flames, sparks and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. This product can accumulate static charge and ignite.
Upper explosion limit	: 6 %(V)
Lower explosion limit	: 0.7 %(V)
Vapour pressure	: 7.5 mmHg (20 °C / 68 °F)
Relative vapour density	: 4.5
Relative density	: 0.8 - 0.88
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 1.3 - 4.1 cSt (40 °C / 104 °F)

### SECTION 10. STABILITY AND REACTIVITY

# SAFETY DATA SHEET

## DIESEL FUEL



000003000395

Version 6.1

Revision Date 2021/05/05

Print Date 2021/08/26

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 <sub>x</sub> , NO <sub>x</sub> , SO <sub>x</sub> , smoke and irritating vapours when heated to decomposition.

### SECTION 11. TOXICOLOGICAL INFORMATION

#### Information on likely routes of exposure

Eye contact  
Ingestion  
Inhalation  
Skin contact

#### Acute toxicity

##### Product:

Acute oral toxicity	: Remarks: Based on available data, the classification criteria are not met.
Acute inhalation toxicity	: Acute toxicity estimate: 1.5 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Calculation method Assessment: The component/mixture is moderately toxic after short term inhalation. Remarks: Harmful if inhaled.
Acute dermal toxicity	: Assessment: The substance or mixture has no acute dermal toxicity

##### Components:

#### **Kerosine (petroleum), hydrodesulfurized; Kerosine — unspecified:**

Acute oral toxicity	: LD50 (Rat): > 5,000 mg/kg,
Acute inhalation toxicity	: LC50 (Rat): > 5.2 mg/l Exposure time: 4 hrs Test atmosphere: dust/mist
Acute dermal toxicity	: LD50 (Rabbit): > 2,000 mg/kg,

#### **Kerosine (petroleum); Straight run kerosine:**

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

# SAFETY DATA SHEET

## DIESEL FUEL

000003000395



Version 6.1

Revision Date 2021/05/05

Print Date 2021/08/26

### **Fuels, diesel; Gasoil — unspecified:**

Acute oral toxicity : LD50 (Rat): 7,500 mg/kg,  
Acute inhalation toxicity : LC50 (Rat): 4.1 mg/l  
Exposure time: 4 h  
Test atmosphere: vapour  
Acute dermal toxicity : LD50 (Mouse): 24,500 mg/kg,

### **Skin corrosion/irritation**

#### **Product:**

Remarks: Causes skin irritation.

### **Serious eye damage/eye irritation**

#### **Product:**

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

### **Respiratory or skin sensitisation**

#### **Product:**

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

### **Germ cell mutagenicity**

#### **Product:**

Germ cell mutagenicity-  
Assessment Based on available data, the classification criteria are not met.

### **Carcinogenicity**

#### **Product:**

Carcinogenicity - As-  
sessment Suspected of causing cancer.

### **Reproductive toxicity**

#### **Product:**

Reproductive toxicity -  
Assessment Based on available data, the classification criteria are not met.

### **STOT - single exposure**

#### **Product:**

Target Organs: Central nervous system  
Remarks: May cause drowsiness or dizziness.

### **STOT - repeated exposure**



# SAFETY DATA SHEET

## DIESEL FUEL

000003000395



Version 6.1

Revision Date 2021/05/05

Print Date 2021/08/26

---

### Product:

Target Organs: Liver, thymus, Bone

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

No data available

### Aspiration toxicity

### Product:

May be fatal if swallowed and enters airways.

---

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Product:

Toxicity to fish : Remarks: No data available

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

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

### Persistence and degradability

#### Product:

Biodegradability : Remarks: No data available

### Bioaccumulative potential

No data available

### Mobility in soil

No data available

### Other adverse effects

No data available

---

## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

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

# SAFETY DATA SHEET

## DIESEL FUEL

000003000395



Version 6.1

Revision Date 2021/05/05

Print Date 2021/08/26

Contaminated packaging : Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.  
: Contact local or business unit authorities for guidance on disposal of product.

### SECTION 14. TRANSPORT INFORMATION

#### International Regulations

##### IATA-DGR

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

##### IMDG-Code

UN number : UN 1202  
Proper shipping name : DIESEL FUEL  
Class : 3  
Packing group : III  
Labels : 3  
EmS Code : F-E, S-E  
Marine pollutant : yes

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

#### National Regulations

##### TDG

UN number : UN 1202  
Proper shipping name : DIESEL FUEL  
Class : 3  
Packing group : III  
Labels : 3  
ERG Code : 128  
Marine pollutant : yes

### SECTION 15. REGULATORY INFORMATION

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

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

**DSL** : On the inventory, or in compliance with the inventory

### SECTION 16. OTHER INFORMATION

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

# SAFETY DATA SHEET

## DIESEL FUEL

000003000395



Version 6.1

Revision Date 2021/05/05

Print Date 2021/08/26

Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228  
For Product Safety Information: 1 905-804-4752

Prepared by : Product Safety

Revision Date : 2021/05/05

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 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.

## SAFETY DATA SHEET

Creation Date 11-Oct-2010

Revision Date 27-Mar-2024

Revision Number 3

### 1. Identification

**Product Name** Calcium hydroxide

**Cat No. :** 14662

**CAS No** 1305-62-0  
**Synonyms** Biocalc; Calcium dihydrate; Calcium hydrate

**Recommended Use** Laboratory chemicals.  
**Uses advised against** Food, drug, pesticide or biocidal product use.

#### Details of the supplier of the safety data sheet

##### Company

Thermo Fisher Scientific Chemicals, Inc.  
30 Bond Street  
Ward Hill, MA 01835-8099  
Tel: 800-343-0660  
Fax: 800-322-4757

##### **Emergency Telephone Number**

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11  
Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99  
**CHEMTREC** Tel. No. **US**:001-800-424-9300 / **Europe**:001-703-527-3887

### 2. Hazard(s) identification

#### **Classification**

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin Corrosion/Irritation	Category 1
Serious Eye Damage/Eye Irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	

#### Label Elements

##### **Signal Word**

Danger

##### **Hazard Statements**

Causes severe skin burns and eye damage  
May cause respiratory irritation

**Precautionary Statements****Prevention**

Wash face, hands and any exposed skin thoroughly after handling  
 Wear protective gloves/protective clothing/eye protection/face protection  
 Use only outdoors or in a well-ventilated area  
 Do not breathe dust/fume/gas/mist/vapors/spray

**Inhalation**

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

**Skin**

Immediately call a POISON CENTER or doctor/physician  
 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower  
 Wash contaminated clothing before reuse

**Eyes**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
 Immediately call a POISON CENTER or doctor/physician

**Ingestion**

IF SWALLOWED: Rinse mouth. DO NOT induce vomiting

**Storage**

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

**Disposal**

Dispose of contents/container to an approved waste disposal plant

**Hazards not otherwise classified (HNOC)**

None identified

### 3. Composition/Information on Ingredients

Component	CAS No	Weight %
Calcium hydroxide	1305-62-0	>95

### 4. First-aid measures

<b>General Advice</b>	If symptoms persist, call a physician.
<b>Eye Contact</b>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
<b>Skin Contact</b>	Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
<b>Inhalation</b>	Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.
<b>Ingestion</b>	Do NOT induce vomiting. Call a physician or poison control center immediately.
<b>Most important symptoms and effects</b>	Causes severe skin burns and eye damage.
<b>Notes to Physician</b>	Treat symptomatically

## 5. Fire-fighting measures

**Suitable Extinguishing Media** Water spray, carbon dioxide (CO<sub>2</sub>), dry chemical, alcohol-resistant foam.

**Unsuitable Extinguishing Media** Carbon dioxide (CO<sub>2</sub>)

**Flash Point** No information available  
**Method -** No information available

**Autoignition Temperature** No information available

**Explosion Limits**

**Upper** No data available

**Lower** No data available

**Sensitivity to Mechanical Impact** No information available

**Sensitivity to Static Discharge** No information available

**Specific Hazards Arising from the Chemical**

Non-combustible. Contact with metals may evolve flammable hydrogen gas. Thermal decomposition can lead to release of irritating gases and vapors.

**Hazardous Combustion Products**

Calcium oxides.

**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**  
3

**Flammability**  
0

**Instability**  
1

**Physical hazards**  
N/A

## 6. Accidental release measures

**Personal Precautions** Use personal protective equipment as required. Ensure adequate ventilation. Avoid dust formation. Avoid contact with skin, eyes or clothing.

**Environmental Precautions** Should not be released into the environment.

**Methods for Containment and Clean Up** Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

## 7. Handling and storage

**Handling** Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid dust formation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation.

**Storage.** Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area. Incompatible Materials. Strong oxidizing agents. Metals. Reducing Agent. Acids. Bases.

## 8. Exposure controls / personal protection

**Exposure Guidelines**

Component	ACGIH TLV	OSHA PEL	NIOSH	Mexico OEL (TWA)
Calcium hydroxide	TWA: 5 mg/m <sup>3</sup>	(Vacated) TWA: 5 mg/m <sup>3</sup> TWA: 15 mg/m <sup>3</sup> TWA: 5 mg/m <sup>3</sup>	TWA: 5 mg/m <sup>3</sup>	TWA: 5 mg/m <sup>3</sup>

*Legend*

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration  
 NIOSH: NIOSH - National Institute for Occupational Safety and Health

**Engineering Measures** Ensure that eyewash stations and safety showers are close to the workstation location. Use only under a chemical fume hood.

### Personal Protective Equipment

**Eye/face Protection** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin and body protection** Wear appropriate protective gloves and clothing to prevent skin exposure.

**Respiratory Protection** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

**Recommended Filter type:** Particulates filter conforming to EN 143.

**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical and chemical properties

<b>Physical State</b>	Solid
<b>Appearance</b>	Off-white
<b>Odor</b>	Odorless
<b>Odor Threshold</b>	No information available
<b>pH</b>	12.4 saturated solution
<b>Melting Point/Range</b>	580 °C / 1076 °F
<b>Boiling Point/Range</b>	2850 °C / 5162 °F
<b>Flash Point</b>	No information available
<b>Evaporation Rate</b>	Not applicable
<b>Flammability (solid,gas)</b>	No information available
<b>Flammability or explosive limits</b>	
<b>Upper</b>	No data available
<b>Lower</b>	No data available
<b>Vapor Pressure</b>	No information available
<b>Vapor Density</b>	Not applicable
<b>Specific Gravity</b>	No information available
<b>Solubility</b>	1.65 g/L (20°C)
<b>Partition coefficient; n-octanol/water</b>	No data available
<b>Autoignition Temperature</b>	No information available
<b>Decomposition Temperature</b>	No information available
<b>Viscosity</b>	Not applicable
<b>Molecular Formula</b>	H2 Ca O2
<b>Molecular Weight</b>	74.09

## 10. Stability and reactivity

**Reactive Hazard** None known, based on information available

**Stability** Air sensitive. Moisture sensitive.

**Conditions to Avoid** Avoid dust formation. Incompatible products. Excess heat. Exposure to air or moisture over prolonged periods.

**Incompatible Materials** Strong oxidizing agents, Metals, Reducing Agent, Acids, Bases

**Hazardous Decomposition Products** Calcium oxides

**Hazardous Polymerization** Hazardous polymerization does not occur.

**Hazardous Reactions** None under normal processing.

## 11. Toxicological information

### Acute Toxicity

#### Product Information Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Calcium hydroxide	LD50 = 7340 mg/kg ( Rat )	LD50 > 2500 mg/kg ( Rat )	LC50 > 6.04 mg/L ( Rat ) 4 h

**Toxicologically Synergistic Products** No information available

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

**Irritation** CAUSES (SEVERE) EYE BURNS, Causes skin burns, Irritating to respiratory system

**Sensitization** No information available

**Carcinogenicity** The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Calcium hydroxide	1305-62-0	Not listed	Not listed	Not listed	Not listed	Not listed

**Mutagenic Effects** No information available

**Reproductive Effects** No information available.

**Developmental Effects** No information available.

**Teratogenicity** No information available.

**STOT - single exposure** Respiratory system  
**STOT - repeated exposure** None known

**Aspiration hazard** No information available

**Symptoms / effects, both acute and delayed** No information available

**Endocrine Disruptor Information** No information available

**Other Adverse Effects** The toxicological properties have not been fully investigated.

## 12. Ecological information

### Ecotoxicity

Do not empty into drains. .

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Calcium hydroxide	Not listed	LC50 = 160 mg/L, 96h static (Gambusia affinis)	Not listed	Not listed

**Persistence and Degradability** Soluble in water Persistence is unlikely based on information available.

**Bioaccumulation/ Accumulation** No information available.

**Mobility** Will likely be mobile in the environment due to its water solubility.



### 13. Disposal considerations

**Waste Disposal Methods** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

### 14. Transport information

**DOT** Not regulated  
**TDG** Not regulated  
**IATA** Not regulated  
**IMDG/IMO** Not regulated

### 15. Regulatory information

#### United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Calcium hydroxide	1305-62-0	X	ACTIVE	-

#### **Legend:**

**TSCA** US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

X - Listed

'-' - Not Listed

**TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT)** Not applicable

**TSCA 12(b)** - Notices of Export Not applicable

#### International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Calcium hydroxide	1305-62-0	X	-	215-137-3	X	X	X	X	X	KE-04518

**KECL** - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

#### U.S. Federal Regulations

##### **SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

##### **SARA 311/312 Hazard Categories**

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

**CWA (Clean Water Act)** Not applicable

**Clean Air Act** Not applicable

**OSHA** - Occupational Safety and Health Administration Not applicable

##### **CERCLA**

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive

Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

**California Proposition 65** This product does not contain any Proposition 65 chemicals.

#### U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Calcium hydroxide	X	X	X	-	X

#### U.S. Department of Transportation

Reportable Quantity (RQ): N  
 DOT Marine Pollutant N  
 DOT Severe Marine Pollutant N

**U.S. Department of Homeland Security** This product does not contain any DHS chemicals.

#### Other International Regulations

**Mexico - Grade** No information available

**Authorisation/Restrictions according to EU REACH** Not applicable

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Calcium hydroxide	1305-62-0	-	-	-

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

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Calcium hydroxide	1305-62-0	Listed	Not applicable	Not applicable	Not applicable

#### Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?

Not applicable

#### Other International Regulations

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Calcium hydroxide	1305-62-0	Not applicable	Not applicable	Not applicable	Not applicable

## 16. Other information

#### Prepared By

Health, Safety and Environmental Department  
 Email: chem.techinfo@thermofisher.com

www.thermofisher.com

**Creation Date** 11-Oct-2010  
**Revision Date** 27-Mar-2024  
**Print Date** 27-Mar-2024  
**Revision Summary** New emergency telephone response service provider.

**Disclaimer**

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

**End of SDS**



# AVIATION FUEL (JET A-1, JP-5, JP-8, AN-8)

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### 1.1. Product identifier

<b>Commercial name:</b>	<b>AVIATION FUEL (JET A-1, JP-5, JP-8, AN-8)</b>
Substance name:	n/a (mixture)
EINECS Number:	n/a (mixture)
Registration Number (EC Regulation 1907/2006):	n/a (mixture)
CAS Number:	n/a (mixture)

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

Intended use:	Manufacture (industrial), distribution (industrial), formulation and (re)packing (industrial). Use as a fuel (professional, consumer)
---------------	---

### 1.3. Details of the supplier of the Safety Data Sheet

Manufacturer	MOTOR OIL (HELLAS), CORINTH REFINERIES S.A
Supplier:	Shell & MOH Aviation Fuels A.E.
Address:	151, Kifissias Ave, Maroussi, 151 24, Greece
Telephone number:	+30 210 6006 380-1
Fax number:	+30 210 6083 820
e-mail address:	info@shell-moh.com
e-mail contact for MSDS:	If you have any enquiries about the content of this MSDS, please email: ops@shell-moh.com

### 1.4. Emergency telephone number

National emergency centre:	166
National poison centre:	+30 210-7793777

## 2. HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

#### 2.1.1. Classification according to Regulation (EC) 1272 /2008 [CLP]

Flam. Liquid 3	H226
Skin Irrit. 2	H315
Asp.Tox. 1	H304
STOT Single Exp. 3	H336
Aquatic Chronic 2	H411

### 2.1.2. Additional information

No additional information available.

## 2.2. Label elements

### 2.2.1. Labelling according to Regulation (EC) 1272/2008 [CLP]

#### Hazard pictogram (CLP):



#### Signal word:

Danger

#### Hazard statements:

H226 Flammable liquid and vapour.  
H304 May be fatal if swallowed and enters airways.  
H315 Causes skin irritation.  
H336 May cause drowsiness or dizziness.  
H411 Toxic to aquatic life with long lasting effects.

#### Precautionary statements:

P102 Keep out of reach of children.  
P210 Keep away from heat/sparks/open flames/.../hot surfaces.  
... No smoking.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/protective clothing/eye protection/  
face protection.  
P331 Do NOT induce vomiting.  
P301+ IF SWALLOWED: Immediately call a POISON CENTER or  
P310 doctor/physician.

## 2.3. Other hazards

The substance is not considered to be PBT nor vPvB.

## 3. COMPOSITION INFORMATION ON INGREDIENTS

CAS No	EC No	Index No	REACH Registration No	% weight	Name	Classification according to Regulation EC 1272/2008 (CLP)
91770-15-9	294-799-5	649-427-00-X	01-2119502385-46-0057	99.85-100	Kerosine (petroleum), sweetened; Kerosine - unspecified	Flam. Liquid 3; H226 Skin Irrit. 2; H315 Asp. Tox. 1; H304 STOT Single Exp.3; H336 Aquatic Chronic 2; H411
111-77-3	203-906-6	603-107-00-6	01-2119475100-52-XXXX	0-0.15	2-(2-Methoxy ethoxy) ethanol	Repr. Cat. 2; H361d

May also contain additives at <0.1% v/v each.

## 4. FIRST AID MEASURES

### 4.1. Description of first aid measures

<b>General notes:</b>	<p>Spillages make surface slippery. Before attempting to rescue casualties, isolate area from all potential sources of ignition including disconnecting electrical supply. Ensure adequate ventilation and check that a safe, breathable atmosphere is present before entry into confined spaces. Drench contaminated clothing with water before removing to avoid risk of sparks from static electricity. (Subject to applicability) Hydrogen sulphide (H<sub>2</sub>S) can accumulate in the headspace of storage tanks and reach potentially hazardous concentrations.</p>
<b>Inhalation:</b>	<p>Inhalation is unlikely because of the low vapour pressure of the substance at ambient temperature. Exposure to vapours may however occur when the substance is handled at high temperatures with poor ventilation. If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If the casualty is unconscious and:</p> <ul style="list-style-type: none"><li>* Not breathing – ensure that there is no obstruction to breathing and give artificial respiration by trained personnel. If necessary, give external cardiac massage and obtain medical assistance.</li><li>* Breathing - place in the recovery position and keep the head below the level of the torso. Administer oxygen if necessary;</li></ul> <p>Obtain medical attention if casualty has an altered state of consciousness or if symptoms do not resolve. (Subject to applicability) If there is any suspicion of inhalation of H<sub>2</sub>S:</p> <ul style="list-style-type: none"><li>* Rescuers must wear breathing apparatus, belt and safety rope, and follow rescue procedures.</li><li>* Remove casualty to fresh air as quickly as possible.</li><li>* Immediately begin artificial respiration if breathing has ceased.</li><li>* Provision of oxygen may help.</li><li>* Obtain medical advice for further treatment.</li></ul>
<b>Skin contact:</b>	<p>Remove contaminated clothing and footwear, and dispose of safely. Wash affected area with soap and water. Seek medical attention if skin irritation, swelling or redness develops and persists. When using high-pressure equipment, injection of product can occur. If high-pressure injuries occur, immediately seek professional medical attention. Do not wait for symptoms to develop. For minor thermal burns: Cool the burn. Hold the burned area under cold running water for at least five minutes, or until the pain subsides. However, body hypothermia must be avoided.</p>
<b>Eye contact:</b>	<p>Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing. If irritation, blurred vision or swelling occurs and persists, obtain medical advice from a specialist.</p>
<b>Ingestion/Aspiration:</b>	<p>In case of ingestion, always assume that aspiration has occurred. The casualty should be sent immediately to a hospital. Do not wait for symptoms to develop. Do not induce vomiting, as there is high risk of aspiration. Do not give anything by mouth to an unconscious person.</p>
<b>Self-protection of the first aider:</b>	<p>First aid personnel must be aware of personal risk during rescue. Use personal protective equipment. See section 8 for more detail.</p>

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

<b>Following inhalation:</b>	Inhalation of vapours may cause headache, nausea, vomiting and an altered state of consciousness
<b>Following skin contact:</b>	Reddening, irritation
<b>Following eye contact:</b>	Slight irritation (unspecific)
<b>Following ingestion/ aspiration:</b>	Few or no symptoms expected. If any, nausea and diarrhea might occur.

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

Treat accordingly depending on the type of exposure.

# 5. FIREFIGHTING MEASURES

## 5.1. Extinguishing media

<b>Suitable extinguishing media:</b>	Foam (Specifically trained personnel only) Water fog (Specifically trained personnel only) Dry chemical powder Carbon dioxide Other inert gases (subject to regulations) Sand or earth
<b>Unsuitable extinguishing media:</b>	Do not use direct water jets on the burning product; they could cause splattering and spread the fire. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

## 5.2. Special hazards arising from the substance or mixture

This substance will float and can be reignited on surface water.

### **Hazardous combustion products:**

Incomplete combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates and gases, including carbon monoxide and unidentified organic and inorganic compounds. If sulfur compounds are present in appreciable amounts, combustion products may include also H<sub>2</sub>S and SO<sub>x</sub> (sulfur oxides) or sulfuric acid.

## 5.3. Advice for fire-fighters

### **Protective equipment for fire fighters:**

In case of a large fire or in confined or poorly ventilated spaces wear full fire resistant protective clothing and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

# 6. ACCIDENTAL RELEASE MEASURES

## **General information**

Stop or contain leak at the source, if safe to do so. Avoid direct contact with released material. Stay upwind. In case of large spillages, alert occupants in downwind areas.



Keep non-involved personnel away from the area of spillage. Alert emergency personnel. Except in case of small spillages, the feasibility of any actions should always be assessed and advised, if possible, by a trained, competent person in charge of managing the emergency.

Eliminate all ignition sources, if safe to do so (e.g. electricity, sparks, fires, flares).

(Subject to applicability): In those cases when the presence of dangerous amounts of H<sub>2</sub>S around the spilled product is suspected or proved, additional or special actions may be warranted, including access restrictions, use of special protection equipment, procedures and personnel training.

If required, notify relevant authorities according to all applicable regulations.

## 6.1. Personal precautions, protective equipment and emergency procedures

### 6.1.1. For non-emergency personnel:

Wear Personal Protective Equipment (PPE) listed in Section 8. Stand upwind from the spill site. Ensure adequate ventilation. Eliminate all ignition sources (electricity, sparks, fires, flares, smoking). Avoid contact with skin, eye and clothing.

### 6.1.2. For emergency responders:

Small spillages: normal antistatic working clothes are usually adequate.  
Large spillages: full body suit of chemically resistant and antistatic material.

Work gloves providing adequate chemical resistance, specifically to aromatic hydrocarbons. Note: gloves made of PVA are not water-resistant and are not suitable for emergency use.

Work helmet. Antistatic non-skid safety shoes or boots. Goggles or face shield, if splashes or contact with eyes is possible or anticipated.

Respiratory protection: A half or full-face respirator with filter(s) for organic vapours (and when applicable for H<sub>2</sub>S) or a Self Contained Breathing Apparatus (SCBA) can be used according to the extent of spill and predictable amount of exposure. If the situation cannot be completely assessed, or if an oxygen deficiency is possible, only SCBAs should be used.

## 6.2. Environmental precautions

Spillages onto land: Prevent product from entering sewers, rivers, waterways or other bodies of water. Prevent product from contaminating soil or ground water system.

## 6.3. Methods and material for containment and cleaning up

### 6.3.1. For containment:

Spillages onto land: If necessary dike the product with dry earth, sand or similar non-combustible materials.

Large spillages may be cautiously covered with foam, if available, to limit fire risk. Do not use direct jets.

Spillages on water or at sea: In case of small spillages in closed waters (i.e. ports) contain product with floating barriers or other equipment. Large spillages in open waters should be contained with floating barriers or other mechanical means. Control the spreading of the spillage.

### 6.3.2. For cleaning up:

The use of dispersants should be advised by an expert and approved by local authorities.

REMARK: in case of interior space (e.g. inside buildings or confined spaces) ensure adequate ventilation.

Spillages onto land: Absorb spilled product with suitable non-combustible materials. Collect free product with suitable means and transfer collected product and other contaminated materials to suitable containers for recycle, recovery or safe disposal according to relevant regulations.

In case of soil contamination, remove contaminated soil and treat this in accordance with local regulations.

Spillages on water or at sea: In case of small spillages, contain spilled product and collect it by absorbing with specific floating absorbents. In case of large spillages in open waters collect the product by skimming or other suitable mechanical means, only if fire/explosion risks can be adequately prevented.

Collect recovered product and other materials in suitable tanks or containers for recovery or safe disposal according to relevant regulations.

**6.3.3. Other information:**

Recommended measures are based on the most likely spillage scenarios for this material; however, local conditions (wind, air temperature, wave/current direction and speed) may significantly influence the choice of appropriate actions. For this reason, local experts should be consulted when necessary. Local regulations may also prescribe or limit actions to be taken.

(Subject to applicability) Concentration of H<sub>2</sub>S in tank headspaces may reach hazardous values, especially in case of prolonged storage. This situation is especially relevant for those operations, which involve direct exposure to the vapours in the tank.

(Subject to applicability) Spillages of limited amounts of products, especially in the open air when vapours will be usually quickly dispersed, are dynamic situations, which are unlikely to entail exposure to dangerous concentrations. As H<sub>2</sub>S has a density greater than ambient air, a possible exception may regard the build-up of dangerous concentrations in specific spots, like trenches, depressions or confined spaces. In all these circumstances, however, the correct actions should be assessed on a case-by-case basis.

## 6.4. Reference to other sections

Personal Protective Equipment: See Section 8 for more details.

Waste Treatment: See Section 13

## 7. HANDLING AND STORAGE

### General information:

A specific assessment of inhalation risks from the presence of H<sub>2</sub>S in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases must be made to help determine controls appropriate to local circumstances.

The vapour is heavier than air. Beware of accumulation in pits and confined spaces.

### 7.1. Precautions for safe handling

#### Prevention of fire:

Risk of explosive mixtures of vapour and air. Ensure that all relevant regulations regarding explosive atmospheres, and handling and storage facilities of flammable products, are followed.

Ground/bond containers, tanks and transfer/receiving equipment.

Use and store only outdoors or in a well-ventilated area.

Take precautionary measures against static electricity.

Use explosion-proof electrical/ventilating/lighting equipment

Use only non-sparking tools.

Keep away from heat/sparks/open flames/hot surfaces. – No smoking

#### Prevention of aerosol and dust generation:

Do not use compressed air for filling, discharging, or handling operations.

**Protection of the**

Avoid release to the environment

**environment:**

**Hygiene measures:**

Avoid contact with skin and eyes. Never siphon by mouth. Do not ingest. Avoid breathing vapours. Use personal protective equipment as required (see Section 8). For more information regarding protective equipment and operational conditions see Exposure Scenarios. Ensure that proper housekeeping measures are in place. Contaminated materials should not be allowed to accumulate in the workplace and should never be kept inside the pockets. Keep away from food and beverages. Do not eat, drink or smoke while using this product. Wash the hands thoroughly after handling. Change contaminated clothes at the end of working shift.

## 7.2. Conditions from safe storage, including any incompatibilities

**Technical measures and storage conditions:**

Storage installations should be designed with adequate bunds so as to prevent ground and water pollution in case of leaks or spills. Cleaning, inspection and maintenance of internal structure of storage tanks must be done only by properly equipped and qualified personnel as defined by national, local or company regulations. Before entering storage tanks and commencing any operation in a confined area, check the atmosphere for oxygen content and flammability. If sulphur compounds are suspected to be present in the product, check the atmosphere for H<sub>2</sub>S content.

If the product is supplied in containers:

- \* Keep only in the original container or in a suitable container for this kind of product.
- \* Keep containers tightly closed and properly labeled. Protect from the sunlight.
- \* Light hydrocarbon vapours can build up in the headspace of containers. These can cause flammability / explosion hazards. Open slowly in order to control possible pressure release.
- \* Empty containers may contain flammable product residues. Do not weld, solder, drill, cut or incinerate empty containers, unless they have been properly cleaned.

**Packing materials:**

Recommended materials: For containers, or container linings use mild steel, stainless steel.

Unsuitable materials: some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Compatibility should be checked with the manufacturer.

**Requirements for storage:**

Storage area layout, tank design, equipment and operating procedures must comply with the relevant European, national or local legislation.

**Storage class:**

Category II according to national legislation (Ministerial Decision 34458/1990)

**Further information on storage conditions:**

Store separately from oxidizing agents.

## 7.3. Specific end use(s)

See Exposure scenarios in the Annex

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters

#### 8.1.1. Limit values:

**National occupational exposure limit values:** Not reported

**National biological limit values:** Not reported

**International occupational exposure limit values:**

Since no occupational exposure limit values are reported for kerosine CAS No 91770-15-9, the limits below that have been published for kerosine CAS No 8008-20-6\*, have been considered appropriate for kerosene CAS No 91770-15-9 streams as well.

Substance	Kerosine			
Cas No	8008-20-6			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>
Belgium		200		
Canada - Ontario		200 (1) (2)		
Ireland		100		
South Korea		200		
USA-NIOSH		100		

Remarks:

Canada-Ontario: (1) Jet fuels, as total hydrocarbon vapour (2) Application restricted to conditions in which there are negligible aerosol exposures

*\*CAS No 8008-20-6: Kerosine (petroleum); straight run Kerosine; a complex of HC produced by the distillation of crude oil. It consists of HC having carbon numbers predominantly in the range of C9 through C16 and boiling in the range of 130 °C to 290 °C*

Substance	2-(2-Methoxyethoxy)ethanol			
Cas No	111-77-3			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>
Austria	10	50,1		
Belgium	10	50,1		
Denmark	25 provisional			
European Union	<b>10</b>	<b>50,1</b>		
Finland	10	50		
France	10	50,1		
Germany (AGS)	10 (1)	50 (1)		
Hungary		50,1		
Ireland	10	15,1		
Italy	10	50,1		
Latvia	20	100		
Poland		50		
Spain	10	50,1		
The Netherlands		45		
United Kingdom	10	50,1		

**Remarks:**

European Union: Bold-type: Indicative occupational exposure limit value and limit value for occupational exposure

France: *Italic type*: Indicative statutory limit values

Germany (AGS): (1) Inhalable aerosol and vapour

Italy: Skin

Spain: Skin

**8.1.2. Monitoring procedures:**

Monitoring of the air in confined places using gas detectors to detect and monitor presence of H<sub>2</sub>S, oxygen deficient conditions and explosive atmospheres. Refer to BS EN 14042:2003 "Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents", BS EN 1127-1:2007 "Explosive atmospheres-explosion prevention and protection", ES EN 60079-0:2009 "Explosive atmospheres-equipment general requirements"

**8.1.3. Exposure limit values for air contaminants formed when using the substance/mixture**

Not reported

**8.1.4. Derived No Effect Level (DNEL) and Predicted No Effect Concentration (PNEC)**

**DNEL Worker (industrial / professional)**

Chemical name	Short term, systematic effects	Short term, local effects	Long term, systemic effects	Long term, local effects
Kerosines	Dermal (a)	Dermal (b)	Dermal (a)	Dermal (b)
	Inhalation (a)	Inhalation (a)	Inhalation (a)	Inhalation (a)

(a) No hazard identified for this route (data available)

(b) The data do not allow setting a DNEL

**DNEL Consumer/General population**

Chemical name	Short term, systematic effects	Short term, local effects	Long term, systemic effects	Long term, local effects
Kerosines	Dermal (a)	Dermal (b)	Dermal (a)	Dermal (b)
	Inhalation (a)	Inhalation (a)	Inhalation (a)	Inhalation (a)
			Oral: 19 mg/kg/24h	

(a) No hazard identified for this route (data available)

(b) The data do not allow setting a DNEL

**PNEC**

Substance is a hydrocarbon UVCB. Conventional methods of deriving PNECs are not appropriate for such complex substances.

**8.1.5. Use of control banding approach**

See Section 7 and 8.2

## 8.2. Exposure control

### 8.2.1. Appropriate engineering controls:

Storage and handling in closed systems. Use sealed systems as far as possible. Local exhaust ventilation is recommended.

Provide basic employee training to prevent/minimise exposure.

Hazard recognition and risk assessment should be conducted for each work. Confined space entry procedures should be followed (e.g. work permit, gas measurements etc). Do not enter empty storage tanks until measurements of available oxygen have been carried out.

Draining, flushing and/or purging of the equipment prior to any disassembly work.

### 8.2.2. Personal protection equipment:

	IF	PPE	STANDARD
<b>Eye and face protection</b>	Splashing is likely	Protective shield and /or safety goggles should be used	EN 166
<b>Hand protection</b>	There is potential for exposure	Impervious gloves	EN 374
<b>Other skin protection</b>	There is potential for exposure	Impervious protective clothing	EN 340
<b>Respiratory protection</b>	There is vapour formation	Full face masks with gas filters for organic vapours	EN 14387, EN 136, EN 137
<b>Thermal Hazards</b>	Large scale fires	Fire resistant coveralls with self-contained breathing apparatus	EN 340, EN 469, EN 1486, EN 137

### 8.2.3. Environmental exposure controls:

See sections 6, 7 and exposure scenarios in the Annex.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on basic physical and chemical properties

- (a) Appearance : Low viscosity, liquid (at 20 °C and 101.3 Kpa)
- (b) Odour : Characteristic (hydrocarbon-like)
- (c) Odour threshold : Not available
- (d) pH : Not applicable
- (e) Melting point/freezing point : Freezing point is below -20°C
- (f) Initial boiling point and boiling range : 130-290 °C
- (g) Flash point : The flash point is 29 - 70°C (CONCAWE 2010a) (EN ISO 2719, 13736 and ASTM D 9302a)
- (h) Evaporation rate : Not available
- (i) Flammability (solid, gas) : Not applicable
- Flammability (liquid) : Flammable liquid (cat.3)
- (j) Upper/lower flammability or explosive limits : Not applicable
- (k) Vapour pressure : The vapour pressure for kerosines ranges from <1 kPa to 3.7 kPa at 37.8 °C
- (l) Vapour density : Not available

(m) Density at 15oC

: The absolute density ranges from 0.77 to 0.85 g/cm<sup>3</sup> at



	15 °C (CONCAWE, 2010a),(ASTM D-4052, EN ISO 12185)
(n) Solubility in water	: Not applicable
(o) Partition coefficient: n-octanol/water	: Not applicable
(p) Auto-ignition temperature	: 220°C to 550°C (ASTM E 659 test method)
(q) Decomposition temperature	: Not available
(r) Viscosity	: 1 to 2.4 cSt at 40°C
(s) Explosive properties	: Not applicable
(t) Oxidising properties	: Not applicable

## 9.2. Other information

No information available

## 10. STABILITY AND REACTIVITY

### 10.1. Reactivity

No information available

### 10.2. Chemical stability

Stable under recommended handling and storage conditions

### 10.3. Possibility of hazardous reactions

None when treated according to provisions

### 10.4. Conditions to avoid

Avoid flammability hazards and potential ignition and heat sources (extremely high temperatures, heat sources, open flames, static electricity, sparks)

### 10.5. Incompatible materials

Strong oxidizing agents. Strong acids. Strong bases. Halogens.

### 10.6. Hazardous decomposition products

Does not decompose when used for intended uses.

## 11. TOXICOLOGICAL INFORMATION

### 11.1. Information on toxicological effects

**Basis of assessment:** Information given is based on product data, knowledge of the components and the toxicology of similar products. The results are based on the available studies and support the classification.

Acute toxicity	Method	Species	Route of exposure	Effective dose	Exposure time	Results
	Equiv. or similar to OECD 420	Rat (Sprague Dawley) male, female	<b>Oral</b> Gavage	5000mg/kg bw	single dose, 14days	LD50 >5000mg/kg bw
	Equiv. or similar to OECD 402	Rabbit (New Zealand White) male, female	<b>Dermal</b> Occlusive coverage	2000mg/kg bw	single dose, 24 hours to 10% of their body surface area	LD50 >2000mg/kg bw
	Equiv. or similar to OECD 403	Rat (Sprague-Dawley), male, female	<b>Inhalation,</b> Vapour, whole body	5.28 mg/L air	4 h	LC50 >5280 mg/m3 air
Based on evaluation of all the acute toxicity data discussed above, kerosine does not meet the criteria for classification as an acute oral, inhalation or dermal toxicant under the EU CLP Regulation (EC No. 1272/2008).						

Skin Irritation	Method	Species	Route of exposure	Effective dose	Exposure time	Results
	Equivalent or similar to OECD 404	Rabbit (New Zealand white)	<b>Skin</b>	Semi-occlusive coverage (saved) to 0.5mL of kerosene Test material: odourless kerosene	4 h	Not irritating
	EPA Guidelines in FR vol.44, No.145	"	"	Occlusive coverage (intact and abraded skin sites) to 0.5mL of kerosene Test material: kerosene/ heating oil	24 h	Irritating
Based on the overall weight of evidence of skin irritation scores, kerosines are classified as irritating to the skin as defined by EU CLP Regulation (EC No 1272/2008). They are classified as Skin Irritant, Category 2 (H315), irritating to the skin.						

Serious eye damage/irritation	Method	Species	Route of exposure	Effective dose	Exposure time	Results
	EPA OTS 798:4500	New Zealand Rabbit, white	<b>Eye</b>	0.1mL of was instilled in the conjunctival sac of the eye Test material: Kerosine, CAS No 68333-23-3	72 hours observation	Not irritating
Based on a lack of corneal, iridial, and conjunctival irritation, kerosines do not meet the criteria for classification as an eye irritant as defined by EU CLP Regulation.						

Corrosivity	Method	Species	Route of exposure	Effective dose	Exposure time	Results
No specific studies have been reported on corrosivity of these substances in this category. Considering the available studies, no corrosive action of these substances is expected.						

Respiratory or skin sensitisation	Method	Species	Route of exposure	Effective dose	Exposure time	Results
	Equiv. or similar to OECD 406	Guinea pig (Hartley), male	<b>Skin</b> Induction and Challenge: epicutaneous, occlusive	Induction: 1:4 dilution Challenge: 1:4 dilution or 0.2% DNCB Test material: Kerosine , CAS No 68333-23-3		Not sensitizing

Skin sensitisation: Based on test data, kerosines do not meet the criteria for classification as a dermal sensitizer under EU CLP Regulation (EC No. 1272/2008).  
Respiratory sensitization: This endpoint is not a REACH requirement

Germ cell mutagenicity	Method	Species	Route of exposure	Effective dose	Exposure time	Results
	<u>IN VITRO</u> Modified Ames assay	S.Typhimurium 98		50 µl/ml Test material: CAS No 64742-81-0 and 8008-20-6		All in vitro assays were negative for genotoxicity, except for one assay done with straight run kerosine which was positive
	Equiv. or similar to OECD 471	S.Typhimurium TA 1535,1537, 1538, 98, 100 and S. Cerevisiae D4 (met. act. with and without		0.001-5.0 µl/plate Test material: CAS No 8008-20-6		
	Equiv. or similar to OECD 476	Mouse lymphoma L5178Y cells (met. act. with and without)		-3.91-6.25 nl/ml (with activation) and 6.25-37.5 nl/ml (without activation) -0.004-0.065 nl/ml (with activation) and 0.006-0.13 nl/ml (without activation) Test material: CAS No 8008-20-6		
	<u>IN VIVO</u> Equiv. or similar to OECD 475	Rat (Sprague-Dawley), m, f	<b>Intraperitoneal</b>	- 0, 0.3, 1.0, 3.0 g/kg Test material: CAS No 8008-20-6 -0.3, 1.0, 3.0 g/kg Test material: CAS No 64742-81-0		All in vivo chromosome aberration and dominant lethal assays were negative for genotoxicity (OECD 475, 478), while one in vivo sister chromatid exchange assay (modified OECD 479) was positive for genotoxicity in male, but not in female mice.
	"	"	"	Sample1: 0.4, 0.13, 0.04 ml/rat Sample2: 0.18, 0.06, 0.02 ml/rat Test material: CAS No 8008-20-6		
	Equiv. or similar to OECD 478	Mouse (CD-1), male	<b>Inhalation</b>	Actual: 0, 98.4, 378.3 ppm Test material: JF-A		
	"	Mouse and rat, male	<b>Intraperitoneal</b>	Mouse: 1ml/kg (diluted 10% in corn oil), Rat: undiluted Test material: Deodorized kerosine		
Equiv. or similar to OECD 479	Mouse (B6C3F1) male, female	"	400, 2000, 4000 mg/kg Test material: CAS No 64742-81-0			
There were no studies located that described mutagenic or genotoxic effects of kerosine or jet fuels in humans. Because most studies were negative and the data on various individual components of kerosines and jet fuels were negative, the weight of evidence from in vitro and in vivo mutagenic studies indicates that kerosine and jet fuels are likely not mutagens and are not classified as mutagens under the EU CLP Regulation (EC No. 1272/2008).						

Carcinogenicity	Method	Species	Route of exposure	Effective dose	Exposure time	Results
-----------------	--------	---------	-------------------	----------------	---------------	---------

	Equiv. or similar to OECD 451	Mouse (C3H/HeNCrIBR), male	<b>Dermal</b>	37.5 µl Test material: JF-A	2 years, twice each week	Neoplastic effects: Yes
	"	Mouse (C3H), male, female	"	25 mg Test material: JF-A	105 weeks, 3 times weekly	"
	"	Mouse (C3H), male	"	50 µl Test material: CAS No 8008-20-6	24 months, twice weekly	"
	"	Mouse (C3H/HeJ), m,f	"	50 µl Test material: CAS No 64742-81-0	lifetime, twice per week	"
	"	Mouse (B6C3F1), m,f	"	0, 250 or 500 mg/kg Test material: JP-5	103 w, except high dose- females were only exposed for 90 weeks (5 d/w)	"
	"	Mouse (C3H), male	"	0, 28.5, 50, 100% Test material: CAS No 64742-81-0	2 years (low dose 7d/w, mild dose 4d/w, high dose 2d/w)	"
	"	"	"	50 gr/mouse Test material: CAS No 8008-20-6, 64742-47-8	2 years, twice per week	"

Kerosine is not carcinogenic when animals are exposed via the oral or inhalation route. However, chronic skin contact with kerosines and jet fuel may lead to tumour formation as a consequence of repeated cycles of irritation, skin damage and repair.  
LOAEL: 200 mg/ kg bw/day - Target organs: other: skin  
In studies where dermal irritation and/or inflammation were prevented, but other factors, such as dermal uptake of polycyclic aromatic compounds, were kept identical, no skin tumours were observed.  
Based on this data, kerosines are classified as non-carcinogenic according to the EU CLP Regulation (EC No.1272/2008).

Reproductive and developmental toxicity	Method	Species	Route of exposure	Effective dose	Exposure time	Results
	OECD 421	Rat (Sprague-Dawley), male, female	<b>Dermal</b>	165(20%), 330 (40%) 494(60%) mg/kg/d. Different concentrations in solution and amount applied  Test material: CAS No 64742-81-0	14 d pre mating to day 20 of gestation with males treated an additional week	NOAEL (P, reprod.toxicity): ≥494 mg/kg bw/day  NOAEL (F1, develop. offspring toxicity): ≥494 mg/kg bw/day
	No specific guidelines mentioned	Rat (Sprague-Dawley), male, female	<b>Oral</b> (gavage)	Males: 750, 1500,3000 mg/kg/d Females: 325, 750, 1500 mg/kg/d  Test material: JP-8	Males: 70 to 90 days  Females: 21 weeks	NOAEL (P): 750 mg/kg bw/day  NOAEL (P, reprod.toxicity, male): ≥3000 mg/kg bw/day  NOAEL (P, reprod.toxicity, female): ≥1500 mg/kg bw/day  NOAEL (F1): 750 mg/kg bw/day

OECD 414	Rat (Sprague-Dawley)	<b>Oral</b> (gavage)	500, 1000, 1500, 2000 mg/kg/day (actually ingested) Test material: JP-8	10 days	NOAEL (embryotoxicity): 1000 mg /Kg bw/day  LOAEL (embryotoxicity): 1500 mg /Kg bw/day  NOAEL (maternal toxicity): 500 mg /Kg bw/day  LOAEL (maternal toxicity): 1000 mg /Kg bw/day
OECD 414	Rat (Sprague-Dawley)	<b>Inhalation</b> Whole body	106 or 364 ppm Test material: CAS No 8008-20-6	Six hours each day (daily) Days 6 through 15 of gestation	NOAEC (maternal toxicity): ≥364ppm NOAEC (teratogenicity): ≥364ppm

- Kerosine does not cause fertility effects (OECD 421)  
NOAEL (oral route): ≥3000 mg/kg bw/day  
NOAEL (dermal route): ≥ 494 mg/kg bw/day  
NOAEL (inhalation): ≥ 1000 mg/kg bw/day
- All animal studies show that kerosine and jet fuel have no effects on developmental (OECD 414)  
NOAEL (oral route): 1000 mg/kg bw/day  
NOAEL (dermal route): ≥ 494 mg/kg bw/day  
NOAEL (inhalation): ≥ 364 ppm

Therefore, there is insufficient data to classify kerosines as toxic for reproduction under the EU CLP Regulation (EC No. 1272/2008).  
Developmental studies did not provide sufficient evidence to cause a strong suspicion of developmental toxicity in the absence of signs of marked maternal toxicity, therefore kerosines are not classified as a developmental toxicant according to EU CLP Regulation (EC No. 1272/2008).

Specific Target Organ Exposure (STOT) – repeated exposure	Method	Species	Route of exposure	Effective dose	Exposure time	Results
	Equiv. or similar to OECD 412	Rat (Sprague-Dawley), male, female	<b>Inhalation</b> Subacute, Vapour, whole body	24mg/m <sup>3</sup> (vapour) Test material: Kerosine, CAS No 64742-81-0	6h/d, 5d/w for 4w	NOAEC: ≥24 mg/m <sup>3</sup> air  No treatment related effects observed
	Equiv. or similar to OECD 413	Rat (Fischer 344), male, female	<b>Inhalation</b> Subchronic Vapour, whole body	0, 500, 1000 mg/m <sup>3</sup> (vapour) Test material: JP-8	24h/d for 90 d	NOAEL: ≥1000mg/m <sup>3</sup> air  LOAEL: 500 mg/m <sup>3</sup> (male, body and organ weights)
	"	Mouse ( C57 BL) male, female	"	"	"	NOAEL: ≥1000mg/m <sup>3</sup> air
	OECD 410	Rat (Sprague-Dawley), male, female	<b>Dermal</b> Subacute	0.01, 0.05, 0.5 ml/kg/d Test material: Kerosine, CAS No 68333-23-3	6h/d, 5d/w for 4w	NOAEL: ≥0.5 ml/kgbw (male, female)  Skin LOAEL: 0.01 ml/kgbw (male, female)
	Study (no specific guidelines)	Rat (Sprague-Dawley), male, female	<b>Oral</b> Subchronic, gavage	Males: 0, 750, 1500, 3000 mg/kg/d Females: 0, 325, 750, 1500 mg/kg/d Test material: JP-8	Males: 70 to 90 days Females: 21 w (daily)	NOAEL: 750 mg/kgbw/d

- NOAEL (oral): 750 mg /Kg bw /day
  - NOAEL (dermal):  $\geq 400$  mg /Kg bw /day
  - NOAEC (inhalation):  $\geq 1000$  mg /Kg bw /day
- Based on the lack of adverse systemic effects even with the highest doses administered, kerosines are not classified for repeated dose toxicity under the EU CLP Regulation (EC No. 1272/2008).

STOT – single dose	Method	Species	Route of exposure	Effective dose	NOAEL	Exposure time
Affected organs: Central Nervous System Route of exposure: Inhalation						
<b>Aspiration Hazard</b>	Due to low viscosity of kerosines aspiration is expected to occur only during ingestion or in case of vomiting after ingestion					

## 12. ECOLOGICAL INFORMATION

**Basis of assessment** Information given is based on a knowledge of the components and the ecotoxicology of similar products.

### 12.1. Toxicity

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

**Acute (short-term) Aquatic toxicity:**

**Fish** LL50 (96h): 2 to 5 mg/L, NOEL(96h): 2.0 mg/L (Oncorhynchus mykiss, OECD 203; KS = 1)

**Aquatic invertebrates** EL50 (48h): 1.4 mg/L, NOEL(48h): 0.3 mg/L (Daphnia magna, OECD 202; KS = 1)

**Chronic (long-term) Aquatic toxicity:**

**Fish** NOEL: 0.098 mg/L (freshwater fish, PETROTOX computer model)

**Aquatic invertebrates** NOEL (21d): 0.48 mg/L, LOEL (21d): 1,2 mg/L, EL50(21d): 0.89 mg/L (Daphnia magna, OECD 211; KS = 1)

**Toxicity to aquatic algae:** NOEL (72h): 1.0 mg/L, EL50(72h): 1-3 mg/L (OECD 201; KS = 1)

**Toxicity to microorganisms:** LL50(72h): 677.9mg/L (Tetrahymena pyriformis, PETROTOX computer model)

**Sediment and terrestrial toxicity:** Substance is a hydrocarbon UVCB. Standard tests for this endpoint are intended for single substances and are not appropriate for the risk assessment of this complex substance.

**Toxicity to birds:** In accordance with Column 2 of REACH Annex X, studies on long-term or reproductive toxicity to birds studies do not need to be conducted due to the existence of a large mammalian dataset.

### 12.2. Persistence and degradability

**Abiotic Degradation:  
Physical/photo-chemical**

Hydrolysis

Kerosines are resistant to hydrolysis because they lack a

**elimination**

functional group that is hydrolytically reactive.

Phototransformation in air:

Standard tests for atmospheric oxidation half-lives are intended for single substances and are not appropriate for this complex substance.

Phototransformation in water and soil:

The substance does not have the potential to undergo photolysis in water and soil.

**Biodegradation:**

Kerosines are not readily biodegradable, but as they can be degraded by micro-organisms, they are regarded as being inherently biodegradable.

12.3. Bio accumulative potential

The substance is a hydrocarbon UVCB. Standard tests for this endpoint are intended for single substances and are not appropriate for the risk assessment of this complex substance.

12.4. Mobility

**Known or predicted distribution to environmental compartments:**

The distribution of the substance in the environmental compartments, air, water, soil, and sediment, has been calculated using the PETRORISK Model. Based on the regional scale exposure assessment, the multimedia distribution of the substance is 91.57 % to air, 1.54 % to water, 2.07 % to sediment and 4.82 % to soil.

**Adsorption/Desorption:**

The substance is a hydrocarbon UVCB. Standard tests for this endpoint are intended for single substances and are not appropriate for this complex substance.

12.5. Results of PBT and vPvB assessment

The substance is not considered to be PBT nor vPvB.

12.6. Other adverse effects

No information available

**13. DISPOSAL CONSIDERATIONS**

13.1. Waste treatment methods

Recover if possible. Dispose of in accordance with the European Directives on waste and hazardous waste. The waste producer is responsible for determining the proper EWC code, classification of the waste and disposal methods, based on the application for which the product was used.

**13.1.1 Product / Packaging disposal:**

Dispose empty containers via an authorized person/licensed waste disposal contractor in accordance with local and European regulations.



**13.1.2 Waste treatment-relevant information:**

Empty containers may retain product residue including flammable or explosive vapours. Empty and drain the container thoroughly, including all internal piping, traps, and standpipes. Removal of flammable material from vessels and/or containers may be done by steaming out. Do not perform any work (welding, cutting, drilling,, soldering) on an "empty" container unless they have been cleaned and declared safe. Do not pollute the soil, water or environment with the waste container.

**13.1.3 Sewage disposal-relevant information:**

DON'T pour the substance down the drain, down the storm sewer or on the ground. Product should not be disposed of by release to sewers.

**13.1.4 Other disposal recommendations:**

Where possible (e.g. in the absence of relevant contamination), recycling of used substance is feasible and recommended. Disposal should be in accordance with applicable regional, national and local laws and regulations.

## 14. TRANSPORT INFORMATION

### Land Transport (ADR/RID)

**14.1. UN No:**

UN 1863

**14.2. UN Proper Shipping Name:**

FUEL, AVIATION, TURBINE ENGINE

**14.3. Transport Hazard class:**

3 Flammable liquids

**14.4. Packing Group:**

I or II or III

The correct choice of packaging group, hazard identification number (HIN) and UK emergency action code (EAC) will depend upon the closed flash point and initial boiling point of the low boiling point of the liquid being transported. The criteria are published in the transport regulations, but are summarised below. Initial boiling point  $\leq 35^{\circ}\text{C}$  requires packaging group I, HIN 33, UK EAC 3YE. Flash point (closed cup)  $< 23^{\circ}\text{C}$  and Initial boiling point  $> 35^{\circ}\text{C}$  requires packaging group II, HIN 33, UK EAC 3YE.

Flash point (closed cup)  $\geq 23$  to  $\leq 60^{\circ}\text{C}$  and Initial boiling point  $> 35^{\circ}\text{C}$  requires packaging group III, HIN 30, UK EAC 3Y.

For UN 1863 substances belonging to packing group II, the special provisions in ADR, RID and ADN(R) differ depending upon whether the vapour pressure of the substance at  $50^{\circ}\text{C}$  is more than 110 kPa or not more than 110 kPa.

**14.5. Environmental hazard:**

This product is classified as dangerous to the environment

**Remarks:**

Hazard identification number (HIN) 30 or 33. UK Emergency action code (EAC) 3YE or 3Y. Tunnel restriction code: D/E (Note: ADR requirement only).

### Inland waterways Transport (ADN)

**14.1. UN No:**

UN1863

**14.2. UN Proper Shipping Name:**

FUEL, AVIATION, TURBINE ENGINE

**14.3. Transport Hazard class:**

3 Flammable liquids

**14.4. Packing Group:**

I or II or III

The correct choice of packaging group, hazard identification number (HIN) and UK emergency action code (EAC) will depend upon the closed flash point and initial boiling point of the low boiling point of the liquid being transported. The criteria are published in the transport regulations, but are summarised below. Initial boiling point  $\leq 35^{\circ}\text{C}$  requires packaging group I, HIN 33, UK EAC 3YE. Flash point (closed cup)  $< 23^{\circ}\text{C}$  and Initial boiling point  $> 35^{\circ}\text{C}$  requires packaging group II, HIN 33, UK EAC 3YE.

Flash point (closed cup)  $\geq 23$  to  $\leq 60^{\circ}\text{C}$  and Initial boiling point  $> 35^{\circ}\text{C}$  requires packaging group III, HIN 30, UK EAC 3Y.

For UN 1863 substances belonging to packing group II, the special provisions in ADR, RID and ADN(R) differ depending upon whether the vapour pressure of the substance at  $50^{\circ}\text{C}$  is more than 110 kPa or not more than 110 kPa.

**14.5. Environmental hazard:**

This product is classified as dangerous to the environment

**Remarks:**

Substance transported by inland waterway in a tank vessel may have a different classification to substance being transported in packaging by inland waterway.

**Sea transport (IMDG Code)**

**14.1. UN No:**

UN 1863

**14.2. UN Proper Shipping Name:**

FUEL, AVIATION, TURBINE ENGINE

**14.3. Transport Hazard class:**

3 Flammable liquids

**14.4. Packing Group:**

I or II or III

The correct choice of packaging group, hazard identification number (HIN) and UK emergency action code (EAC) will depend upon the closed flash point and initial boiling point of the low boiling point naphtha being transported. The criteria are published in the transport regulations, but are summarised below.

Initial boiling point  $\leq 35^{\circ}\text{C}$  requires packaging group I, HIN 33, UK EAC 3YE.

Flash point (closed cup)  $< 23^{\circ}\text{C}$  and Initial boiling point  $> 35^{\circ}\text{C}$  requires packaging group II, HIN 33, UK EAC 3YE.

Flash point (closed cup)  $\geq 23$  to  $\leq 60^{\circ}\text{C}$  and Initial boiling point  $> 35^{\circ}\text{C}$  requires packaging group III, HIN 30, UK EAC 3Y.

For UN 1863 substances belonging to packing group II, the special provisions in ADR, RID and ADN(R) differ depending upon whether the vapour pressure of the substance at  $50^{\circ}\text{C}$  is more than 110 kPa or not more than 110 kPa.

**14.5. Environmental hazard:**

Marine pollutant

**Air Transport (IATA)**

**14.1. UN No:**

UN 1863

**14.2. UN Proper Shipping Name:**

FUEL, AVIATION, TURBINE ENGINE

**14.3. Transport Hazard class:**

3 Flammable liquids

**14.4. Packing Group:**

I or II or III

The correct choice of packaging group, hazard identification number (HIN) and UK emergency action code (EAC) will depend upon the closed flash point and initial boiling point of the low boiling point of the liquid being transported. The criteria are published in the transport regulations, but are summarised below.

Initial boiling point  $\leq 35^{\circ}\text{C}$  requires packaging group I, HIN 33, UK EAC 3YE.

Flash point (closed cup)  $< 23^{\circ}\text{C}$  and Initial boiling point  $> 35^{\circ}\text{C}$  requires packaging group II, HIN 33, UK EAC 3YE.

Flash point (closed cup)  $\geq 23$  to  $\leq 60^{\circ}\text{C}$  and Initial boiling point  $> 35^{\circ}\text{C}$  requires packaging group III, HIN 30, UK EAC 3Y.

For UN 1863 substances belonging to packing group II, the special provisions in ADR, RID and ADN(R) differ depending upon whether the vapour pressure of the substance at  $50^{\circ}\text{C}$  is more than 110 kPa or not more than 110 kPa.

**14.5. Environmental hazard:**

This product is classified as dangerous to the environment

**14.6. Special precautions for user**

Refer to Section 7, Handling and Storage

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

For bulk transport follow Annex II of MARPOL 73/78 and the IBC Code

## 15. REGULATORY INFORMATION

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

#### EU Regulations

- Regulation (EC) No 1907/2006 of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC
- Regulation (EC) No 1272/2008 of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
- Regulation (EC) No 453/2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
- Regulation (EC) No 830/2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

#### Authorisations and/or restrictions on use

- Authorisations: REACH Regulation Annex XIV – List of substances subject to authorisation
- Restrictions on use: REACH Regulation Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

#### Other EU regulations

- Directive 2008/98/EC of 19 November 2008 on waste and repealing certain Directives
- Directive 2012/18/EK of 4 July 2012 on the control of major accident hazards involving dangerous substances, amending and consequently repealing Directive 96/82/EC.
- Directive 2001/7/EC of 29 January 2001 adapting for the third time to technical progress Council Directive 94/55/EC on the approximation of the laws of the Member States with regard to the transport of dangerous goods by road
- Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage
- Directive 2004/37/EC of 29 April 2004 on the protection of workers from the risks related to exposure to carcinogens or mutagens at work.
- Directive 2009/161 establishing a third list of indicative exposure limit values in implementation of Directive 98/24/EK and amending Directive 2000/39/EK

#### National regulations

- Ministerial Decree 13588/725/2006 «Measures, terms and restrictions for handling hazardous wastes according to the Directive 91/689/EEC for hazardous waste» Replacement of the Ministerial Decree 19396/1546/1997 «Measures and terms for handling hazardous waste»
- Presidential Decree 307/1986 «Protection of Workers from the Risks Related to Exposure to Certain Chemical Agents at Work», as it has been amended by:
  - P.D. 77/1993 «Protection of workers from physical, chemical and biological agents at work and amendments and additions to P.D. 307/86 according to Directive 88/642/EEC»
  - P.D. 90/1999 «Establishment of exposure limit values and upper exposure limit values for workers exposed to certain chemical agents at work according to Directives 91/322/EEC and 96/94/EC and amendments and additions to P.D. 307/86, as it has been amended by P.D. 77/93»
  - P.D. 339/2001 «Amendments to P.D. 307/86 "Protection of workers from the risks related to exposure to certain chemical agents at work" »
  - P.D. 162/2007 «Protection of workers from the risks related to exposure to certain chemical agents at work, amending last version of P.D. 307/86 according to Directive 2006/15/EC»
  - P.D. 12/2012 «Amendments to P.D. 307/86 "Protection of workers from the risks related to exposure to certain chemical agents at work» according to Directive 2009/161/EU»
- Presidential Decree 395/1994, «Minimum Safety and Health Requirements for the Use of Work Equipment by Workers at Work (relevant to Directive 89/655/EEC)», as it has been amended by:
  - P.D. 89/99 «Amendments to P.D.395/94 according to Directive 95/63/EC»
  - P.D. 304/00 «Amendments to P.D.395/94, as it has been amended by P.D. 89/99»
  - P.D. 155/04 «Amendments to the last version of P.D.395/94 according to Directive 2001/45/EC»
- Presidential Decree 396/1994 «Minimum Health and Safety Requirements for the Use by Workers of Personal Protective Equipment at the Workplace (relevant to Directive 89/656/EEC)», as it has been amended
- Presidential Decree 338/2001 «Protection of the health and safety of workers from hazards caused by chemical agents at work»

- Ministerial Decision 34458/1990 "Technical specifications for the configuration, design, construction, safe operation and fire protection of refineries and other petroleum industries"

## 15.2. Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for this substance.

## 16. ABBREVIATIONS

### Abbreviations, acronyms

<b>CAS</b>	Chemical Abstracts Service
<b>DSD</b>	Directive 67/548/EEC
<b>CLP</b>	Regulation 1272/2008
<b>ADR</b>	European Agreement concerning the International Carriage of Dangerous Goods by Road
<b>ADN</b>	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterway
<b>IMDG</b>	International Maritime Dangerous Goods Code
<b>ICAO-TI</b>	International Civil Aviation Organization-Technical Instructions
<b>RID</b>	Regulations concerning the International Carriage Dangerous Goods by Rail
<b>DMEL</b>	Derived Minimum Effect Level
<b>DNEL</b>	Derived No Effect Level
<b>PNEC</b>	Predicted No Effect Concentration
<b>LOAEC</b>	Lowest Observed Adverse Effect Concentration
<b>LOAEL</b>	Lowest Observed Adverse Effect Level
<b>LOEL</b>	Lowest Observed Effect Level
<b>NOAEC</b>	No Observed Adverse Effect Concentration
<b>NOAEL</b>	No Observed Adverse Effect Level
<b>NOEC</b>	No Observed Effect Concentration
<b>NOEL</b>	No Observed Effect Level
<b>NOELR</b>	No Observed Effect Loading Rate
<b>LD50</b>	Lethal Dose 50%
<b>LC50</b>	Lethal Concentration 50%
<b>EL50</b>	Effective Level 50%
<b>ErL50</b>	Effective Level 50% Reduction Growth Rate
<b>LL50</b>	Lethal Level 50%
<b>PBT</b>	Persistent, Bioaccumulative and Toxic
<b>vPvB</b>	very Persistent and very Bioaccumulative
<b>SCC</b>	Strictly Controlled Conditions
<b>SCOEL</b>	Scientific Committee on Occupational Exposure Limits
<b>STOT</b>	Specific Target Organ Toxicity
<b>bw</b>	Body weight
<b>bw/day</b>	Body weight/day
<b>IARC</b>	International Agency for Research on Cancer

<b>References</b>	IUCLID Chemical Safety Report Οριακές τιμές έκθεσης GESTIS ( <a href="http://www.dguv.de/ifa/en/gestis/limit_values/index.jsp">http://www.dguv.de/ifa/en/gestis/limit_values/index.jsp</a> )
-------------------	---

**Issue date**

**Revision Date** 15-12-2015

**Reason for revision** Update due to new occupational exposure limit values from GESTIS (section 8) and to the repeal of Directives 67/548/EEC and 1999/45/EC (section 2 and 3)

**Additional information**

**Disclaimer**

MOTOR OIL (HELLAS) -CORINTH REFINERIES specifies that the information given refers only to the specific product, and only when it is not used in combination with another product. The information is accurate according to the current state of knowledge and experience of the product at the date of last revision. MOTOR OIL (HELLAS) – CORINTH REFINERIES S.A. accepts no legal responsibility from any losses or damages caused by other uses, not described above, or from any incorrect use, handling, storage or purchase of the product. It is on the sole responsibility of the user to take all the necessary precautions for the safe use of the specific product. The information and guidelines of this document should be made available to all users. If further information is needed, please contact the company at the above telephone numbers or address.

## **EXPOSURE SCENARIOS**

- ES 1:** Manufacture of Kerosine - Industrial
- ES 2:** Distribution of Kerosine - Industrial
- ES 3:** Formulation & (Re)packing of Kerosine - Industrial
- ES 4:** Use of Kerosine as a Fuel - Professional
- ES 5:** Use of Kerosine as a Fuel - Consumer

## ES.1. Manufacture of Kerosine - Industrial

<b>Section 1 Exposure Scenario Title Kerosine</b>	
<b>Title</b>	
Manufacture of Substance	
<b>Use Descriptor</b>	
Sector(s) of Use	3, 8, 9
Process Categories	1, 2, 3, 4, 8a, 8b, 15
Environmental Release Categories	1, 4
Specific Environmental Release Category	ESVOC SpERC 1.1.v1
<b>Processes, tasks, activities covered</b>	
Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).	
<b>Assessment Method</b>	
See Section 3.	
<b>Section 2 Operational conditions and risk management measures</b>	
<b>Section 2.1 Control of worker exposure</b>	
<b>Product characteristics</b>	
Physical form of product	Liquid
Vapour pressure (kPa)	Liquid, vapour pressure 0.5-10 kPa at STP. <b>OC4.</b>
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) <b>G13</b>
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) <b>G2</b>
Other Operational Conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). <b>OC7.</b> Assumes a good basic standard of occupational hygiene is implemented <b>G1.</b>
<b>Contributing Scenarios</b>	<b>Specific Risk Management Measures and Operating Conditions</b>
General measures (skin irritants) <b>G19</b>	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent/ minimise exposures and to report any skin effects that may develop. <b>E3</b>
CS15 General exposures (closed systems)	No other specific measures identified. <b>EI20</b>
CS16 General exposures (open systems)	No other specific measures identified. <b>EI20</b>
CS14 Bulk transfers	No other specific measures identified. <b>EI20</b>
CS2 Process sampling	No other specific measures identified. <b>EI20</b>
CS36 Laboratory activities	No other specific measures identified. <b>EI20</b>

CS39 Equipment cleaning and maintenance	No other specific measures identified. EI20
CS85 Bulk Product Storage	No other specific measures identified. EI20
<b>Section 2.2 Control of environmental exposure</b>	
<b>Product characteristics</b>	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
<b>Amounts used</b>	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	5.4e6
Fraction of Regional tonnage used locally	0.11
Annual site tonnage (tonnes/year)	6.0e5
Maximum daily site tonnage (kg/day)	2.0e6
<b>Frequency and duration of use</b>	
Continuous release [FD2].	
Emission days (days/year)	300
<b>Environmental factors not influenced by risk management</b>	
Local freshwater dilution factor	10
Local marine water dilution factor	100
<b>Other given operational conditions affecting environmental exposure</b>	
Release fraction to air from process (initial release prior to RMM)	1.0e-2
Release fraction to wastewater from process (initial release prior to RMM)	3.0e-4
Release fraction to soil from process (initial release prior to RMM)	0.0001
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Common practices vary across sites thus conservative process release estimates used [TCS1].	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	
Risk from environmental exposure is driven by freshwater sediment [TCR1b]. Prevent discharge of undissolved substance to or recover from onsite wastewater [TRC14]. Onsite wastewater treatment required [TCR13].	
Treat air emission to provide a typical removal efficiency of (%)	90
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency $\geq$ (%)	97.7
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq$ (%)	56.1
<b>Organisation measures to prevent/limit release from site</b>	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	



<b>Conditions and measures related to municipal sewage treatment plant</b>	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	97.7
Maximum allowable site tonnage ( $M_{safe}$ ) based on release following total wastewater treatment removal (kg/d)	2.0e6
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	10000
<b>Conditions and measures related to external treatment of waste for disposal</b>	
During manufacturing no waste of the substance is generated [ETW4].	
<b>Conditions and measures related to external recovery of waste</b>	
During manufacturing no waste of the substance is generated [ERW2].	
<b>Section 3 Exposure Estimation</b>	
<b>3.1. Health</b>	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. <b>G21.</b>	
<b>3.2. Environment</b>	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].	
<b>Section 4 Guidance to check compliance with the Exposure Scenario</b>	
<b>4.1. Health</b>	
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. <b>G32.</b> Risk Management Measures are based on qualitative risk characterization. <b>G37.</b>	
Available hazard data do not support the need for a DNEL to be established for other health effects. <b>G36.</b> Users are advised to consider national Occupational Exposure Limits or other equivalent values. <b>G38.</b>	
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. <b>G23.</b>	
<b>4.2. Environment</b>	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet ( <a href="http://cefic.org/en/reach-for-industries-libraries.html">http://cefic.org/en/reach-for-industries-libraries.html</a> ). [DSU4]. Scaled assessments for EU refineries have been performed using site-specific data and are attached in Petrorisk file in IUCLID Section 13-"Site-Specific Production" worksheet [DSU6].	

## ES.2. Distribution of Kerosine - Industrial

<b>Section 1 Exposure Scenario Title Kerosine</b>	
<b>Title</b>	
Distribution of Substance	
<b>Use Descriptor</b>	
Sector(s) of Use	3
Process Categories	1, 2, 3, 4, 8a, 8b, 9, 15
Environmental Release Categories	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7
Specific Environmental Release Category	ESVOC SpERC 1.1b.v1
<b>Processes, tasks, activities covered</b>	
Bulk loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading, maintenance and associated laboratory activities.	
<b>Assessment Method</b>	
See Section 3.	
<b>Section 2 Operational conditions and risk management measures</b>	
<b>Section 2.1 Control of worker exposure</b>	
<b>Product characteristics</b>	
Physical form of product	Liquid
Vapour pressure (kPa)	Liquid, vapour pressure 0.5-10 kPa at STP. <b>OC4.</b>
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) <b>G13</b>
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) <b>G2</b>
Other Operational Conditions affecting exposure	Assumes use at not more than 20 °C above ambient temperatures, unless stated differently <b>G15</b> . Assumes a good basic standard of occupational hygiene is implemented <b>G1</b> .
<b>Contributing Scenarios</b>	<b>Specific Risk Management Measures and Operating Conditions</b>
General measures (skin irritants) <b>G19</b>	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent/ minimise exposures and to report any skin effects that may develop. <b>E3</b>
CS15 General exposures (closed systems)	No other specific measures identified. <b>EI20</b>
CS16 General exposures (open systems)	No other specific measures identified. <b>EI20</b>
CS2 Process sampling	No other specific measures identified. <b>EI20</b>
CS36 Laboratory activities	No other specific measures identified. <b>EI20</b>

CS14 Bulk transfers	No other specific measures identified. EI20
CS6 Drum and small package filling	No other specific measures identified. EI20
CS39 Equipment cleaning and maintenance	No other specific measures identified. EI20
CS85 Bulk Product Storage	No other specific measures identified. EI20
<b>Section 2.2 Control of environmental exposure</b>	
<b>Product characteristics</b>	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
<b>Amounts used</b>	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	5.4e6
Fraction of Regional tonnage used locally	2.0e-3
Annual site tonnage (tonnes/year)	1.1e4
Maximum daily site tonnage (kg/day)	3.6e4
<b>Frequency and duration of use</b>	
Continuous release [FD2].	
Emission days (days/year)	300
<b>Environmental factors not influenced by risk management</b>	
Local freshwater dilution factor	10
Local marine water dilution factor	100
<b>Other given operational conditions affecting environmental exposure</b>	
Release fraction to air from process (initial release prior to RMM)	1.0e-3
Release fraction to wastewater from process (initial release prior to RMM)	1.0e-5
Release fraction to soil from process (initial release prior to RMM)	0.00001
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Common practices vary across sites thus conservative process release estimates used [TCS1].	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	
Risk from environmental exposure is driven by freshwater [TCR1a]. No wastewater treatment required [TCR6].	
Treat air emission to provide a typical removal efficiency of (%)	90
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency $\geq$ (%)	0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq$ (%)	0
<b>Organisation measures to prevent/limit release from site</b>	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	

<b>Conditions and measures related to municipal sewage treatment plant</b>	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.7
Maximum allowable site tonnage ( $M_{safe}$ ) based on release following total wastewater treatment removal (kg/d)	2.6e6
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	2000
<b>Conditions and measures related to external treatment of waste for disposal</b>	
External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3].	
<b>Conditions and measures related to external recovery of waste</b>	
External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1].	
<b>Section 3 Exposure Estimation</b>	
<b>3.1. Health</b>	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. <b>G21.</b>	
<b>3.2. Environment</b>	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the PETRORISK model [EE2].	
<b>Section 4 Guidance to check compliance with the Exposure Scenario</b>	
<b>4.1. Health</b>	
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. <b>G32.</b> Risk Management Measures are based on qualitative risk characterization. <b>G37.</b>	
Available hazard data do not support the need for a DNEL to be established for other health effects. <b>G36.</b> Users are advised to consider national Occupational Exposure Limits or other equivalent values. <b>G38.</b>	
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. <b>G23.</b>	
<b>4.2. Environment</b>	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet ( <a href="http://cefic.org/en/reach-for-industries-libraries.html">http://cefic.org/en/reach-for-industries-libraries.html</a> ). [DSU4].	

## ES.3. Formulation & (Re)packing of Kerosine - Industrial

<b>Section 1 Exposure Scenario Title Kerosine</b>	
<b>Title</b>	
Formulation & (Re)packing of Substances and Mixtures	
<b>Use Descriptor</b>	
Sector(s) of Use	3, 10
Process Categories	1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15
Environmental Release Categories	2
Specific Environmental Release Category	ESVOC SpERC 2.2.v1
<b>Processes, tasks, activities covered</b>	
Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, maintenance, sampling and associated laboratory activities.	
<b>Assessment Method</b>	
See Section 3.	
<b>Section 2 Operational conditions and risk management measures</b>	
Section 2.1 Control of worker exposure	
<b>Product characteristics</b>	
Physical form of product	Liquid
Vapour pressure (kPa)	Liquid, vapour pressure 0.5-10 kPa at STP. <b>OC4.</b>
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) <b>G13</b>
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) <b>G2</b>
Other Operational Conditions affecting exposure	Assumes use at not more than 20 <sup>o</sup> C above ambient temperatures, unless stated differently <b>G15</b> . Assumes a good basic standard of occupational hygiene is implemented <b>G1</b> .
<b>Contributing Scenarios</b>	<b>Specific Risk Management Measures and Operating Conditions</b>
General measures (skin irritants) <b>G19</b>	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent/ minimise exposures and to report any skin effects that may develop. <b>E3</b>
CS15 General exposures (closed systems)	No other specific measures identified. <b>EI20</b>
CS16 General exposures (open systems)	No other specific measures identified. <b>EI20</b>
CS2 Process sampling	No other specific measures identified. <b>EI20</b>
CS36 Laboratory activities	No other specific measures identified. <b>EI20</b>
CS14 Bulk transfers	No other specific measures identified. <b>EI20</b>

CS30 Mixing operations (open systems)	No other specific measures identified. EI20
CS34 Manual / CS22 Transfer from/pouring from containers	No other specific measures identified. EI20
CS8 Drum/batch transfers	No other specific measures identified. EI20
CS100 Tableting, compression, extrusion or pelletisation	No other specific measures identified. EI20
CS6 Drum and small package filling	No other specific measures identified. EI20
CS39 Equipment cleaning and maintenance	No other specific measures identified. EI20
CS85 Bulk Product Storage	No other specific measures identified. EI20
<b>Section 2.2 Control of environmental exposure</b>	
<b>Product characteristics</b>	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
<b>Amounts used</b>	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	5.2e6
Fraction of Regional tonnage used locally	5.8e-3
Annual site tonnage (tonnes/year)	3.0e4
Maximum daily site tonnage (kg/day)	1.0e5
<b>Frequency and duration of use</b>	
Continuous release [FD2].	
Emission days (days/year)	300
<b>Environmental factors not influenced by risk management</b>	
Local freshwater dilution factor	10
Local marine water dilution factor	100
<b>Other given operational conditions affecting environmental exposure</b>	
Release fraction to air from process (after typical onsite RMMs, consistent with EU Solvent Emissions Directive Requirements)	1.0e-2
Release fraction to wastewater from process (initial release prior to RMM)	2.0e-4
Release fraction to soil from process (initial release prior to RMM)	0.0001
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Common practices vary across sites thus conservative process release estimates used [TCS1].	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	
Risk from environmental exposure is driven by freshwater sediment [TCR1b]. Prevent discharge of undissolved substance to or recover from onsite wastewater [TRC14].	

If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TCR9].	
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency $\geq$ (%)	86.0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq$ (%)	0
<b>Organisation measures to prevent/limit release from site</b>	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
<b>Conditions and measures related to municipal sewage treatment plant</b>	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.7
Maximum allowable site tonnage ( $M_{safe}$ ) based on release following total wastewater treatment removal (kg/d)	2.6e5
Assumed domestic sewage treatment plant flow (m3/d)	2000
<b>Conditions and measures related to external treatment of waste for disposal</b>	
External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3].	
<b>Conditions and measures related to external recovery of waste</b>	
External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1].	
<b>Section 3 Exposure Estimation</b>	
<b>3.1. Health</b>	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. <b>G21.</b>	
<b>3.2. Environment</b>	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the PETRORISK model [EE2].	
<b>Section 4 Guidance to check compliance with the Exposure Scenario</b>	
<b>4.1. Health</b>	

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. **G32**. Risk Management Measures are based on qualitative risk characterization. **G37**.

Available hazard data do not support the need for a DNEL to be established for other health effects. **G36**. Users are advised to consider national Occupational Exposure Limits or other equivalent values. **G38**.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. **G23**.

#### **4.2. Environment**

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>). [DSU4].





## ES.4. Use of Kerosine as a Fuel – Professional

<b>Section 1 Exposure Scenario Title Kerosine</b>	
<b>Title</b>	
Use as a Fuel	
<b>Use Descriptor</b>	
Sector(s) of Use	22
Process Categories	1, 2, 3, 8a, 8b, 16
Environmental Release Categories	9a, 9b
Specific Environmental Release Category	ESVOC SpERC 9.12b.v1
<b>Processes, tasks, activities covered</b>	
Covers the use as a fuel (or fuel additives and additive components) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.	
<b>Assessment Method</b>	
See Section 3.	
<b>Section 2 Operational conditions and risk management measures</b>	
<b>Section 2.1 Control of worker exposure</b>	
<b>Product characteristics</b>	
Physical form of product	Liquid
Vapour pressure (kPa)	Liquid, vapour pressure 0.5-10 kPa at STP. <b>OC4.</b>
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) <b>G13</b>
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) <b>G2</b>
Other Operational Conditions affecting exposure	Assumes use at not more than 20 <sup>0</sup> C above ambient temperatures, unless stated differently <b>G15</b> . Assumes a good basic standard of occupational hygiene is implemented <b>G1</b> .
<b>Contributing Scenarios</b>	<b>Specific Risk Management Measures and Operating Conditions</b>
General measures (Skin irritants) <b>G19</b>	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin effects that may develop. <b>E3</b>
CS15 General exposures (closed systems).	No other specific measures identified. <b>EI20</b>
GEST_12I Use as a fuel. CS 107 (closed system)	No other specific measures identified. <b>EI20</b>
CS14 Bulk transfers	No other specific measures identified. <b>EI20</b>
CS22 Transfer from/pouring from containers	No other specific measures identified. <b>EI20</b>
CS39 Equipment cleaning and maintenance	No other specific measures identified. <b>EI20</b>

CS85 Bulk Product Storage	No other specific measures identified. EI20
<b>Section 2.2 Control of environmental exposure</b>	
<b>Product characteristics</b>	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
<b>Amounts used</b>	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	4.4e6
Fraction of Regional tonnage used locally	5.0e-4
Annual site tonnage (tonnes/year)	2.2e3
Maximum daily site tonnage (kg/day)	6.1e3
<b>Frequency and duration of use</b>	
Continuous release [FD2].	
Emission days (days/year)	365
<b>Environmental factors not influenced by risk management</b>	
Local freshwater dilution factor	10
Local marine water dilution factor	100
<b>Other given operational conditions affecting environmental exposure</b>	
Release fraction to air from wide dispersive use (regional only)	1.0e-3
Release fraction to wastewater from wide dispersive use	0.00001
Release fraction to soil from wide dispersive use (regional only)	0.00001
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Common practices vary across sites thus conservative process release estimates used [TCS1].	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	
Risk from environmental exposure is driven by freshwater [TCR1a]. No wastewater treatment required [TCR6].	
Treat air emission to provide a typical removal efficiency of (%)	N/A
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency $\geq$ (%)	0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq$ (%)	0
<b>Organisation measures to prevent/limit release from site</b>	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
<b>Conditions and measures related to municipal sewage treatment plant</b>	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.7

Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.7
Maximum allowable site tonnage ( $M_{safe}$ ) based on release following total wastewater treatment removal (kg/d)	6.9e5
Assumed domestic sewage treatment plant flow ( $m^3/d$ )	2000
<b>Conditions and measures related to external treatment of waste for disposal</b>	
Combustion emissions limited by required exhaust emission controls [ETW1]. Combustion emissions considered in regional exposure assessment [ETW2].	
<b>Conditions and measures related to external recovery of waste</b>	
This substance is consumed during use and no waste of the substance is generated [ERW3].	
<b>Section 3 Exposure Estimation</b>	
<b>3.1. Health</b>	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated <b>G21</b> .	
<b>3.2. Environment</b>	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the PETRORISK model [EE2].	
<b>Section 4 Guidance to check compliance with the Exposure Scenario</b>	
<b>4.1. Health</b>	
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. <b>G32</b> . Risk Management Measures are based on qualitative risk characterisation. <b>G37</b> .	
Available hazard data do not support the need for a DNEL to be established for other health effects. <b>G36</b> . Users are advised to consider national Occupational Exposure Limits or other equivalent values. <b>G38</b> .	
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. <b>G23</b> .	
<b>4.2. Environment</b>	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet ( <a href="http://cefic.org/en/reach-for-industries-libraries.html">http://cefic.org/en/reach-for-industries-libraries.html</a> ). [DSU4].	

## ES.5. Use of Kerosine as a Fuel - Consumer

<b>Section 1 Exposure Scenario Title Kerosine</b>		
<b>Title</b>		
Use as a Fuel		
<b>Use Descriptor</b>		
Sector(s) of Use	21	
Product Categories	13	
Environmental Release Categories	9a, 9b	
Specific Environmental Release Category	ESVOC SpERC9.12c.v1	
<b>Processes, tasks, activities covered</b>		
Covers consumer uses in fuels.		
<b>Assessment Method</b>		
See Section 3.		
<b>Section 2 Operational conditions and risk management measures</b>		
<b>Section 2.1 Control of consumer exposure</b>		
<b>Product characteristics</b>		
Physical form of product	liquid	
Vapour pressure	Liquid, vapour pressure > 10 Pa (STP)[OC15]	
Concentration of substance in product	Unless otherwise stated, covers concentrations up to 100% [ConsOC1]	
Amounts used	Unless otherwise stated, covers use amounts up to 50000g [ConsOC2]; covers skin contact area up to 420cm <sup>2</sup> [ConsOC5]	
Frequency and duration of use/exposure	Unless otherwise stated, covers use frequency up to 0.143 times per day [ConsOC4]; covers exposure up to 2 hours per event [ConsOC1 4]	
Other Operational Conditions affecting exposure	Unless otherwise stated, assumes use at ambient temperatures [ConsOC15]; assumes use in a 20 m <sup>3</sup> room [ConsOC11]; assumes use with typical ventilation [ConsOC8]	
<b>Product Category</b>	<b>Specific Risk Management Measures and Operating Conditions</b>	
PC13: Fuels-Liquid -: Refueling	OC	Unless otherwise stated, covers concentrations up to 100% [ConsOC1]; covers use up to 52 days/year [ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 210.00 cm <sup>2</sup> [ConsOC5]; for each use event, covers use amounts up to 50000g [ConsOC2]; covers outdoor use [ConsOC12]; covers use in room size of 100m <sup>3</sup> [ConsOC11]; for each use event, covers exposure up to 0.05hr/event [ConsOC14];
	RMM	No specific RMMs developed beyond those OCs stated
<b>Section 2.2 Control of environmental exposure</b>		
<b>Product characteristics</b>		
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].		
<b>Amounts used</b>		
Fraction of EU tonnage used in region	0.1	
Regional use tonnage (tonnes/year)	1.8e5	
Fraction of Regional tonnage used locally	0.0005	
Annual site tonnage (tonnes/year)	89	
Maximum daily site tonnage (kg/day)	245	
<b>Frequency and duration of use</b>		

Continuous release [FD2].	
Emission days (days/year)	365
<b>Environmental factors not influenced by risk management</b>	
Local freshwater dilution factor	10
Local marine water dilution factor	100
<b>Other given operational conditions affecting environmental exposure</b>	
Release fraction to air from wide dispersive use (regional only)	1.0e-3
Release fraction to wastewater from wide dispersive use	0.00001
Release fraction to soil from wide dispersive use (regional only)	0.00001
<b>Conditions and measures related to municipal sewage treatment plant</b>	
Risk from environmental exposure is driven by freshwater [STP7a]	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.7
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total wastewater treatment removal (kg/d)	3.1e4
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	2000
<b>Conditions and measures related to external treatment of waste for disposal</b>	
Combustion emissions limited by required exhaust emission controls [ETW1]. Combustion emissions considered in regional exposure assessment [ETW2].	
<b>Conditions and measures related to external recovery of waste</b>	
This substance is consumed during use and no waste of the substance is generated [ERW3].	
<b>Section 3 Exposure Estimation</b>	
<b>3.1. Health</b>	
The ECETOC TRA tool has been used to estimate consumer exposures, consistent with the content of ECETOC Report #107 and the Chapter R15 of the IR&CSATGD. Where exposure determinants differ to these sources, then they are indicated.	
<b>3.2. Environment</b>	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].	
<b>Section 4 Guidance to check compliance with the Exposure Scenario</b>	
<b>4.1. Health</b>	
Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given in Section 2 are implemented. <b>G39</b> . Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. <b>G23</b> .	
<b>4.2. Environment</b>	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Further details on scaling and control technologies are provided in SpERC factsheet ( <a href="http://cefic.org/en/reach-for-industries-libraries.html">http://cefic.org/en/reach-for-industries-libraries.html</a> ) [DSU4].	

**Section 1: IDENTIFICATION**

**Product Name:** Propane

**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

**Date of Preparation of SDS:** September 17, 2021

**Section 2: HAZARD(S) IDENTIFICATION****GHS INFORMATION**

**Classification:** Flammable Gases, Category 1  
Gases Under Pressure - Compressed Gas  
Simple Asphyxiant, Category 1

**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, hot surfaces, sparks, open flames and other ignition sources. 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 / Synonyms	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. Central nervous system depression can occur if product is present in concentrations that will reduce the oxygen content of air below 18 % (vol). Symptoms may include headache, lightheadedness, drowsiness, disorientation, vomiting and seizures. Unconsciousness and death may occur with severe oxygen deprivation. 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.
- 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.
- 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 discoloration 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 CO<sub>2</sub>.

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.



<b>Personal Precautions:</b>	Do not touch or walk through spilled material. Use personal protection recommended in Section 8.
<b>Environmental Precautions:</b>	Not normally required.
<b>Methods for Containment:</b>	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.
<b>Methods for Clean-Up:</b>	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.
<b>Other Information:</b>	See Section 13 for disposal considerations.

## Section 7: HANDLING AND STORAGE

### Handling:

Avoid breathing gas. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. 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:** Simple asphyxiant; Explosion hazard

**OSHA:** 1000 ppm (TWA), 1800 mg/m<sup>3</sup> (TWA);

Ethane [CAS No. 74-84-0]

**ACGIH:** Simple asphyxiant; Explosion hazard

**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 (STEL); Explosion hazard (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:**

Wear safety glasses. Use equipment for eye protection that meets the standards referenced by CSA Standard CAN/CSA-Z94.3 and OSHA regulations in 29 CFR 1910.133 for Personal Protective Equipment.

**Hand Protection:**

Wear insulated neoprene 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, 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**

<b>Appearance:</b>	Liquefied gas.
<b>Colour:</b>	Colourless.
<b>Odour:</b>	Odourless, unless odourized with ethyl mercaptan (skunky odour, similar to boiling cabbage).
<b>Odour Threshold:</b>	4800 ppm
<b>Physical State:</b>	Gas.
<b>pH:</b>	Not available.
<b>Melting Point / Freezing Point:</b>	-188 °C (-306.4 °F)
<b>Initial Boiling Point:</b>	-42.2 °C (-44 °F)
<b>Boiling Point:</b>	-42 °C (-43.6 °F)
<b>Flash Point:</b>	-103.4 °C (-154.1 °F) (Closed Cup)
<b>Evaporation Rate:</b>	Rapid.
<b>Flammability (solid, gas):</b>	Extremely flammable gas.

## SAFETY DATA SHEET

<b>Lower Flammability Limit:</b>	2.1%
<b>Upper Flammability Limit:</b>	9.5%
<b>Vapor Pressure:</b>	1435 kPa (maximum) at 37.8 °C (100 °F)
<b>Vapor Density:</b>	1.52 (Air = 1)
<b>Relative Density:</b>	0.51 (Water = 1)
<b>Solubilities:</b>	Slight, 6.1% by volume @ 17.8°C (64 °F)
<b>Partition Coefficient: n-Octanol/Water:</b>	Not available.
<b>Auto-ignition Temperature:</b>	432 °C (809.6 °F)
<b>Decomposition Temperature:</b>	Not available.
<b>Viscosity:</b>	Not available.
<b>Percent Volatile, wt. %:</b>	Not available.
<b>VOC content, wt. %:</b>	Not available.
<b>Density:</b>	Not available.
<b>Coefficient of Water/Oil Distribution:</b>	Not available.

**Section 10: STABILITY AND REACTIVITY**

<b>Reactivity:</b>	Contact with incompatible materials. Sources of ignition. Exposure to heat.
<b>Chemical Stability:</b>	Stable under normal storage conditions.
<b>Possibility of Hazardous Reactions:</b>	Gas explodes spontaneously when mixed with chloride dioxide.
<b>Conditions to Avoid:</b>	Contact with incompatible materials. Sources of ignition. Exposure to heat.
<b>Incompatible Materials:</b>	Oxidizers. Chlorine dioxide.
<b>Hazardous Decomposition Products:</b>	Carbon dioxide. Carbon monoxide.

**Section 11: TOXICOLOGICAL INFORMATION****EFFECTS OF ACUTE EXPOSURE****Product Toxicity**

<b>Oral:</b>	Not available.
<b>Dermal:</b>	Not available.
<b>Inhalation:</b>	Not available.

### Component Toxicity

Component	CAS No.	LD <sub>50</sub> oral	LD <sub>50</sub> dermal	LC <sub>50</sub>
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 <sup>3</sup> (rat); 4H
Butane	106-97-8	Not available.	Not available.	658000 mg/m <sup>3</sup> (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. Central nervous system depression can occur if product is present in concentrations that will reduce the oxygen content of air below 18 % (vol). Symptoms may include headache, lightheadedness, drowsiness, disorientation, vomiting and seizures. Unconsciousness and death may occur with severe oxygen deprivation. 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.

**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.

**Ingestion:** Not a normal route of exposure.

**Skin Sensitization:** Not available.

**Respiratory Sensitization:** Not available.

**Medical Conditions Aggravated By Exposure:** Not available.

### 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.

SAFETY DATA SHEET

Date of Preparation: September 17, 2021

**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
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.

**Date of Preparation of SDS:** September 17, 2021

**Version:** 2.0

**GHS SDS Prepared by:** Deerfoot Consulting Inc.

**Phone:** (403) 720-3700