

# **SPILL PREVENTION AND RESPONSE PLAN**

**DEWAR LAKES CAMP  
QIKIQTANI REGION, NUNAVUT, CANADA**



**Prepared by:**



**Effective Date: July 1, 2022**

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## 1 Introduction

This Spill Prevention and Response Plan (SPRP) applies to activities carried out at the Commander Resources Ltd. (Commander or “the Company”) Dewar Lakes Camp (the Camp), Nunavut, Canada.

This SPRP will come into effect July 1, 2022, pending approval. Copies and updates to this plan may be obtained via the Company or APEX Geoscience Ltd. (APEX).

### 1.1 Contact Details

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### 1.2 Purpose and Scope

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

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

### 1.3 Other Plans

The SPRP should be considered as a part of the Dewar Lakes Camp management system. Other management plans in place at the Dewar Lakes Camp include:

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

## 1.4 Applicable Legislation and Guidelines

Acts, regulations, and guidelines that relate to environmental management and spill prevention and response in Nunavut include, but are not limited to, the following:

### 1.4.1 Federal

- Canadian Environmental Protection Act
- Environment Canada's Environmental Emergency (E2) Regulations
- Implementation Guidelines for the Environmental Emergency Regulations
- Canadian Standards Association (CSA) Z1600-14 - Emergency and continuity management program
- Environment Canada's Guidelines for the Preparation of Hazardous Material Spill Contingency Plans, 1990
- Fisheries Act
- Migratory Birds Convention Act
- Nunavut Waters and Nunavut Surface Rights Tribunal Act
- Transportation of Dangerous Goods Act
- Transportation of Dangerous Good Regulations
- National Fire Code of Canada
- Northern Land Use Guidelines
- Workplace Hazardous Materials Information System
- Guidelines for Spill Contingency Planning

### 1.4.2 Territorial

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

## 1.5 Camp Description and History

The Dewar Lakes Camp has been used as a base location to conduct mineral exploration work on Baffin Island since 2003. Camp activities were most recently conducted under the authorization of Crown Indigenous Relations and Northern Affairs Canada (CIRNAC) Land Use Permit N2017J0014 (Expires July 4, 2022) and Nunavut Water Board (NWB) Water Licence 2BE-NAD1722 (Expires July 17, 2022) both issued to Commander Resources Ltd. (Commander). Commander is requesting to renew Land Use Permit N2017J0014 for an additional 2 years and Water Licence 2BE-NAD1722 for an additional 5 years to support work activities at the existing Dewar Lakes Camp.

The Camp is located on Crown Land beside Dewar Lakes, adjacent to the North Warning System Fox-3 airstrip in the Qikiqtani Region of Nunavut. The approximate location of the Camp is 68°37'59" N and 71°6'38" W (or 414199E/7614919N UTM Nad83 Zone 19) and is located within the 1:50,000 National Topographic System (NTS) map sheet 27B12.

The Camp consists of accommodations for up to 40 persons with a dry, large cook tent, generator shack, tool shed, incinerator, core shack, latrine with pacto toilets and a metal silo structure used for storage. At the end of the 2018 program, the Dewar Lakes Camp fuel cache contained 6 drums of jet fuel and 5 propane cylinders. 50 empty drums remain on site for removal during the next field program.

The Camp was used by Commander as an operating base to support exploration activities from 2003 to 2011. The Camp was unoccupied from 2012 to 2016, other than in 2013 when Biogenie personnel, on behalf of Commander, were onsite to clean up and secure the Camp after an episode of vandalism damaged structures. The Camp was utilized by ValOre Metals Corp. (ValOre, formerly Kivalliq Energy Corp.) in 2017 and 2018 to support mineral exploration activities at their Baffin Gold Project.

Exploration activities supported by the Dewar lakes camp are authorized under separate permits and licenses held by Commander or an assignee (currently ValOre). It is anticipated that the Dewar Lakes Camp will support ongoing exploration activities for the next several years.

A figure illustrating the Dewar Lakes Camp location is located in Appendix 1.

## 2 Hazardous Materials On-Site

The following section details the products which are anticipated to be the most commonly used hazardous materials at the Project. The list is subject to change based on product replacements, etc. Any changes will be reflected in future revisions of this plan. Safety Data Sheets/Material Safety Data Sheets (SDS/MSDS) for all fuels, as well as possible oils and greases, cleaning products and drilling additives are included in Appendix 2.

### 2.1 Fuel

The main Dewar Lakes Camp fuel cache is established proximal to the camp and primarily to store diesel and jet fuel, with smaller quantities of gasoline and propane. Other hazardous materials found on site may include small quantities of various lubricants/oil/grease for maintenance of motorized equipment, cleaning products, and waste oil.

At the end of the 2018 program, the Dewar Lakes Camp fuel cache contained 6 drums of jet fuel and 5 propane cylinders. 50 empty drums remain on site for removal during the next field program. The anticipated fuel to be stored at the Dewars Lakes Camp fuel cache when the camp is actively in use is listed in table 2.1.

Table 2.1: Inventory of Fuels to be Stored on Site

Material	Container	Approximate in cache
Diesel	205 L Drum	23 Drums
Jet Fuel (Jet A or Jet B)	205 L Drum	25 Drums
Gasoline	205 L Drum	2 Drums
Propane	100 lb Cylinder	2 Cylinders

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

Further details on fuel storage and monitoring can be found in the “Dewar Lakes Camp Fuel Management Plan”. Material Safety Data Sheets (MSDS) for each of the hazardous materials listed in Table 2.1 are included in Appendix 2.

## 2.2 Other Hazardous Materials

Other hazardous materials which may be present at the Kahuna Gold Property include chemicals for cleaning, motor oil, drilling additives, antifreeze, and batteries. All hazardous materials will be stored in their original containers within the designated area in the hazardous materials cache.

### 2.2.1 Chemicals

Chemicals to be used on site may include household-strength cleaning supplies such as Javex, ammonia-based sprays, wash soaps, hand sanitizer, degreasers, etc. In addition, limited miscellaneous items such as insect repellent and aerosols will be available. All items will be stored in their original containers in their respective storage/use areas and removed off-site with routine garbage backhauls, such as at crew change. All containers storing hazardous materials will be inspected for dents, punctures, etc. prior to being transported. Extreme care will be taken in the process of transferring all chemicals/chemical solutions/fuels/etc. Funnels will be utilized to direct small amounts of liquid to reduce the potential of spillage. Spill mats will be in place when transferring/refuelling.

### 2.2.2 Motor, Hydrologic and Gear Oils

Small amounts of motor, hydraulic and gear oils may be stored on site for equipment such as generators and All Terrain Vehicles (ATV). The products will be supplied in 1 L plastic containers. This inventory will be maintained during operations and resupplied as needed. The containers will be stored in a sperate section of the fuel Cache, in the generator shack or outdoors on pallets, wrapped in polyethylene sheeting and tarped over.

### 2.2.3 Lead Acid Batteries

Lead acid batteries may be present for equipment such as on the engines for the electrical generators and other portable items. For the purpose of this project description, we have assumed that two spare lead acid batteries will be kept at the camp. Secondary containment measures are not contemplated given the small number of batteries in storage. At no time will any batteries be put in the garbage or incinerated.

## 3 Risk Assessment

Commander recognizes that there are a number of risks associated with the use, storage, and transfer of hazardous materials. The following summarizes a number of potential risks that may be present at the Dewar Lakes Camp.

### 3.1 Potential Spill Hazards

- Containers, such as 205 L steel drums, have the potential to leak or rupture due to mishandling,
- Older or refilled drums are more prone to leaking around the bungs if the seals are not properly maintained,
- Water and spills may collect in the secondary containment and overflow.
- Motorized equipment may experience fuel or oil leaks as a result of malfunctions, impacts, lack of maintenance, improper storage, or faulty operation.
- Leaks or spills may occur during fuel transfer due to over-fueling, improper fueling procedure, or faulty equipment.

### 3.2 Potential Environmental Impacts

All hazardous materials pose a threat to the environment if spilled. Overall, spills in the winter are usually lower impact as snow is a natural sorbent and ice forms a barrier against soil or water contamination. The following list outlines potential environmental impacts of hazardous materials stored on site:

- Gasoline may be harmful to wildlife and aquatic life. It is not readily biodegradable and has the potential for bioaccumulation in the environment. Gasoline volatilizes quickly.
- Diesel may be harmful to wildlife and aquatic life. It is not readily biodegradable and has the potential for bioaccumulation in the environment. Diesel burns slowly and thus the risk to the environment is reduced during recovery as it can be more readily contained compared to more volatile fuels.
- Jet fuel may be harmful to wildlife and aquatic life. It is not readily biodegradable and has the potential for bioaccumulation in the environment. Jet fuel volatilizes relatively quickly.

- Propane may be harmful to wildlife and the surrounding environment, and it has the potential to accumulate in the environment. Propane is extremely volatile and is the most flammable material stored on site. Impacts to the immediate surrounding environment are of greatest concern.
- Oils and greases may be harmful to wildlife and aquatic life. They are not readily biodegradable and have the potential for bioaccumulation in the environment.

#### 4 Preventative Measures

All fuels and other hazardous materials will be stored within “Arctic Insta-Berms”, or similar products, for secondary containment. These types of berms utilize chemical and fire resistant fabric (generally polyurethane coated nylon or vinyl coated polyester material) designed for extreme arctic temperatures and puncture resistance. “RainDrain” or similar hydrocarbon filtration systems will be used to safely remove any water collected inside the berms, and as a safeguard against any potential overflows of contaminated water. The storage area will be located a minimum distance of 31 m from the normal high water mark of any water body. Spill kits and firefighting equipment will be strategically located near where any hazardous materials are stored, used or transferred.

All hazardous materials will be clearly labeled in accordance with the Workplace Hazardous Materials Information System (WHMIS) and other applicable legislation. Labels will include, but not limited to, the type of material, safe handling procedures, reference to SDS/MSDS, company name, and the date of delivery to site. Signs with the same information, along with SDS/MSDS for each material type will be posted at each storage or transfer site. Additionally, “No Smoking” signs will be posted at all locations where hazardous materials are stored or transferred.

All fuel drums will be inspected before being transported to site. Monitoring of storage containers, fuel transfer equipment, and fuel caches will be ongoing during use of the Camp. Inspections will be conducted on a regular and timely basis to identify any damaged or leaking containers, and the findings recorded. Any damage discovered during or as a result of transport will also be recorded. Any leaks or spills will be reported and contained as outlined in this document.

The Project Field Supervisor is responsible for supervising the monitoring and inspection program and keeping a detailed inventory of all fuel and other hazardous materials on site.

##### 4.1 Fuel

Fuel drums will be stored on their sides in organized rows with the bungs in the three o'clock and nine o'clock positions. They will be stored in such a manner that they will not be susceptible to tipping over, rolling or otherwise being unstable. Drums will be stood upright 1 to 2 days prior to use to allow any contaminants to settle. Regular visual inspections will be conducted to identify any damaged or leaking containers. In the event that a leak is discovered, the substance will either be used immediately or transferred to

an undamaged container. Regular inspections and maintenance of motorized equipment will also be performed to avoid any fluid leaks onto the land.

Electric or hand wobble pumps equipped with filtration devices will be used for the transfer of diesel, jet fuel, and gasoline from their storage containers directly to their end-use fuel tanks. Portable drip trays or mini berms will be used to mitigate the risk of any spillage. Proper grounding procedures will always be used during fuel transfer while using an electric pump. Cigarette smoking, sparks, open flames, and any potential ignition sources are prohibited within 100 m of any fuel storage site and at all times during fuel transfer.

Any personnel who are required to handle or store fuel will receive appropriate training, including instruction in the operation and maintenance of fuel transfer and storage equipment. All on-site personnel will receive training as outlined in this document.

#### 4.2 Propane

Propane will be stored in appropriate, certified containers. Propane cylinders will be inspected and monitored on a regular basis for any signs of deterioration or corrosion. Containers will be secured and fastened in an upright position to ensure there is no risk of damage to the regulator in the event of a fall.

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

#### 4.3 Chemicals

Containers and packages of chemicals will be placed in the hazardous materials cache within secondary containment and may also be on pallets, wrapped in polyethylene sheeting and tarped over. Immediately prior to use, bags or containers of chemicals will be transported to the drill site. Appropriate spill kits, including empty containers/drums for contaminated soil, will be kept on hand to clean up any product spilled.

Chemicals will generally be transferred directly to the end use machinery from the containers that the products were provided in. Considering the nature of the operations, generally less than 2 L of product will be transferred at a time. For any solid products, the bags will be opened directly over the intended use tanks into which the product will be placed. Used chemical products will be returned to empty containers and stored for shipment off-site. Used motor oil will be accumulated in sealed, labeled 20 L pails for shipment off-site.

#### 4.4 Battery Acid

All batteries will be protected from damage by fastening them into the space designed for them when used with various power equipment and stored safely within appropriate secondary containment when not in use.

#### 4.5 Transportation of Fuel and Other Hazardous Materials to Site

Fuel and other hazardous materials will be brought to site by fixed wing aircraft. Prior to transport to site all fuel drums, tanks or other containers will be inspected to identify any defects (i.e. torn, missing, or twisted gaskets, punctures, etc.). A second inspection will be performed upon arrival at the camp. Regulations outlined in the Transportation of Dangerous Goods Act, and other relevant legislation, will be observed at all times during transport. Empty drums will be removed from site for proper disposal at an accredited facility.

#### 5 Resource Inventory

Spill kits and firefighting equipment will be strategically located near where any hazardous materials are stored or transferred, such as near the fuel cache, in the helicopter and at numerous locations throughout the Camp.

##### 5.1 On-site Resources

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

- 100 oil sorbent pads
- 6 small pillows
- 2 large pillows
- 2 3"x4' socks
- 5 3"x8' socks
- 2 4' socks
- 1 25 lb bag granular
- 2 pair splash goggles
- 2 poly coated Tyvek suits
- 2 disposable respirators
- 10 large bags with ties for temporary use
- 2 large tarps
- 1 collapsible shovel
- 1 roll duct tape
- 1 utility knife
- 2 spill kit labels
- 1 laminated copy of the Dewar Lakes Camp Spill Prevention and Response Plan
- 1 231 L overpack drum
- 1 checklist of required items

Spill kits will include enough Flexible Intermediate Bulk Containers ("FIBC")-type bags (suitable for transporting contaminated materials by helicopter) to be able to address the largest possible spill volume (i.e., combined spill of multiple barrels) being stored or transported at that time.

## 5.2 Other Equipment

Other equipment on-site may include:

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

## 5.3 Fire Extinguishers

Appropriate fire extinguishers and other fire fighting equipment will be strategically located near where any hazardous materials are used, stored, or transferred, including at the fuel cache and in the helicopter.

## 6 Training

### 6.1 On-site Personnel

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

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

- Review of the SPRP and ERT member responsibilities.
- Location of fuel and chemical storage sites.
- Causes and possible effects of spills.
- Use of on and off-site spill response resources.
- Exercises in spill response and spill kit use.

All on-site personnel are required to have basic training in first aid, Workplace Hazardous Materials Information System (WHMIS), and Transportation of Dangerous Goods (TDG). Supervisors are required to have advanced first aid training, as well as a valid Occupational Health and Safety (OHS" Supervisor's Certificate.

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

## 6.2 Contractors

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

## 7 Response Organization

In the case of a spill or other environmental emergency, an immediate, safe, and environmentally responsible reaction is required. 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 threshold volumes outlined in Appendix 3 “Immediately Reportable Spill Quantities.” It must be reported to the Nunavut 24-Hour Spill Report Line at 1-867-920-8130.

### 7.1 Basic Steps

The basic steps of the response plan are as follows:

1. **Assess** safety hazards and risks.
2. **Ensure** the safety of all persons at all times.
3. **Identify** the spilled substance and its source.
4. **Eliminate** ignition source(s), if safe to do so.
5. **Stop** the flow of the spill (shut off valve, stand up drum, etc.), if safe to do so.
6. **Contain** the spill or environmental hazard, if safe to do so.
7. **Inform** the Solstice Project Field Supervisor.
8. **Request** assistance (if required).
9. **Implement** any necessary cleanup/remedial action.
10. **Photograph** if and where possible, during and after cleanup.

### 7.2 Chain of Command

1. **Project Field Supervisor.**
2. **NT/NU 24 Hour Spill Report Line** at 867-920-8130 (Fax: 867-873-6924).
  - a. Before or after contacting the 24-Hour Spill Report Line, a Spill Report Form (Appendix 4) is to be filled out.
3. **Any other agencies** as instructed by the NT/NU 24 Hour Spill Report Line and the INAC in Nunavut at 1-800-567-9604, the Manager of Field Operations at 867-975-4295, and Environment Canada at 867-920-8130.
4. **Commander Resources Ltd.**, Robert Cameron President and CEO, at (604) 685-5254 (office) or (778) 989-1501 (cell).

## 8 Containment Procedures

The following list outlines the containment procedures for hazardous materials spilled on site:

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

### 8.1 Containment of Hazardous Fluid Spills

#### 8.1.1 Containment of Spills on Land

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

#### **Dykes**

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

#### **Trenches**

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

#### 8.1.2 Containment of Spills on Water

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

## **Booms**

Booms are commonly used to recover fuel floating on the surface of lakes or slow moving streams. They are released from the shore of a water body to create a circle around the spill. If the spill is away from the shoreline a boat will need to be used to reach the spill, then the boom can be set out. More than one boom may be used at once. Booms may also be used in streams and should be set out at an angle to the current. Booms are designed to float and have sorbent materials built into them to absorb fuels at the edge of the boom. Fuel contained within the circle of the boom will need to be recovered using sorbent materials or pumps and placed into barrels or bags for disposal.

## **Weirs**

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

## **Barriers**

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

## **Burning**

In some cases, it may be appropriate to burn fuel or to let volatile fuels such as gasoline evaporate after containment on the water surface. This should only be undertaken in consultation with, and after approval from the CIRNAC or lead agency inspector.

### *8.1.3 Containment of Spills on Ice*

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

## **Dykes**

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

## **Trenches**

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

## **Burning**

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

### *8.1.4 Containment of Spills on Snow*

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

## **Dykes**

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

### *8.1.5 Storage, Transfer and Disposal*

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

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

All contaminated supplies used for clean-up will be stored in sealed, labeled containers and removed from site for proper disposal at an approved facility. All contaminated water, ice and snow will be stored in sealed, labeled containers and removed from site for proper disposal at an approved facility. All contaminated soils will be stored in sealed, labeled containers and removed from site for proper disposal at an approved facility or, subject to approval and consent, from the appropriate regulatory authorities authorization, contaminated soils may be remediated on site by bioremediation or soil farming techniques. The movement of all hazardous wastes will be monitored by the Nunavut

Department of Environment and tracked with a Waste Manifest during all movements and transfers.

## 8.2 Containment of Propane Spills

It is not possible to contain vapors when released. Water spray can be used to knock down vapors if no chance of ignition exists. Personnel should leave the area immediately unless a small leak is stopped immediately following detection. Personnel should avoid touching release points on damaged containers as frost may form rapidly. If tanks are damaged, do not attempt a recovery – allow gas to disperse. Keep clear of tank ends. Small fires can be extinguished with a dry chemical CO<sub>2</sub> fire extinguisher.

## 8.3 Containment of Chemical Spills

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

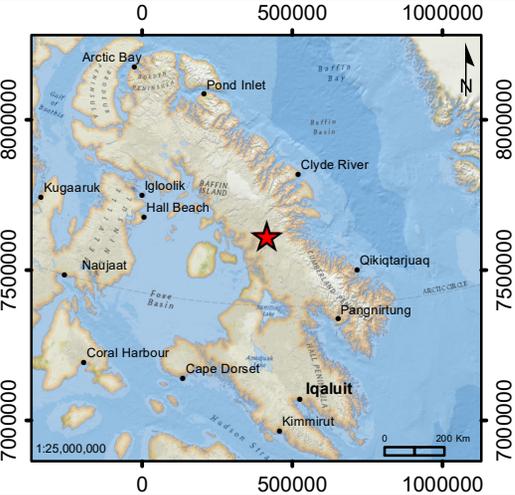
The Project Field Supervisor is responsible for maintaining a detailed inventory of all fuel and other hazardous materials, including waste. The Project Field Supervisor will track all movement and transfer of hazardous materials, including wastes, with appropriately detailed logs. A Hazardous Waste Manifest will be completed and will accompany all shipments of hazardous waste. Copies of the Hazardous Waste Manifests will also be kept with the Project Field Supervisor.

## **Appendix 1: Figures**



**Legend**

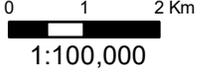
-  Dewar Lakes Camp Location
- Inuit Owned Land**
-  Surface Parcel
-  Subsurface Parcel
-  1:50,000 NTS Mapsheet Index



**COMMANDER RESOURCES LTD.**

Baffin Island, Nunavut, Canada

**Dewar Lakes Camp Location**



Nad 83 Zone 19  
APEX Geoscience Ltd.

## **Appendix 2: SDS/MSDS**

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### SECTION 1. IDENTIFICATION

Product name : PROPANE

Synonyms : Propane HD-5, Propane commercial, Liquefied Petroleum Gas (LPG), C<sub>3</sub>H<sub>8</sub>, CGSB Propane Grade 1, CGSB Propane Grade 2, odorized propane, stench propane, automotive propane.

Product code : 100139

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

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

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

Recommended use : Propane is used as a fuel gas, refrigerant and as a raw material for organic synthesis. It is also used as a laboratory gas. The grade determines the propane content. It is supplied as pressurized liquid in tanks.

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

### SECTION 2. HAZARDS IDENTIFICATION

#### Emergency Overview

Appearance	Gas at room temperature; liquid when stored under pressure., Liquefied compressed gas.
Colour	colourless
Odour	Propane is an odourless gas. Odourized propane will contain up to 30 g Ethyl Mercaptan per 1000 L of propane.

#### GHS Classification

Flammable gases : Category 1

Gases under pressure : Liquefied gas

Simple Asphyxiant : Category 1

#### GHS label elements

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Hazard pictograms



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.  
In case of leakage, eliminate all ignition sources.  
**Storage:**  
Protect from sunlight. Store in a well-ventilated place.

### Potential Health Effects

Primary Routes of Entry

: Eye contact  
Inhalation  
Skin contact

Inhalation

: Inhalation may cause central nervous system effects.  
May cause respiratory tract irritation.  
Inhalation of vapours may cause drowsiness, headache, dizziness, and disorientation.

Skin

: Contact with rapidly expanding gas may cause burns or frostbite.

Eyes

: Contact with rapidly expanding gas may cause burns or frostbite.

Ingestion

: Exposure by this route unlikely.

Aggravated Medical Condition

: Overexposure may lead to cardiac sensitization.

### Other hazards

None known.

### IARC

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

### ACGIH

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

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### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

#### Hazardous components

Chemical name	CAS-No.	Concentration
propane	74-98-6	90 - 100 %
propylene	115-07-1	1 - 5 %
butane	106-97-8	1 - 2.5 %
ethane	74-84-0	1 - 1.5 %
methane	74-82-8	0.1 - 0.2 %

### SECTION 4. FIRST AID MEASURES

- If inhaled : Move to fresh air.  
Artificial respiration and/or oxygen may be necessary.  
Seek medical advice.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.  
Wash skin thoroughly with soap and water or use recognized skin cleanser.  
Wash contaminated clothing before reuse.  
Seek medical advice.
- In case of eye contact : Remove contact lenses.  
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.  
Obtain medical attention.
- If swallowed : Not a significant route of exposure.
- Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

### SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : No information available.
- Specific hazards during fire-fighting : If the product release cannot be shut off safely, allow the product to burn itself out.  
Cool closed containers exposed to fire with water spray.
- Hazardous combustion prod- : Carbon oxides (CO, CO<sub>2</sub>), smoke and irritating vapours as

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- ucts : 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 and full protective wear.  
Wear a positive-pressure supplied-air respirator with full face-piece.

### SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.  
Ensure adequate ventilation.  
Evacuate personnel to safe areas.  
In case of inadequate ventilation wear respiratory protection.  
Remove all sources of ignition.
- 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.  
Ensure adequate ventilation.  
Use explosion-proof ventilation equipment.  
Non-sparking tools should be used.  
Contact the proper local authorities.

### SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : For personal protection see section 8.  
Smoking, eating and drinking should be prohibited in the application area.  
In case of insufficient ventilation, wear suitable respiratory equipment.  
Avoid contact with skin, eyes and clothing.  
Avoid breathing gas.  
Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity.  
Use only with adequate ventilation.  
Keep away from heat and sources of ignition.  
Keep container closed when not in use.  
Do not use sparking tools.  
Do not enter areas where used or stored until adequately ventilated.
- 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.  
Keep away from sources of ignition - No smoking.

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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
propane	74-98-6	TWA	1,000 ppm	CA AB OEL
		TWA	1,000 ppm	CA BC OEL
		TWAEV	1,000 ppm 1,800 mg/m <sup>3</sup>	CA QC OEL
propylene	115-07-1	TWA	500 ppm 860 mg/m <sup>3</sup>	CA AB OEL
		TWA	500 ppm	CA BC OEL
		TWA	500 ppm	ACGIH
butane	106-97-8	TWA	1,000 ppm	CA AB OEL
		TWA	600 ppm	CA BC OEL
		STEL	750 ppm	CA BC OEL
		TWAEV	800 ppm 1,900 mg/m <sup>3</sup>	CA QC OEL
ethane	74-84-0	TWA	1,000 ppm	CA AB OEL
		TWA	1,000 ppm	CA BC OEL

**Engineering measures** : Use only in well-ventilated areas.  
Use explosion-proof ventilation equipment.  
Adequate ventilation to ensure that Occupational Exposure Limits are not exceeded.

#### Personal protective equipment

**Respiratory protection** : 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** : Always wear NIOSH-approved self-contained breathing apparatus when handling this material.

**Hand protection**  
**Material** : Wear insulated gloves to prevent frostbite.

**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.

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

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : Gas at room temperature; liquid when stored under pressure.,  
Liquefied compressed gas.
- Colour : colourless
- Odour : Propane is an odourless gas. Odourized propane will contain up to 30 g Ethyl Mercaptan per 1000 L of propane.
- Odour Threshold : No data available
- pH : No data available
- Pour point : No data available
- Boiling point/boiling range : -42 °C (-44 °F)
- Flash point : -104 °C (-155 °F)  
Method: closed cup
- Fire Point : No data available
- Auto-Ignition Temperature : 450 °C (842 °F)
- Evaporation rate : No data available
- Flammability : Extremely flammable in presence of open flames, sparks, and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. Rapid escape of vapour may generate static charge causing ignition. May accumulate in confined spaces.
- Upper explosion limit : 9.5 %(V)
- Lower explosion limit : 2.1 %(V)
- Vapour pressure : 10,763 mmHg (38 °C / 100 °F)
- Relative vapour density : 1.56
- Relative density :  
No data available
- Density : No data available
- Solubility(ies)

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Water solubility	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Viscosity		
Viscosity, kinematic	:	No data available
Explosive properties	:	Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Containers may explode in heat of fire. Vapour explosion hazard indoors, outdoors or in sewers. Propane may form explosive mixtures with air.

### SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	:	Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	:	Heat, flames and sparks.
Incompatible materials	:	Reactive with oxidising agents and halogenated compounds.
Hazardous decomposition products	:	May release COx, smoke and irritating vapours when heated to decomposition.

### SECTION 11. TOXICOLOGICAL INFORMATION

#### Information on likely routes of exposure

Eye contact  
Inhalation  
Skin contact

#### Acute toxicity

##### Product:

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

##### Components:

###### **butane:**

Acute inhalation toxicity	:	LC50 (Rat): 658 mg/l Exposure time: 4 h Test atmosphere: gas
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#### Skin corrosion/irritation

##### Product:

Remarks: No data available

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### Serious eye damage/eye irritation

**Product:**

Remarks: No data available

### Respiratory or skin sensitisation

No data available

### Germ cell mutagenicity

No data available

### Carcinogenicity

No data available

### Reproductive toxicity

No data available

### STOT - single exposure

No data available

### STOT - repeated exposure

No data available

---

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

**Product:**

Toxicity to fish : Remarks: No data available

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

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

### Persistence and degradability

**Product:**

Biodegradability : Remarks: No data available

### Bioaccumulative potential

No data available

### Mobility in soil

No data available

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### Other adverse effects

No data available

## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

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

## SECTION 14. TRANSPORT INFORMATION

### International Regulations

#### IATA-DGR

UN/ID No. : UN 1978  
Proper shipping name : Propane  
Class : 2.1  
Packing group : Not assigned by regulation  
Labels : Class 2 - Gases: Flammable (Division 2.1)  
Packing instruction (cargo aircraft) : 200

#### IMDG-Code

UN number : UN 1978  
Proper shipping name : PROPANE  
  
Class : 2.1  
Packing group : Not assigned by regulation  
Labels : 2.1  
EmS Code : F-D, S-U  
Marine pollutant : no

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

### National Regulations

#### TDG

UN number : UN 1978  
Proper shipping name : PROPANE  
  
Class : 2.1  
Packing group : Not assigned by regulation  
Labels : 2.1  
ERG Code : 115

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Marine pollutant : no

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### SECTION 15. REGULATORY INFORMATION

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

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

<b>DSL</b>	On the inventory, or in compliance with the inventory
<b>TSCA</b>	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
<b>EINECS</b>	On the inventory, or in compliance with the inventory

---

### SECTION 16. OTHER INFORMATION

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

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

Revision Date : 2016/07/20

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



## Avjet Holding Inc. Material Safety Data Sheet

Effective Date: 2016-01-01  
Supersedes: 2013-01-01



Class B2 Flammable  
Liquid



Class D2B Other Toxic  
Effects - Skin Irritant

### 1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT: **AVGAS 100 LL**  
SYNONYMS: AVIATION GASOLINE  
PRODUCT USE: Fuel  
MSDS Number: 101-200

**MANUFACTURER**  
Avjet Holding Inc.

900, Lemire Boulevard  
Drummondville, QC Canada  
J2C 7W8

**TELEPHONE NUMBERS**  
Avjet Emergency Number

For general information:  
For MSDS information:

1-866-472-0007

(819) 479-1000  
(819) 479-1000

This MSDS was prepared by the Toxicology and Product Stewardship Section of Avjet Holding Inc.

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS Number	% Range	WHMIS Controlled
Naphtha (Petroleum), Light Alkylate	64741-66-8	70 - 90	Yes
Toluene	108-88-3	10 - 30	Yes

See Section 8 for Occupational Exposure Guidelines.

### 3. HAZARDS IDENTIFICATION

**Physical Description:** Liquid Blue Colour Clear Typical Gasoline Odour

**Routes of Exposure:** Exposure will most likely occur through skin contact or inhalation.

**Hazards:**

Vapour concentrations above the recommended exposure level are irritating to the eyes and respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.

Flammable Liquid.

Irritating to skin.

Ingestion may result in vomiting. Avoid aspiration of vomitus into lungs as small quantities may result in aspiration pneumonitis.

May be absorbed by skin contact.

**Handling:**

Eliminate all ignition sources.

Wear suitable gloves and eye protection.

Bond and ground transfer containers and equipment to avoid static accumulation.

Avoid prolonged exposure to vapours.

Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

For further information on health effects, see Section 11.

#### 4. FIRST AID

- Eyes:** Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.
- Skin:** Wash contaminated skin with mild soap and water for 15 minutes. If irritation occurs and persists, obtain medical attention.
- Ingestion:** Do not induce vomiting. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously keep head below hips to prevent aspiration of liquid into the lungs. Do not give anything by mouth to an unconscious person. Obtain medical attention immediately.
- Inhalation:** Remove victim from further exposure and restore breathing, if required. Obtain medical attention.
- Notes to Physician:** The main hazard following accidental ingestion is aspiration of the liquid into the lungs producing chemical pneumonitis. If more than 2.0 mL/kg has been ingested, vomiting should be induced with supervision. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before vomiting, gastric lavage with a cuffed endotracheal tube should be considered.

#### 5. FIRE FIGHTING MEASURES

- Extinguishing Media:** Dry Chemical  
Carbon Dioxide  
Foam  
Water Fog
- Firefighting Instructions:** Extremely flammable. Vapour forms a flammable/explosive mixture with air between upper and lower flammable limits. Vapours may travel along ground and flashback along vapour trail may occur. Product will float and can be reignited on surface of water. Do not use water except as a fog. Avoid breathing vapours. Avoid inhalation of smoke. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus.
- Hazardous Combustion Products:** Carbon dioxide, carbon monoxide and unidentified organic compounds may be formed upon combustion.

## 6. ACCIDENTAL RELEASE MEASURES

Issue warning "Flammable". Eliminate all ignition sources. Isolate hazard area and restrict access. Handling equipment must be grounded. Try to work upwind of spill. Avoid direct contact with material. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Dike and contain land spills; contain water spills by booming. Use water fog to knock down vapours; contain runoff. Absorb residue or small spills with absorbent material and remove to non-leaking containers for disposal. Recommended materials: Clay or Sand Flush area with water to remove trace residue. Dispose of recovered material as noted under Disposal Considerations. Notify appropriate environmental agency(ies).

## 7. HANDLING AND STORAGE

- Handling:** Extremely flammable. Avoid breathing vapours and prolonged or repeated contact with skin. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Provide adequate ventilation. Vapours may accumulate and travel to distant ignition sources and flashback. Do not cut, drill, grind, weld or perform similar operations on or near containers. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. Wash with soap and water prior to eating, drinking, smoking, applying cosmetics or using toilet facilities. Launder contaminated clothing prior to reuse. Use good personal hygiene.
- Storage:** Store in a cool, dry, well ventilated area, away from heat and ignition sources. Protect against physical damage to containers.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**THE FOLLOWING INFORMATION, WHILE APPROPRIATE FOR THIS PRODUCT, IS GENERAL IN NATURE. THE SELECTION OF PERSONAL PROTECTIVE EQUIPMENT WILL VARY DEPENDING ON THE CONDITIONS OF USE.**

### **OCCUPATIONAL EXPOSURE LIMITS (Current ACGIH TLV/TWA unless otherwise noted):**

Gasoline: 300 ppm (STEL: 500 ppm)

Toluene (skin): 50 ppm

Skin Notation: Absorption through skin, eyes and mucous membranes may contribute significantly to the total exposure.

- Mechanical Ventilation:** Use explosion-proof ventilation as required to control vapour concentrations. Concentrations in air should be maintained below lower explosive limit at all times or below the recommended threshold limit value if unprotected personnel are involved. Make up air should always be supplied to balance air exhausted (either generally or locally). For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere.

### **PERSONAL PROTECTIVE EQUIPMENT:**

- Eye Protection:** Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes. Provide an eyewash station in the area.

- Skin Protection:** Avoid contact with skin. Use protective clothing and gloves manufactured from nitrile. Safety showers should be available for emergency use.
- Respiratory Protection:** Avoid breathing vapour or mists. If exposure has the potential to exceed occupational exposure limits, use an appropriate NIOSH-approved respirator. For high airborne concentrations, use a NIOSH-approved supplied-air respirator, either self-contained or airline breathing apparatus, operated in positive pressure mode.

## 9. PHYSICAL DATA

<b>Physical State:</b>	Liquid
<b>Appearance:</b>	Blue Colour Clear
<b>Odour:</b>	Typical Gasoline Odour
<b>Odour Threshold:</b>	Not available
<b>Freezing/Pour Point:</b>	Freeze Point < -58 °C
<b>Boiling Point:</b>	70 - 170 °C
<b>Density:</b>	Not available
<b>Vapour Density (Air = 1):</b>	Not available
<b>Vapour Pressure (absolute):</b>	> 285 mm Hg @ 38 °C
<b>pH:</b>	Not applicable
<b>Flash Point:</b>	Tag Closed Cup < 1 °C
<b>Lower Explosion Limit:</b>	1.4 % (vol.)
<b>Upper Explosion Limit:</b>	7.6 % (vol.)
<b>Autoignition Temperature:</b>	Not available
<b>Viscosity:</b>	Not available
<b>Evaporation Rate (n-BuAc = 1):</b>	Not available
<b>Partition Coefficient (log K<sub>ow</sub>):</b>	Not available
<b>Water Solubility:</b>	Insoluble
<b>Other Solvents:</b>	Hydrocarbon Solvents

## 10. STABILITY AND REACTIVITY

<b>Chemically Stable:</b>	Yes
<b>Hazardous Polymerization:</b>	No
<b>Sensitive to Mechanical Impact:</b>	No
<b>Sensitive to Static Discharge:</b>	Yes
<b>Incompatible Materials:</b>	Avoid strong oxidizing agents.
<b>Conditions of Reactivity:</b>	Avoid excessive heat, open flames and all ignition sources.

## 11. TOXICOLOGICAL INFORMATION

<b>Ingredient (or Product if not specified)</b>	<b>Toxicological Data</b>
Naphtha (Petroleum), Light Alkylate	LD50 Oral Rat > 8000 mg/kg LD50 Dermal Rat > 4000 mg/kg LC50 Inhalation Rat > 11000 mg/m <sup>3</sup> for 4hours
Toluene	LD50 Dermal Rabbit = 14000 mg/kg LC50 Inhalation Rat = 8000 ppm for 4 hours LD50 Oral Rat = 5000 mg/kg

- Routes of Exposure:** Exposure will most likely occur through skin contact or inhalation.
- Formulation:** This product contains n-hexane.

<b>Irritancy:</b>	This product is expected to be irritating to skin but is not predicted to be a skin sensitizer.
<b>Acute Toxicity:</b>	Vapour concentrations above the recommended exposure level are irritating to the eyes and respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.
<b>Chronic Effects:</b>	Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Prolonged or repeated exposure to high vapour concentration or ingestion can cause headache, nausea, dizziness, and central nervous system depression, and in rare cases may sensitize heart muscles causing heart arrhythmia. Peripheral neurotoxicity has been reported in connection with over exposure to n-hexane. This product contains low levels of lead. Chronic, low grade exposure to lead compounds could lead to insomnia, anorexia, nausea and vomiting, diarrhea, anemia, sensory loss and muscular weakness.
<b>Pre-existing Conditions:</b>	Pre-existing eye, skin and respiratory disorders may be aggravated by exposure to this product.

## 12. ECOLOGICAL INFORMATION

Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Block off drains and ditches. Provincial regulations require and federal regulations may require that environmental and/or other agencies be notified of a spill incident. Spill area must be cleaned and restored to original condition or to the satisfaction of authorities.

<b>Biodegradability:</b>	Rapid volatilization.
<b>Bioaccumulation:</b>	Not available.
<b>Partition Coefficient (log <math>K_{ow}</math>):</b>	Not available

### Aquatic Toxicity

Product is expected to be toxic to aquatic organisms.

<b>Ingredient:</b>	<b>Toxicological Data</b>
<b>Naphtha</b>	EL50 - growth rate (WAF method) Algae (72hr) 1 - 10 mg/L.
<b>(Petroleum), Light</b>	EL50 (WAF method) Daphnia Magna (48hr) 1 - 10 mg/L.
<b>Alkylate</b>	LL50 (WAF method) Rainbow Trout (96hr) 1 - 10 mg/L.
<b>Toluene</b>	EL50 - growth rate Algae (72hr) 10 - 100 mg/L.
	EL50 Daphnia Magna (48hr) 10 - 100 mg/L.
	LL50 Rainbow Trout (96hr) 10 - 100 mg/L.

## 13. DISPOSAL CONSIDERATIONS

Waste management priorities (depending on volumes and concentration of waste) are: 1. recycle (reprocess), 2. energy recovery (cement kilns, thermal power generation), 3. incineration, 4. disposal at a licenced waste disposal facility. Do not attempt to combust waste on-site. Incinerate at a licenced waste disposal site with approval of environmental authority.

## 14. TRANSPORTATION INFORMATION

**Canadian Road and Rail Shipping Classification:**

UN Number	UN1203
Proper Shipping Name	GASOLINE
Hazard Class	Class 3 Flammable Liquids
Packing Group	PG II
Additional Information	Marine Pollutant
Shipping Description	GASOLINE Class 3 UN1203 PG II Marine Pollutant

**15. REGULATORY INFORMATION**

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

**WHMIS Class:** Class B2 Flammable Liquid  
Class D2B Other Toxic Effects - Skin Irritant

**DSL/NDSL Status:** This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act.

**Other Regulatory Status:** No Canadian federal standards.

**16. ADDITIONAL INFORMATION****LABEL STATEMENTS**

**Hazard Statement :** Flammable Liquid.  
Irritating to skin.

**Handling Statement:** Eliminate all ignition sources.  
Wear suitable gloves and eye protection.  
Bond and ground transfer containers and equipment to avoid static accumulation.  
Avoid prolonged exposure to vapours.  
Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

**First Aid Statement :** Wash contaminated skin with soap and water.  
Flush eyes with water.  
If overcome by vapours remove to fresh air.  
Do not induce vomiting.  
Obtain medical attention.

**Revisions:**

This MSDS has been reviewed and updated.  
Changes have been made to:

- Section 3
- Section 5
- Section 6
- Section 7
- Section 8
- Section 9
- Section 12
- Section 14

# SAFETY DATA SHEET

## DIESEL FUEL

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### SECTION 1. IDENTIFICATION

Product name : DIESEL FUEL

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

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

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

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

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

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

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

### SECTION 2. HAZARDS IDENTIFICATION

#### Emergency Overview

Appearance	Bright oily liquid.
Colour	Clear to yellow (This product may be dyed red for taxation purposes)
Odour	Mild petroleum oil like.
Hazard Summary	Combustible liquid. May cause cancer. Irritating to eyes and skin.

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### Potential Health Effects

- Primary Routes of Entry : Eye contact  
Ingestion  
Inhalation  
Skin contact  
Skin Absorption
- Target Organs : Skin  
Eyes  
Respiratory Tract
- Inhalation : May cause respiratory tract irritation.  
Inhalation may cause central nervous system effects.  
Symptoms and signs include headache, dizziness, fatigue,  
muscular weakness, drowsiness and in extreme cases, loss of  
consciousness.
- Skin : Causes skin irritation.
- Eyes : Causes eye irritation.
- Ingestion : Ingestion may cause gastrointestinal irritation, nausea, vomit-  
ing and diarrhoea.  
Aspiration hazard if swallowed - can enter lungs and cause  
damage.
- Aggravated Medical Condi- : None known.  
tion

### Other hazards

None known.

### IARC

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

### ACGIH

Confirmed animal carcinogen with unknown relevance to humans

Fuel Oil No. 1

8008-20-6

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

### Hazardous components

Chemical name	CAS-No.	Concentration
---------------	---------	---------------

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kerosine (petroleum), hydrodesulfurized	64742-81-0	70 - 100 %
kerosine (petroleum)	8008-20-6	
fuels, diesel	68334-30-5	
fuel oil no. 2	68476-30-2	
Alkanes, C10-20-branched and linear	928771-01-1	0 - 25 %
Soybean oil, Methyl ester	67784-80-9	0 - 5 %
Rape oil, Methyl ester	73891-99-3	
Fatty acids, tallow, Methyl esters	61788-61-2	

### SECTION 4. FIRST AID MEASURES

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

### SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Dry chemical  
Carbon dioxide (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>), sulphur compounds (H<sub>2</sub>S), smoke and irritating

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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.

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### SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.  
Ensure adequate ventilation.  
Evacuate personnel to safe areas.  
Material can create slippery conditions.

Environmental precautions : If the product contaminates rivers and lakes or drains inform respective authorities.

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

---

### SECTION 7. HANDLING AND STORAGE

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

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.

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### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

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Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
kerosine (petroleum), hydrodesulfurized	64742-81-0	TWA	200 mg/m <sup>3</sup> (As total hydrocarbon vapour)	ACGIH
		TWA	200 mg/m <sup>3</sup> (As total hydrocarbon vapour)	ACGIH
kerosine (petroleum)	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

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

### Personal protective equipment

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

**Filter type** : 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.

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Eye protection	: Wear face-shield and protective suit for abnormal processing problems.
Skin and body protection	: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Protective measures	: Wash contaminated clothing before re-use.
Hygiene measures	: Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash face, hands and any exposed skin thoroughly after handling.

---

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Bright oily liquid.
Colour	: Clear to yellow (This product may be dyed red for taxation purposes)
Odour	: Mild petroleum oil like.
Odour Threshold	: No data available
pH	: No data available
Pour point	: No data available
Boiling point/boiling range	: 150 - 371 °C (302 - 700 °F)
Flash point	: > 40 °C (104 °F) Method: closed cup
Auto-Ignition Temperature	: 225 °C (437 °F)
Evaporation rate	: No data available
Flammability	: Flammable in presence of open flames, sparks and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. This product can accumulate static charge and ignite.
Upper explosion limit	: 6 %(V)
Lower explosion limit	: 0.7 %(V)
Vapour pressure	: 7.5 mmHg (20 °C / 68 °F)
Relative vapour density	: 4.5
Relative density	: 0.8 - 0.88

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### 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)

### Explosive properties

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

---

## SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions : Hazardous polymerisation does not occur. Stable under normal conditions.

Conditions to avoid : Extremes of temperature and direct sunlight.

Incompatible materials : Reactive with oxidising agents and acids.

Hazardous decomposition products : May release CO<sub>x</sub>, NO<sub>x</sub>, SO<sub>x</sub>, H<sub>2</sub>S, smoke and irritating vapours when heated to decomposition.

---

## SECTION 11. TOXICOLOGICAL INFORMATION

### Information on likely routes of exposure

Eye contact

Ingestion

Inhalation

Skin contact

Skin Absorption

### Acute toxicity

#### Product:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

#### Components:

##### **kerosine (petroleum), hydrodesulfurized:**

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

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

### **kerosine (petroleum):**

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

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

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

### **fuels, diesel:**

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

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

### **fuel oil no. 2:**

Acute oral toxicity : LD50 (Rat): 12,000 mg/kg,

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

### **Skin corrosion/irritation**

#### **Product:**

Remarks: No data available

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

#### **Product:**

Remarks: No data available

### **Respiratory or skin sensitisation**

No data available

### **Germ cell mutagenicity**

No data available

### **Carcinogenicity**

No data available

### **Reproductive toxicity**

No data available

### **STOT - single exposure**

No data available

### **STOT - repeated exposure**

No data available

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### SECTION 12. ECOLOGICAL INFORMATION

#### Ecotoxicity

##### Product:

Toxicity to fish : Remarks: No data available

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

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

#### Persistence and degradability

##### Product:

Biodegradability : Remarks: No data available

#### Bioaccumulative potential

No data available

#### Mobility in soil

No data available

#### Other adverse effects

No data available

---

### SECTION 13. DISPOSAL CONSIDERATIONS

#### Disposal methods

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

Contaminated packaging : Do not re-use empty containers.

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### SECTION 14. TRANSPORT INFORMATION

#### International Regulations

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## DIESEL FUEL



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### IATA-DGR

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

### IMDG-Code

UN number : UN 1202  
Proper shipping name : DIESEL FUEL  
  
Class : 3  
Packing group : III  
Labels : 3  
EmS Code : F-E, S-E  
Marine pollutant : no

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

### National Regulations

#### TDG

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

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## SECTION 15. REGULATORY INFORMATION

**WHMIS Classification** : B3: Combustible Liquid  
D2A: Very Toxic Material Causing Other Toxic Effects  
D2B: Toxic Material Causing Other Toxic Effects

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

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

**DSL** On the inventory, or in compliance with the inventory  
**TSCA** All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.  
**EINECS** On the inventory, or in compliance with the inventory

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## SECTION 16. OTHER INFORMATION

# SAFETY DATA SHEET

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

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

Revision Date : 2016/08/23

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.



# Shell Canada Limited Material Safety Data Sheet

Effective Date: 2010-05-07

Supersedes: 2007-05-25



Class B2 Flammable Liquid



Class D2A Carcinogenicity

## 1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT: REGULAR UNLEADED GASOLINE**

**SYNONYMS:** Automotive Fuel  
Petrol

**PRODUCT USE:** Fuel

**PRODUCT CODE:** 211-001

### SUPPLIER

**Shell Canada Limited (SCL)**

P.O. Box 100, Station M

400-4th Ave. S.W.

Calgary, AB Canada

T2P 2H5

### TELEPHONE NUMBERS

**Shell Emergency Number**

**CANUTEC 24 HOUR EMERGENCY NUMBER**

For general information:

1-800-661-7378

1-613-996-6666

1-800-661-1600

[www.shell.ca](http://www.shell.ca)

This MSDS was prepared by the Toxicology and Product Stewardship Section of Shell Canada Limited.

\*An asterisk in the product name designates a trade-mark of Shell Brands International AG. Used under license.

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS Number	% Range	WHMIS Controlled
Gasoline	86290-81-5	> 90	Yes
Benzene	71-43-2	< 1.5	Yes

See Section 8 for Occupational Exposure Guidelines.

## 3. HAZARDS IDENTIFICATION

**Physical Description:** Volatile Liquid Colourless Typical Gasoline Odour

**Routes of Exposure:** Exposure will most likely occur through skin contact or inhalation.

### Hazards:

Vapour concentrations above the recommended exposure level are irritating to the eyes and respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.

Flammable Liquid.

Contains Benzene.

May cause cancer.

Ingestion may result in vomiting. Avoid aspiration of vomitus into lungs as small quantities may result in aspiration pneumonitis.  
 May be absorbed by skin contact.  
 In rare cases may sensitize heart muscle causing heart arrhythmia.

**Handling:** Eliminate all ignition sources.  
 Wear suitable gloves and eye protection.  
 Bond and ground transfer containers and equipment to avoid static accumulation.  
 Avoid prolonged exposure to vapours.  
 Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

For further information on health effects, see Section 11.

#### 4. FIRST AID MEASURES

**Eyes:** Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

**Skin:** Wash contaminated skin with mild soap and water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

**Ingestion:** DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY.  
 Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Do not give anything by mouth to an unconscious person.

**Inhalation:** Remove victim from further exposure and restore breathing, if required. Obtain medical attention.

**Notes to Physician:** The main hazard following accidental ingestion is aspiration of the liquid into the lungs producing chemical pneumonitis.

#### 5. FIRE FIGHTING MEASURES

**Extinguishing Media:** Dry Chemical  
 Carbon Dioxide  
 Foam  
 Water Fog

**Firefighting Instructions:** Flammable. Clear area of unprotected personnel. Do not use a direct stream of water as it may spread fire. Product will float and can be reignited on surface of water. Vapour forms a flammable/explosive mixture with air between upper and lower flammable limits. Avoid breathing vapours. Use water to cool fire exposed containers. Vapours may travel along ground and flashback along vapour trail may occur. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus. Delayed lung damage can be experienced after exposure to combustion products, sometimes hours after the exposure.

**Hazardous Combustion Products:** Carbon dioxide, carbon monoxide and unidentified organic compounds may be formed upon combustion.

#### 6. ACCIDENTAL RELEASE MEASURES

Issue warning "Flammable". Eliminate all ignition sources. Isolate hazard area and restrict access. Handling

equipment must be grounded. Work upwind of spill if it is safe to do so. Avoid direct contact with material. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Dike and contain land spills; contain spills to water by booming. Use water fog to knock down vapours; contain runoff. Adsorb residue or small spills with adsorbent material and remove to non-leaking containers for disposal. Notify appropriate environmental agency(ies). After area has been cleaned up to the satisfaction of regulatory authorities, flush area with water to remove trace residue. Dispose of recovered material as noted under Disposal Considerations.

## 7. HANDLING AND STORAGE

**Handling:** Flammable. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Avoid breathing vapours and prolonged or repeated contact with skin. Vapours may accumulate and travel to distant ignition sources and flashback. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. Do not pressurize drum containers to empty them. Do not cut, drill, grind, weld or perform similar operations on or near containers. Provide adequate ventilation. Launder contaminated clothing prior to reuse. Wash with soap and water prior to eating, drinking, smoking, applying cosmetics or using toilet facilities.

**Storage:** Store in a cool, dry, well ventilated area, away from heat and ignition sources. Use explosion-proof ventilation to prevent vapour accumulation.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

The following information, while appropriate for this product, is general in nature. The selection of personal protective equipment will vary depending on the conditions of use.

### OCCUPATIONAL EXPOSURE LIMITS (Current ACGIH TLV/TWA unless otherwise noted):

The exposure limits listed here are provided for guidance only. Consult local, provincial and territorial authorities for specific values.

Gasoline: 300 ppm (STEL: 500 ppm)

Benzene (skin) : 0.5 ppm (STEL: 2.5 ppm)

Benzene: Shell internal standard is 0.5 ppm or 1.6 mg/m<sup>3</sup> (8-12 hour time-weighted average limit), 2.5 ppm or 8 mg/m<sup>3</sup> (15-minute short term limit)

Skin Notation: Absorption through skin, eyes and mucous membranes may contribute significantly to the total exposure.

**Mechanical Ventilation:** Concentrations in air should be maintained below the occupational exposure limit if unprotected personnel are involved. Use explosion-proof ventilation as required to control vapour concentrations. Local ventilation recommended where general ventilation is ineffective in controlling airborne concentrations below the recommended occupational exposure limit. Make up air should always be supplied to balance air exhausted (either generally or locally). For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere.

### PERSONAL PROTECTIVE EQUIPMENT:

**Eye Protection:** Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes. Provide an eyewash station in the area.

- Skin Protection:** Avoid contact with skin. Use protective clothing and gloves manufactured from nitrile. Safety showers should be available for emergency use.
- Respiratory Protection:** Avoid breathing vapour or mists. If exposure has the potential to exceed occupational exposure limits, use an appropriate NIOSH-approved respirator. For high airborne concentrations, use a NIOSH-approved supplied-air respirator, either self-contained or airline breathing apparatus, operated in positive pressure mode.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State:</b>	Volatile Liquid
<b>Appearance:</b>	Colourless
<b>Odour:</b>	Typical Gasoline Odour
<b>Odour Threshold:</b>	< 0.25 ppm
<b>Freezing/Pour Point:</b>	Not available
<b>Boiling Point:</b>	35 - 220 °C
<b>Density:</b>	720 - 760 kg/m <sup>3</sup> @ 15 °C
<b>Vapour Density (Air = 1):</b>	3.5
<b>Vapour Pressure (absolute):</b>	< 107 kPa @ 38 °C
<b>Specific Gravity (Water = 1):</b>	0.74
<b>pH:</b>	Not applicable
<b>Flash Point:</b>	TCC -30 °C
<b>Lower Flammable Limit:</b>	1.4 % (vol.)
<b>Upper Flammable Limit:</b>	7.6 % (vol.)
<b>Autoignition Temperature:</b>	280 °C
<b>Viscosity:</b>	< 1 mm <sup>2</sup> /s @ 38 °C
<b>Evaporation Rate (n-BuAc = 1):</b>	Not available
<b>Partition Coefficient (log K<sub>OW</sub>):</b>	2.3
<b>Water Solubility:</b>	Insoluble
<b>Other Solvents:</b>	Hydrocarbon Solvents
<b>Formula:</b>	C4 - C11

## 10. STABILITY AND REACTIVITY

<b>Chemically Stable:</b>	Yes
<b>Hazardous Polymerization:</b>	No
<b>Sensitive to Mechanical Impact:</b>	No
<b>Sensitive to Static Discharge:</b>	Yes
<b>Incompatible Materials:</b>	Avoid contact with strong oxidizing agents and acids.
<b>Conditions of Reactivity:</b>	Avoid excessive heat, open flames and all ignition sources.

## 11. TOXICOLOGICAL INFORMATION

Ingredient (or Product if not specified)	Toxicological Data
Gasoline	LD50 Oral Rat > 18 mL/kg LD50 Dermal Rabbit > 5 mL/kg
Benzene	LD50 Oral Rat 690 - 3400 mg/kg LC50 Inhalation Rat 13700 ppm for 4 hours LD50 Dermal Rabbit > 8260 mg/kg

<b>Routes of Exposure:</b>	Exposure will most likely occur through skin contact or inhalation.
<b>Formulation:</b>	No data is specifically available for this product and therefore this toxicological information is based on testing completed with the ingredients.
<b>Irritancy:</b>	Based on testing with similar materials, this product is not expected to be a primary skin irritant after exposure of short duration, would not be a skin sensitizer and would not be irritating to the eye.
<b>Acute Toxicity:</b>	Vapour concentrations above the recommended exposure level are irritating to the eyes and respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.
<b>Chronic Effects:</b>	Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Prolonged exposure to high vapour concentration can cause headache, dizziness, nausea, blurred vision and central nervous system depression. Prolonged and repeated exposure may cause serious injury to blood forming organs, resulting in anemia and similar conditions. Myelodysplastic syndrome (MDS) has been observed in people exposed to very high levels (50 to 300 ppm) of benzene over a long period of time in the workplace. The relevance of these results to lower levels of exposure is not known.
<b>Carcinogenicity and Mutagenicity:</b>	According to the International Agency for Research on Cancer (IARC) this product is considered to be possibly carcinogenic to humans. This product contains benzene. Carcinogenic hazard. Repeated exposure to benzene concentrations greater than the recommended TLV/TWA may reduce the cellular components of peripheral blood and bone marrow. Epidemiological studies indicate that long term inhalation of benzene vapour can cause leukaemia in man. Benzene has also produced chromosomal aberrations in peripheral blood lymphocytes. May cause heritable genetic damage.

## 12. ECOLOGICAL INFORMATION

Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Block off drains and ditches.

<b>Biodegradability:</b>	Inherently biodegradable. Rapid volatilization.
<b>Bioaccumulation:</b>	Potential for bioaccumulation.
<b>Partition Coefficient (log K<sub>ow</sub>):</b>	2.3
<b>Aquatic Toxicity:</b>	Product is expected to be toxic to aquatic organisms.

Ingredient:	Toxicological Data
<b>Gasoline</b>	LL50 (WAF method) Rainbow Trout (96hr) 1 - 10 mg/L. EL50 (WAF method) Daphnia Magna (48hr) 1 - 10 mg/L. EL50 - growth rate (WAF method) Algae (72hr) 1 - 10 mg/L.
<b>Benzene</b>	LL50 Rainbow Trout (96hr) 1 - 10 mg/L. EL50 Daphnia Magna (48hr) 10 - 100 mg/L. EL50 - growth rate Algae (72hr) 10 - 100 mg/L.

**Definition(s):** LL and EL are the lethal loading concentration and effective loading concentration respectively. The concentration represents the amount of substance added to the system to obtain a toxic concentration. They replace the traditional LC and EC for low solubility substances.  
WAF is the water accommodated fraction. A slightly soluble hydrocarbon is stirred

into water and the insoluble portions are removed. The remaining solution is the water accommodated fraction.

### 13. DISPOSAL CONSIDERATIONS

Waste management priorities (depending on volumes and concentration of waste) are: 1. recycle (reprocess), 2. energy recovery 3. incineration, 4. disposal at a licenced waste disposal facility. Do not attempt to combust waste on-site. Incinerate at a licenced waste disposal site with approval of environmental authority.

### 14. TRANSPORT INFORMATION

#### Canadian Road and Rail Shipping Classification:

UN Number	UN1203
Proper Shipping Name	GASOLINE
Hazard Class	Class 3 Flammable Liquids
Packing Group	PG II
Additional Information	Marine Pollutant
Shipping Description	GASOLINE Class 3 UN1203 PG II Marine Pollutant

### 15. REGULATORY INFORMATION

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

<b>WHMIS Class:</b>	Class B2 Flammable Liquid Class D2A Carcinogenicity
<b>DSL/NDSL Status:</b>	This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act. This product and/or all components are listed on the U.S. EPA TSCA Inventory.
<b>Other Regulatory Status:</b>	The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

### 16. OTHER INFORMATION

#### LABEL STATEMENTS

<b>Hazard Statement :</b>	Flammable Liquid. Contains Benzene. May cause cancer.
<b>Handling Statement:</b>	Eliminate all ignition sources. Wear suitable gloves and eye protection. Bond and ground transfer containers and equipment to avoid static accumulation. Avoid prolonged exposure to vapours. Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.
<b>First Aid Statement :</b>	Wash contaminated skin with soap and water. Flush eyes with water.

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If overcome by vapours remove to fresh air.  
Do not induce vomiting.  
Obtain medical attention.

**Revisions:** This MSDS has been reviewed and updated. Section 4 Section 5 Section 7 Section  
8 Section 11 Section 15

**SECTION 1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : GASOLINE, UNLEADED

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

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

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

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

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

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

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

**SECTION 2. HAZARDS IDENTIFICATION****Emergency Overview**

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

**GHS Classification**

Flammable liquids : Category 1

Skin irritation : Category 2

Germ cell mutagenicity : Category 1B

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

**GHS Label element**

- Hazard pictograms :
- 

- Signal word : Danger

- Hazard statements :
- H224 Extremely flammable liquid and vapour.
  - H304 May be fatal if swallowed and enters airways.
  - H315 Causes skin irritation.
  - H336 May cause drowsiness or dizziness.
  - H340 May cause genetic defects.
  - H350 May cause cancer.
  - H361 Suspected of damaging fertility or the unborn child.
  - H372 Causes damage to organs through prolonged or repeated exposure.

- Precautionary statements :
- Prevention:**
- P201 Obtain special instructions before use.
  - P202 Do not handle until all safety precautions have been read and understood.
  - P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  - P233 Keep container tightly closed.
  - P240 Ground/bond container and receiving equipment.
  - P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
  - P242 Use only non-sparking tools.
  - P243 Take precautionary measures against static discharge.
  - P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
  - P264 Wash skin thoroughly after handling.
  - P270 Do not eat, drink or smoke when using this product.
  - P271 Use only outdoors or in a well-ventilated area.
  - P280 Wear protective gloves/ eye protection/ face protection.
  - P281 Use personal protective equipment as required.
- Response:**
- P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
  - P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
  - P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a

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POISON CENTER or doctor/ physician if you feel unwell.  
P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
P331 Do NOT induce vomiting.  
P332 + P313 If skin irritation occurs: Get medical advice/ attention.  
P362 Take off contaminated clothing and wash before reuse.  
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

### Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.  
P403 + P235 Store in a well-ventilated place. Keep cool.  
P405 Store locked up.

### Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

### Potential Health Effects

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

### Carcinogenicity:

#### IARC

Group 1: Carcinogenic to humans

Benzene 71-43-2

#### ACGIH

Confirmed human carcinogen

Benzene 71-43-2

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	Confirmed animal carcinogen with unknown relevance to humans	
	Ethanol	64-17-5
	Gasoline, natural	8006-61-9
<b>OSHA</b>	OSHA specifically regulated carcinogen	
	Benzene	71-43-2
<b>NTP</b>	Known to be human carcinogen	
	Benzene	71-43-2

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

Pure substance/mixture : Mixture

**Hazardous components**

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

**SECTION 4. FIRST AID MEASURES**

- If inhaled : Artificial respiration and/or oxygen may be necessary.  
Move to fresh air.  
Seek medical advice.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.  
Wash skin thoroughly with soap and water or use recognized skin cleanser.  
Wash clothing before reuse.  
Seek medical advice.
- In case of eye contact : Remove contact lenses.  
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.  
Obtain medical attention.
- If swallowed : Rinse mouth with water.  
DO NOT induce vomiting unless directed to do so by a physician or poison control center.  
Never give anything by mouth to an unconscious person.

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Seek medical advice.

Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

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### 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 firefighting : 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>), polynuclear aromatic hydrocarbons, phenols, aldehydes, ketones, smoke and irritating vapours as products of incomplete combustion.
- Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.
- 

### SECTION 6. ACCIDENTAL RELEASE MEASURES

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

### SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : For personal protection see section 8.  
Smoking, eating and drinking should be prohibited in the application area.  
Use only with adequate ventilation.  
In case of insufficient ventilation, wear suitable respiratory equipment.  
Avoid spark promoters. Ground/bond container and

equipment. These alone may be insufficient to remove static electricity.

Avoid contact with skin, eyes and clothing.

Do not ingest.

Keep away from heat and sources of ignition.

Keep container closed when not in use.

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

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
		TWA	300 ppm 900 mg/m <sup>3</sup>	OSHA P0
		STEL	500 ppm 1,500 mg/m <sup>3</sup>	OSHA P0
		TWA	500 ppm 2,000 mg/m <sup>3</sup>	OSHA Z-1
toluene	108-88-3	TWA	20 ppm	ACGIH
		TWA	100 ppm 375 mg/m <sup>3</sup>	NIOSH REL
		ST	150 ppm 560 mg/m <sup>3</sup>	NIOSH REL
		TWA	200 ppm	OSHA Z-2
		CEIL	300 ppm	OSHA Z-2
		Peak	500 ppm	OSHA Z-2
		TWA	100 ppm 375 mg/m <sup>3</sup>	OSHA P0
		STEL	150 ppm 560 mg/m <sup>3</sup>	OSHA P0
benzene	71-43-2	TWA	0.5 ppm	ACGIH
		STEL	2.5 ppm	ACGIH
		TWA	0.1 ppm	NIOSH REL
		ST	1 ppm	NIOSH REL
		TWA	10 ppm	OSHA Z-2
		CEIL	25 ppm	OSHA Z-2
		Peak	50 ppm	OSHA Z-2
		PEL	1 ppm	OSHA CARC
		STEL	5 ppm	OSHA CARC
ethanol	64-17-5	TWA	1,000 ppm 1,900 mg/m <sup>3</sup>	NIOSH REL
		TWA	1,000 ppm 1,900 mg/m <sup>3</sup>	OSHA Z-1

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		TWA	1,000 ppm 1,900 mg/m <sup>3</sup>	OSHA P0
		STEL	1,000 ppm	ACGIH

**Biological occupational exposure limits**

Component	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Toluene	108-88-3	Toluene	In blood	Prior to last shift of workweek	0.02 mg/l	ACGIH BEI
Toluene		Toluene	Urine	End of shift (As soon as possible after exposure ceases)	0.03 mg/l	ACGIH BEI

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

**Personal protective equipment**

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

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

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

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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.

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### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Clear liquid.
Colour	: Clear to slightly yellow or green, undyed liquid. May be dyed red for taxation purposes.
Odour	: Gasoline
Odour Threshold	: No data available
pH	: No data available
Pour point	: No data available
Boiling point/boiling range	: 25 - 225 °C (77 - 437 °F)
Flash point	: -50 - -38 °C (-58 - -36 °F) Method: Tagliabue.
Auto-Ignition Temperature	: 257 °C (495 °F)
Evaporation rate	: No data available
Flammability	: Extremely flammable in presence of open flames, sparks, shocks, and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. Rapid escape of vapour may generate static charge causing ignition. May accumulate in confined spaces.
Upper explosion limit	: 7.6 %(V)
Lower explosion limit	: 1.3 %(V)
Vapour pressure	: < 802.5 mmHg (20 °C / 68 °F)
Relative vapour density	: 3
Relative density	: 0.685 - 0.8
Solubility(ies)	

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Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity	:	
Explosive properties	:	Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Containers may explode in heat of fire. Vapours may form explosive mixtures with air.

### SECTION 10. STABILITY AND REACTIVITY

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

### SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	Eye contact Ingestion Inhalation Skin contact
--	--

#### Acute toxicity

##### Product:

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

##### Components:

###### **toluene:**

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

###### **benzene:**

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

**ethanol:**

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

**Skin corrosion/irritation**

**Product:**

Remarks: No data available

**Components:**

**toluene:**

Result: Moderate skin irritant

**benzene:**

Result: Moderate skin irritant

**ethanol:**

Result: Skin irritation

**Serious eye damage/eye irritation**

**Product:**

Remarks: No data available

**Components:**

**toluene:**

Result: Mild eye irritation

**benzene:**

Result: Moderate eye irritation

**ethanol:**

Result: Eye irritation

**Respiratory or skin sensitisation**

No data available

**Germ cell mutagenicity**

No data available

**Carcinogenicity**

No data available

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**Reproductive toxicity**

No data available

**STOT - single exposure**

No data available

**STOT - repeated exposure**

No data available

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**SECTION 12. ECOLOGICAL INFORMATION**

**Ecotoxicity**

**Product:**

Toxicity to fish : Remarks: No data available

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

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

**Persistence and degradability**

**Product:**

Biodegradability : Remarks: No data available

**Bioaccumulative potential**

No data available

**Mobility in soil**

No data available

**Other adverse effects**

No data available

---

**SECTION 13. DISPOSAL CONSIDERATIONS**

**Disposal methods**

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

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Contaminated packaging : Do not re-use empty containers.

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### SECTION 14. TRANSPORT INFORMATION

#### International Regulation

##### IATA-DGR

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

##### IMDG-Code

UN number : 1203  
Proper shipping name : GASOLINE  
Class : 3  
Packing group : II  
Labels : 3  
EmS Code : F-E, S-E  
Marine pollutant : no

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

Not applicable for product as supplied.

##### 49 CFR

UN/ID/NA number : 1203  
Proper shipping name : Gasoline  
Class : 3  
Packing group : II  
Labels : 3  
ERG Code : 128  
Marine pollutant : no

#### Special precautions for user

Not applicable

---

### SECTION 15. REGULATORY INFORMATION

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

**DSL** On the inventory, or in compliance with the inventory  
**TSCA** All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.  
**EINECS** On the inventory, or in compliance with the inventory

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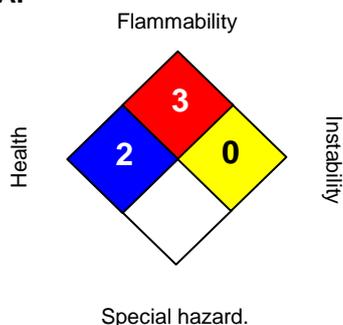
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### SECTION 16. OTHER INFORMATION

#### Further information

##### NFPA:



##### HMIS III:

HEALTH	2*
FLAMMABILITY	3
PHYSICAL HAZARD	0
PERSONAL PROTECTION	H

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

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

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

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

## HYDREX<sup>TM/MC</sup> AW 46

000003000469



Version 5.1

Revision Date 2017/02/17

Print Date 2017/02/17

### SECTION 1. IDENTIFICATION

Product name : HYDREX<sup>TM/MC</sup> AW 46

Product code : HDXAW46P5R, HDXAW46P20, HDXAW46ICT,  
HDXAW46IBC, HDXAW46DRR, HDXAW46DRM,  
HDXAW46DCT, HDXAW46, HDXAW46BLK

Manufacturer or supplier's details  
Petro-Canada Lubricants Inc.  
2310 Lakeshore Road West  
Mississauga ON L5J 1K2  
Canada

Emergency telephone number : Petro-Canada Lubricants Inc.: +1 905-403-5770;  
CHEMTREC Transport Emergency: 1-800-424-9300;  
Poison Control Centre: Consult local telephone directory for  
emergency number(s).

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

Recommended use : These products are designed for use as heavy duty hydraulic power transmission fluids and for lubrication where good anti-wear and anti-oxidation properties are required. They would typically be used in high-pressure hydraulic systems, machine tools, presses, compressors, pumps, gear sets, and centralized bearing lubrication systems.

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

### SECTION 2. HAZARDS IDENTIFICATION

#### Emergency Overview

Appearance	viscous liquid
Colour	Pale, straw-yellow.
Odour	Mild petroleum oil like.

#### GHS Classification

Not a hazardous substance or mixture.

#### GHS label elements

Not a hazardous substance or mixture.

#### Potential Health Effects

Primary Routes of Entry : Eye contact  
Ingestion  
Inhalation

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Skin contact

Aggravated Medical Condition : None known.

### Other hazards

None known.

### IARC

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

### ACGIH

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

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

### Hazardous components

Chemical name	CAS-No.	Concentration
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based	72623-87-1	70 - 90 %
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity	72623-85-9	10 - 20 %
distillates (petroleum), hydrotreated heavy paraffinic	64742-54-7	10 - 20 %
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	10 - 20 %

## 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.  
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.  
Obtain medical attention.

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- If swallowed : Rinse mouth with water.  
DO NOT induce vomiting unless directed to do so by a physician or poison control center.  
Never give anything by mouth to an unconscious person.  
Seek medical advice.
- Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.
- 

### SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : No information available.
- 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.
- 

### SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.  
Ensure adequate ventilation.  
Evacuate personnel to safe areas.  
Material can create slippery conditions.
- Environmental precautions : Do not allow uncontrolled discharge of product into the environment.
- Methods and materials for containment and cleaning up : Prevent further leakage or spillage if safe to do so.  
Remove all sources of ignition.  
Soak up with inert absorbent material.  
Non-sparking tools should be used.  
Ensure adequate ventilation.  
Contact the proper local authorities.
- 

### SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : For personal protection see section 8.  
Smoking, eating and drinking should be prohibited in the ap-

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plication area.  
Use only with adequate ventilation.  
In case of insufficient ventilation, wear suitable respiratory equipment.  
Avoid contact with skin, eyes and clothing.  
Do not ingest.  
Keep away from heat and sources of ignition.  
Keep container closed when not in use.

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

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based	72623-87-1	TWA (Mist)	5 mg/m3	CA AB OEL
		STEL (Mist)	10 mg/m3	CA AB OEL
		TWAEV (Mist)	5 mg/m3	CA QC OEL
		STEV (Mist)	10 mg/m3	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m3	ACGIH
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity	72623-85-9	TWA (Mist)	5 mg/m3	CA AB OEL
		STEL (Mist)	10 mg/m3	CA AB OEL
		TWAEV (Mist)	5 mg/m3	CA QC OEL
		STEV (Mist)	10 mg/m3	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m3	ACGIH
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	TWA (Mist)	5 mg/m3	CA AB OEL
		STEL (Mist)	10 mg/m3	CA AB OEL
		TWAEV (Mist)	5 mg/m3	CA QC OEL
		STEV (Mist)	10 mg/m3	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m3	ACGIH

**Engineering measures** : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne

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contaminants.

### Personal protective equipment

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

Filter type : organic vapour filter

Hand protection  
Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).

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

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

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

Protective measures : Wash contaminated clothing before re-use.

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

---

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : viscous liquid

Colour : Pale, straw-yellow.

Odour : Mild petroleum oil like.

Odour Threshold : No data available

pH : No data available

Pour point : -39 °C (-38 °F)

Boiling point/boiling range : No data available

Flash point : 236 °C (457 °F)  
Method: Cleveland open cup

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Fire Point	:	No data available
Auto-Ignition Temperature	:	No data available
Evaporation rate	:	No data available
Flammability	:	Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	:	No data available
Lower explosion limit	:	No data available
Vapour pressure	:	No data available
Relative vapour density	:	No data available
Density	:	0.8660 kg/l (15 °C / 59 °F)
Solubility(ies)		
Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity		
Viscosity, kinematic	:	46.4 cSt (40 °C / 104 °F)
		6.92 cSt (100 °C / 212 °F)
Explosive properties	:	Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

---

### SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	:	Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	:	No data available
Incompatible materials	:	Reactive with oxidising agents and reducing agents.
Hazardous decomposition products	:	May release CO <sub>x</sub> , H <sub>2</sub> S, metal oxides, methacrylate monomers, smoke and irritating vapours when heated to decomposition.

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### SECTION 11. TOXICOLOGICAL INFORMATION

#### Information on likely routes of exposure

Eye contact  
Ingestion

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Inhalation  
Skin contact

### Acute toxicity

#### Product:

Acute oral toxicity : Remarks: No data available  
Acute inhalation toxicity : Remarks: No data available  
Acute dermal toxicity : Assessment: The substance or mixture has no acute dermal toxicity  
Remarks: No data available

#### Components:

##### **lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based:**

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

##### **lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity:**

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

##### **lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based:**

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

### Skin corrosion/irritation

#### Product:

Remarks: No data available

### Serious eye damage/eye irritation

#### Product:

Remarks: No data available

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### Respiratory or skin sensitisation

No data available

### Germ cell mutagenicity

No data available

### Carcinogenicity

No data available

### Reproductive toxicity

No data available

### STOT - single exposure

No data available

### STOT - repeated exposure

No data available

---

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Product:

Toxicity to fish : Remarks: No data available

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

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

### Persistence and degradability

#### Product:

Biodegradability : Remarks: No data available

### Bioaccumulative potential

No data available

### Mobility in soil

No data available

### Other adverse effects

No data available

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### SECTION 13. DISPOSAL CONSIDERATIONS

#### Disposal methods

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

---

### SECTION 14. TRANSPORT INFORMATION

#### International Regulations

##### IATA-DGR

Not regulated as a dangerous good

##### IMDG-Code

Not regulated as a dangerous good

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

Not applicable for product as supplied.

#### National Regulations

##### TDG

Not regulated as a dangerous good

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### SECTION 15. REGULATORY INFORMATION

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

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

##### DSL

On the inventory, or in compliance with the inventory

##### TSCA

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

##### EINECS

On the inventory, or in compliance with the inventory

##### IECSC

One or more components has been notified but may not be listed in the inventory.

---

### SECTION 16. OTHER INFORMATION

For Copy of SDS

: Internet: [lubricants.petro-canada.com/sds](http://lubricants.petro-canada.com/sds)  
Western Canada, telephone: 1-800-661-1199; fax: 1-800-378-

Internet: [lubricants.petro-canada.com/sds](http://lubricants.petro-canada.com/sds)

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Ontario & Central Canada, telephone: 1-800-268-5850; fax: 1-800-201-6285

Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 1-800-201-6285

For Product Safety Information: 1 905-804-4752

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

Revision Date : 2017/02/17

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.



# Material Safety Data Sheet

## SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

### Chevron Hydraulic Oil AW

**Product Use:** Hydraulic Oil

**Product Number(s):** CPS255673, CPS255674, CPS255675

**Synonyms:** Chevron Hydraulic Oil AW ISO 32, Chevron Hydraulic Oil AW ISO 46, Chevron Hydraulic Oil AW ISO 68

#### Company Identification

Chevron Products Company  
a division of Chevron U.S.A. Inc.  
6001 Bollinger Canyon Rd.  
San Ramon, CA 94583  
United States of America  
www.chevronlubricants.com

#### 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

email : lubemsds@chevron.com  
Product Information: (800) LUBE TEK

## SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Highly refined mineral oil (C15 - C50)	Mixture	70 - 100 %wt/wt

## SECTION 3 HAZARDS IDENTIFICATION

### IMMEDIATE HEALTH EFFECTS

**Eye:** Not expected to cause prolonged or significant eye irritation.

**Skin:** Contact with the skin is not expected to cause prolonged or significant irritation. Contact with the skin is not expected to cause an allergic skin response. Not expected to be harmful to internal organs if absorbed through the skin. High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.

**Ingestion:** Not expected to be harmful if swallowed.

**Inhalation:** Not expected to be harmful if inhaled. Contains a petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit. Symptoms of respiratory irritation may include coughing and difficulty breathing.

**SECTION 4 FIRST AID MEASURES**

**Eye:** No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.

**Skin:** No specific first aid measures are required. As a precaution, remove clothing and shoes if contaminated. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

**Ingestion:** No specific first aid measures are required. Do not induce vomiting. As a precaution, get medical advice.

**Inhalation:** No specific first aid measures are required. If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.

**Note to Physicians:** In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

**SECTION 5 FIRE FIGHTING MEASURES**

Leaks/ruptures in high pressure system using materials of this type can create a fire hazard when in the vicinity of ignition sources (eg. open flame, pilot lights, sparks, or electric arcs).

**FIRE CLASSIFICATION:**

OSHA Classification (29 CFR 1910.1200): Not classified by OSHA as flammable or combustible.

**NFPA RATINGS:** Health: 0 Flammability: 1 Reactivity: 0

**FLAMMABLE PROPERTIES:**

**Flashpoint:** (Cleveland Open Cup) 170 °C (338 °F) Minimum

**Autoignition:** No data available

**Flammability (Explosive) Limits (% by volume in air):** Lower: Not Applicable Upper: Not Applicable

**EXTINGUISHING MEDIA:** Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

**PROTECTION OF FIRE FIGHTERS:**

**Fire Fighting Instructions:** This material will burn although it is not easily ignited. 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**

**Protective Measures:** Eliminate all sources of ignition in vicinity of spilled material.

**Spill Management:** 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. 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 and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

## SECTION 7 HANDLING AND STORAGE

**Precautionary Measures:** DO NOT USE IN HIGH PRESSURE SYSTEMS in the vicinity of flames, sparks and hot surfaces. Use only in well ventilated areas. Keep container closed.

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

**Static Hazard:** 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. For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids', National Fire Protection Association (NFPA 77, 'Recommended Practice on Static Electricity', and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents'.

**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.

## SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

### GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

### ENGINEERING CONTROLS:

Use in a well-ventilated area.

### PERSONAL PROTECTIVE EQUIPMENT

**Eye/Face Protection:** No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

**Skin Protection:** No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances in the

workplace. Suggested materials for protective gloves include: 4H (PE/EVAL), Nitrile Rubber, Silver Shield, Viton.

**Respiratory Protection:** No respiratory protection is normally required.

If user operations generate an oil mist, determine if airborne concentrations are below the occupational exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from the measured concentrations of this material. For air-purifying respirators use a particulate cartridge. Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

**Occupational Exposure Limits:**

Component	Agency	TWA	STEL	Ceiling	Notation
Highly refined mineral oil (C15 - C50)	ACGIH	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	--	--
Highly refined mineral oil (C15 - C50)	OSHA Z-1	5 mg/m <sup>3</sup>	--	--	--

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:** Yellow

**Physical State:** Liquid

**Odor:** Petroleum odor

**pH:** Not Applicable

**Vapor Pressure:** <0.01 mmHg @ 37.8 °C (100 °F)

**Vapor Density (Air = 1):** >1

**Boiling Point:** >315°C (599°F)

**Solubility:** Soluble in hydrocarbon solvents; insoluble in water.

**Freezing Point:** Not Applicable

**Density:** 0.87 kg/l @ 15°C (59°F) (Typical)

**Viscosity:** 28.8 mm<sup>2</sup>/s @ 40°C (104°F) Minimum

**SECTION 10 STABILITY AND REACTIVITY**

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

**Incompatibility With Other Materials:** May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

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

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

**SECTION 11 TOXICOLOGICAL INFORMATION**

**IMMEDIATE HEALTH EFFECTS**

**Eye Irritation:** The eye irritation hazard is based on evaluation of data for similar materials or product components.

**Skin Irritation:** The skin irritation hazard is based on evaluation of data for similar materials or product components.

**Skin Sensitization:** The skin sensitization hazard is based on evaluation of data for similar materials or product components.

**Acute Dermal Toxicity:** The acute dermal toxicity hazard is based on evaluation of data for similar

materials or product components.

**Acute Oral Toxicity:** The acute oral toxicity hazard is based on evaluation of data for similar materials or product components.

**Acute Inhalation Toxicity:** The acute inhalation toxicity hazard is based on evaluation of data for similar materials or product components.

**ADDITIONAL TOXICOLOGY INFORMATION:**

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B). These oils have not been classified by the American Conference of Governmental Industrial Hygienists (ACGIH) as: confirmed human carcinogen (A1), suspected human carcinogen (A2), or confirmed animal carcinogen with unknown relevance to humans (A3).

**SECTION 12 ECOLOGICAL INFORMATION**

**ECOTOXICITY**

This material is not expected to be harmful to aquatic organisms. The ecotoxicity hazard is based on an evaluation of data for the components or a similar material.

**ENVIRONMENTAL FATE**

**Ready Biodegradability:** This material is not expected to be readily biodegradable. The biodegradability of this material is based on an evaluation of data for the components or a similar material.

**SECTION 13 DISPOSAL CONSIDERATIONS**

Use material for its intended purpose or recycle if possible. Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

**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.

**DOT Shipping Description:** PETROLEUM LUBRICATING OIL, NOT REGULATED AS A HAZARDOUS MATERIAL FOR TRANSPORTATION UNDER 49 CFR

**IMO/IMDG Shipping Description:** PETROLEUM LUBRICATING OIL; NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER THE IMDG CODE

**ICAO/IATA Shipping Description:** PETROLEUM LUBRICATING OIL; NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER ICAO TI OR IATA DGR

## SECTION 15 REGULATORY INFORMATION

<b>EPCRA 311/312 CATEGORIES:</b>	1. Immediate (Acute) Health Effects:	NO
	2. Delayed (Chronic) Health Effects:	NO
	3. Fire Hazard:	NO
	4. Sudden Release of Pressure Hazard:	NO
	5. Reactivity Hazard:	NO

### REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	03=EPCRA 313
01-2A=IARC Group 2A	04=CA Proposition 65
01-2B=IARC Group 2B	05=MA RTK
02=NTP Carcinogen	06=NJ RTK
	07=PA RTK

No components of this material were found on the regulatory lists above.

### CHEMICAL INVENTORIES:

All components comply with the following chemical inventory requirements: AICS (Australia), DSL (Canada), EINECS (European Union), ENCS (Japan), IECSC (China), KECI (Korea), PICCS (Philippines), TSCA (United States).

### NEW JERSEY RTK CLASSIFICATION:

Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: PETROLEUM OIL (Hydraulic oil)

### WHMIS CLASSIFICATION:

This product is not considered a controlled product according to the criteria of the Canadian Controlled Products Regulations.

## SECTION 16 OTHER INFORMATION

**NFPA RATINGS:** Health: 0 Flammability: 1 Reactivity: 0

**HMIS RATINGS:** Health: 1 Flammability: 1 Reactivity: 0  
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, \*- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

### LABEL RECOMMENDATION:

Label Category : INDUSTRIAL OIL 1 - IND1

**REVISION STATEMENT:** This revision updates the following sections of this Material Safety Data Sheet:  
1,2,9,16

**Revision Date:** FEBRUARY 16, 2012

### 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	MSDS - Material Safety Data Sheet
CVX - Chevron	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Chevron Energy Technology Company, 100 Chevron Way, Richmond, California 94802.

**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.**



## 1. Product and company identification

<b>Product name</b>	Jet A-1
<b>MSDS #</b>	SAV2101.
<b>Code</b>	SAV2101.
<b>Product use</b>	Jet fuel, do not use for other purposes. For specific application advice see appropriate Technical Data Sheet or consult our company representative.
<b>Synonyms</b>	Aviation Kerosine, Aviation Turbine Fuel, ATK, AVTUR, F-35, Turbine Fuel, Aviation Kerosine Type, Jet A-1
<b>Supplier</b>	BP Products North America 150 W. Warrenville Road Naperville, IL 60563 USA
<b>EMERGENCY HEALTH INFORMATION:</b>	1 (800) 447-8735
<b>EMERGENCY SPILL INFORMATION:</b>	1 (800) 424-9300 CHEMTREC (USA) Outside the US: +1 703-527-3887
<b>OTHER PRODUCT INFORMATION</b>	1 (866) 4 BP - MSDS (866-427-6737 Toll Free - North America) email: bpcares@bp.com

## 2. Hazards identification

<b>Physical state</b>	Liquid.
<b>Color</b>	Colorless. / Yellow.
<b>Emergency overview</b>	<b>WARNING !</b>  COMBUSTIBLE LIQUID AND VAPOR. INHALATION CAUSES HEADACHES, DIZZINESS, DROWSINESS AND NAUSEA AND MAY LEAD TO UNCONSCIOUSNESS. CAUSES SKIN IRRITATION. MAY CAUSE RESPIRATORY TRACT AND EYE IRRITATION. HARMFUL OR FATAL IF SWALLOWED. CAN ENTER LUNGS AND CAUSE DAMAGE. ASPIRATION HAZARD.  <input checked="" type="checkbox"/> Combustible liquid. Aspiration hazard if swallowed. Can enter lungs and cause damage. Keep away from heat, sparks and flame. In accordance with good industrial hygiene and safety work practices, airborne exposures should be controlled to the lowest extent practicable. Do not ingest. If ingested, do not induce vomiting. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
<b>Routes of entry</b>	Dermal contact. Eye contact. Inhalation. Ingestion.
<b>Potential health effects</b>	
<b>Eyes</b>	Unlikely to cause more than transient stinging or redness if accidental eye contact occurs. May cause eye irritation. Exposure to vapor, mist or fume may cause stinging, redness and watering of the eyes.
<b>Skin</b>	<input checked="" type="checkbox"/> Causes skin irritation.
<b>Inhalation</b>	May be harmful by inhalation if exposure to vapor, mists or fumes resulting from thermal decomposition products occurs. Vapor, mist or fume may irritate the nose, mouth and respiratory tract. Inhalation of vapor, mist or fume may cause a sore throat, coughing and shortness of breath.
<b>Ingestion</b>	Aspiration hazard if swallowed. Can enter lungs and cause damage. Ingestion may cause gastrointestinal irritation and diarrhea.

### 3. Composition/information on ingredients

A mixture of kerosine streams. May also contain small quantities of proprietary performance additives. May contain: Tracer A (LDTA-A)

Ingredient name	CAS #	%
Kerosine (petroleum), hydrodesulfurised	64742-81-0	0 - 100
Straight run kerosene	8008-20-6	0 - 100

### 4. First aid measures

<b>Eye contact</b>	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
<b>Skin contact</b>	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention.
<b>Inhalation</b>	Inhaled, remove to fresh air. Get medical attention if symptoms occur.
<b>Ingestion</b>	Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention.
<b>Notes to physician</b>	Treatment should in general be symptomatic and directed to relieving any effects.  Product can be aspirated on swallowing or following regurgitation of stomach contents, and can cause severe and potentially fatal chemical pneumonitis, which will require urgent treatment. Because of the risk of aspiration, induction of vomiting and gastric lavage should be avoided. Gastric lavage should be undertaken only after endotracheal intubation. Monitor for cardiac dysrhythmias.

### 5. Fire-fighting measures

<b>Flammability of the product</b>	Combustible liquid.
<b>Flash point</b>	Closed cup: $\geq 38^{\circ}\text{C}$ ( $\geq 100.4^{\circ}\text{F}$ ) [Pensky-Martens.]
<b>Fire/explosion hazards</b>	In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.
<b>Unusual fire/explosion hazards</b>	Vapors can form explosive mixtures with air. Vapors are heavier than air and can spread along the ground or float on water surfaces to remote ignition sources. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.
<b>Extinguishing media</b>	
<b>Suitable</b>	Use dry chemical, $\text{CO}_2$ , water spray (fog) or foam.
<b>Not suitable</b>	Do not use water jet.
<b>Fire-fighting procedures</b>	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
<b>Hazardous combustion products</b>	Combustion products may include the following: carbon oxides ( $\text{CO}$ , $\text{CO}_2$ ) (carbon monoxide, carbon dioxide), other hazardous substances.
<b>Protective clothing (fire)</b>	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

### 6. Accidental release measures

<b>Personal precautions</b>	Immediately contact emergency personnel. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
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<b>Product name</b> Jet A-1	<b>Product code</b> SAV2101.	<b>Page:</b> 2/7
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	<b>Format</b> Canada (Canada)	<b>(ENGLISH)</b>

## Environmental precautions

Storage tanks must be positioned within a bunded area. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

## Methods for cleaning up

### Large spill

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

### Small spill

Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

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## 7. Handling and storage

### Handling

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Never siphon by mouth. If ingested, do not induce vomiting. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Use only with adequate ventilation. Avoid breathing vapors, spray or mists. Keep away from heat, sparks and flame. When using do not eat, drink or smoke. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Avoid contact of spilled material and runoff with soil and surface waterways.

### Storage

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

### Other information

Light hydrocarbon vapors can build up in the headspace of tanks. These can cause flammability/explosion hazards even at temperatures below the normal flash point (note: flash point must not be regarded as a reliable indicator of the potential flammability of vapor in tank headspaces). Tank headspaces should always be regarded as potentially flammable and care should be taken to avoid static electrical discharge and all ignition sources during filling, ullaging and sampling from storage tanks.

Entry to any tanks or other confined space requires a full risk assessment and appropriate control measures to be put in place in conformance with appropriate regulations and industry practice on confined space entry. Do not enter storage tanks without breathing apparatus unless the tank has been well ventilated and the tank atmosphere has been shown to contain hydrocarbon vapor concentrations of less than 1% of the lower flammability limit and an oxygen concentration of at least 20% volume. Always have sufficient people standing by outside the tank with appropriate breathing apparatus and equipment to effect a quick rescue.

When the product is pumped (e.g. during filling, discharge or ullaging) and when sampling, there is a risk of static discharge. Ensure equipment used is properly earthed or bonded to the tank structure. If product comes into contact with hot surfaces, or leaks occur from pressurized fuel pipes, the vapor or mists generated will create a flammability or explosion hazard. Product contaminated rags, paper or material used to absorb spillages, represent a fire hazard, and should not be allowed to accumulate. Dispose of safely immediately after use.

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## 8. Exposure controls/personal protection

### Occupational exposure limits

#### Ingredient name

Kerosine (petroleum), hydrodesulfurised

#### Occupational exposure limits

**CA British Columbia Provincial (Canada). Absorbed through skin.**

TWA: 200 mg/m<sup>3</sup>, (as total hydrocarbon vapour) 8 hours. Issued/Revised: 8/2004

**CA Alberta Provincial (Canada). Absorbed through skin.**

8 hrs OEL: 200 mg/m<sup>3</sup>, (as total hydrocarbon vapour) 8 hours. Issued/Revised: 7/2009

**CA British Columbia Provincial (Canada). Absorbed through skin.**

TWA: 200 mg/m<sup>3</sup>, (as total hydrocarbon vapour) 8 hours. Issued/Revised: 8/2004

Straight run kerosene

**Product name** Jet A-1

**Product code** SAV2101.

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**CA Ontario Provincial (Canada). Absorbed through skin.**TWA: 200 mg/m<sup>3</sup>, (as total hydrocarbon) 8 hours. Issued/Revised: 1/2003 Form: vapour**CA Alberta Provincial (Canada). Absorbed through skin.**8 hrs OEL: 200 mg/m<sup>3</sup>, (as total hydrocarbon vapour) 8 hours. Issued/Revised: 7/2009

While specific OELs for certain components may be shown in this section, other components may be present in any mist, vapor or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

<b>Control Measures</b>	Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
<b>Hygiene measures</b>	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.
<b>Personal protection</b>	
<b>Eyes</b>	Chemical splash goggles.
<b>Skin and body</b>	Do not get on skin or clothing. Wear suitable protective clothing. Recommended: Wear clothing and footwear that cannot be penetrated by chemicals or oil.
<b>Respiratory</b>	Use only with adequate ventilation. Do not breathe vapor or mist. Recommended: If ventilation is inadequate, use respirator that will protect against organic vapor and dust/mist.
<b>Hands</b>	Wear gloves that cannot be penetrated by chemicals or oil. Recommended: Nitrile gloves.  The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.  Consult your supervisor or Standard Operating Procedure (S.O.P) for special handling instructions.

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## 9. Physical and chemical properties

<b>Physical state</b>	Liquid.
<b>Color</b>	Colorless. / Yellow.
<b>Odor</b>	Hydrocarbon.
<b>Odor threshold</b>	Not available.
<b>Flash point</b>	Closed cup: >=38°C (>=100.4°F) [Pensky-Martens.]
<b>Specific gravity</b>	Not available.
<b>Density</b>	775 to 840 kg/m <sup>3</sup> (0.775 to 0.84 g/cm <sup>3</sup> ) at 15°C
<b>pH</b>	Not available.
<b>Viscosity</b>	Kinematic: 1 to 8 mm <sup>2</sup> /s (1 to 8 cSt) at -20°C
<b>Boiling point / Range</b>	140 to 280°C (284 to 536°F)
<b>Melting point / Range</b>	<-47°C (<-52.6°F)
<b>Vapor pressure</b>	Not available.
<b>Vapor density</b>	Not available.
<b>Evaporation rate</b>	Not available.
<b>Solubility</b>	Very slightly soluble in water.

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## 10. Stability and reactivity

<b>Stability and reactivity</b>	The product is stable.
<b>Possibility of hazardous reactions</b>	Under normal conditions of storage and use, hazardous reactions will not occur.
<b>Conditions to avoid</b>	Avoid all possible sources of ignition (spark or flame). Avoid excessive heat.
<b>Incompatibility with various substances</b>	Reactive or incompatible with the following materials: oxidizing materials.
<b>Hazardous decomposition products</b>	Combustion products may include the following: carbon oxides (CO, CO <sub>2</sub> ) (carbon monoxide, carbon dioxide), other hazardous substances.
<b>Hazardous polymerization</b>	Under normal conditions of storage and use, hazardous polymerization will not occur.

## 11. Toxicological information

### Classification

Product/ingredient name	IARC	NTP	OSHA
Straight run kerosene	3	-	-

**IARC :**  
3 - Not classifiable as a human carcinogen.

### Other information

Aspiration of this product into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this product. Do not siphon by mouth.

From skin-painting studies of petroleum distillates of similar composition and distillate range, it has been shown that these types of materials often possess weak carcinogenic activity in laboratory animals. In these tests, the material is painted on the shaved backs of mice twice a week for their lifetime. The material is not washed off between applications. Therefore, there may be a potential risk of skin cancer from prolonged or repeated skin contact with this product in the absence of good personal hygiene. This particular product has not been tested for carcinogenic activity, but we have chosen to be cautious in light of the findings with other distillate streams.

Occasional skin contact with this product is not expected to have serious effects, but good personal hygiene should be practiced and repeated skin contact avoided. Animal studies with this material have resulted in moderate skin irritation following short-term exposure or prolonged/repeated exposure. Skin irritation and body weight loss were observed in 28 day dermal studies on this material in rats, but there were no systemic tissue changes characteristic of disease. Personal hygiene measures taken to prevent skin irritation are expected to be adequate to prevent risk of skin cancer.

This product has a sufficiently low vapor pressure to prevent a hazardous buildup of vapors unless the product is heated, used in a confined space with inadequate ventilation or misted. Inhalation of mist or high concentrations of vapors can produce dizziness, headache, and nausea and possibly irritation of the eye, nose and throat. In acute inhalation toxicity tests in rats, during exposure the material caused labored breathing, reduced activity and nasal discharge.

Materials of this type have been shown to produce kidney damage in male rats following prolonged inhalation exposures. Following extensive research, this effect appears to be unique to the male rat and is considered to be of little or no relevance in terms of human health risk.

Dermal and inhalation exposure to some jet fuel mixtures has been shown to reduce or inhibit certain indicators of immune function in mice. The relevance of these findings for humans is under investigation.

Diesel exhaust particulates have been classified by the National Toxicological Program (NTP) to be a reasonably anticipated human carcinogen. Exposure should be minimized to reduce potential risk.

### Potential chronic health effects

<b>Carcinogenicity</b>	No known significant effects or critical hazards.
<b>Mutagenicity</b>	No known significant effects or critical hazards.

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<b>Teratogenicity</b>	No known significant effects or critical hazards.
<b>Fertility effects</b>	No known significant effects or critical hazards.
<b>Reproductive effects</b>	No known significant effects or critical hazards.
<b>Medical conditions aggravated by over-exposure</b>	None known.

## 12. Ecological information

### Ecotoxicity

No testing has been performed by the manufacturer.

<b>Persistence/degradability</b>	Inherently biodegradable
<b>Mobility</b>	Spillages may penetrate the soil causing ground water contamination.
<b>Bioaccumulative potential</b>	This product is not expected to bioaccumulate through food chains in the environment.
<b>Other ecological information</b>	Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

## 13. Disposal considerations

<b>Waste information</b>	<p>The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.</p>
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**NOTE: The generator of waste has the responsibility for proper waste identification (based on characteristic(s) or listing), transportation and disposal**

## 14. Transport information

### International transport regulations

Regulatory information	UN number	Proper shipping name	Class	Packing group	Additional information
<b>DOT Classification</b>	UN1863	FUEL, AVIATION, TURBINE ENGINE	3	III	
<b>TDG Classification</b>	UN1863	FUEL, AVIATION, TURBINE ENGINE	3	III	-
<b>IMDG Classification</b>	UN1863	FUEL, AVIATION, TURBINE ENGINE. Marine pollutant	3	III	<p>The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.</p> <p><b>Emergency schedules (EmS)</b> F-E, S-E</p>
<b>IATA/ICAO Classification</b>	UN1863	FUEL, AVIATION, TURBINE ENGINE	3	III	<p>The environmentally hazardous substance mark may appear if required by other transportation regulations.</p>

Regulatory information	UN number	Proper shipping name	Class	Packing group	Additional information

## 15. Regulatory information

### WHMIS (Canada)

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

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

### Other regulations

Canada inventory	<input checked="" type="checkbox"/> Contact supplier for regulatory information.
United States inventory (TSCA 8b)	<input checked="" type="checkbox"/> All components are listed or exempted.
REACH Status	<input checked="" type="checkbox"/> For the REACH status of this product please consult your company contact, as identified in Section 1.
Australia inventory (AICS)	Not determined.
China inventory (IECSC)	Not determined.
Japan inventory (ENCS)	Not determined.
Korea inventory (KECI)	Not determined.
Philippines inventory (PICCS)	Not determined.

## 16. Other information

### Label requirements

WARNING !

COMBUSTIBLE LIQUID AND VAPOR.  
INHALATION CAUSES HEADACHES, DIZZINESS, DROWSINESS AND NAUSEA AND MAY LEAD TO UNCONSCIOUSNESS.  
CAUSES SKIN IRRITATION.  
MAY CAUSE RESPIRATORY TRACT AND EYE IRRITATION.  
HARMFUL OR FATAL IF SWALLOWED.  
CAN ENTER LUNGS AND CAUSE DAMAGE.  
ASPIRATION HAZARD.

### History

**Date of issue** 03/19/2014.

**Date of previous issue** 07/12/2010.

**Prepared by** Product Stewardship

Indicates information that has changed from previously issued version.

### Notice to reader

*All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.*

*The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from us.*

*It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken.*

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# Material Safety Data Sheet

JET B AVIATION TURBINE FUEL



## 1. Product and company identification

<b>Product name</b>	: JET B AVIATION TURBINE FUEL
<b>Synonym</b>	: Jet B; Jet B DI; JP-4; Jet F-40; NATO F-40; Turbine Fuel, Aviation, Wide Cut Type (Can/CGSB-3.22).
<b>Code</b>	: W219, SAP: 150, 151, 152
<b>Material uses</b>	: Used as aviation turbine fuel. May contain a fuel system icing inhibitor.
<b>Manufacturer</b>	: PETRO-CANADA P.O. Box 2844 150 – 6th Avenue South-West Calgary, Alberta T2P 3E3
<b><u>In case of emergency</u></b>	: Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).

## 2. Hazards identification

<b>Physical state</b>	: Clear liquid.
<b>Odour</b>	: Gasoline like.
<b>WHMIS (Canada)</b>	:   Class B-2: Flammable liquid Class D-2A: Material causing other toxic effects (Very toxic). Class D-2B: Material causing other toxic effects (Toxic).
<b>OSHA/HCS status</b>	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
<b>Emergency overview</b>	: DANGER! EXTREMELY FLAMMABLE LIQUID AND VAPOUR. FLAMMABLE. VAPOUR MAY CAUSE FLASH FIRE. CAUSES SKIN IRRITATION. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER. POSSIBLE BIRTH DEFECT HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE BIRTH DEFECTS, BASED ON ANIMAL DATA. Extremely flammable liquid. Irritating to skin. Keep away from heat, sparks and flame. Avoid exposure - obtain special instructions before use. Do not breathe vapour or mist. Avoid contact with eyes, skin and clothing. Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure. Contains material which may cause birth defects, based on animal data. Avoid exposure during pregnancy. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
<b>Routes of entry</b>	: Dermal contact. Eye contact. Inhalation. Ingestion.
<b><u>Potential acute health effects</u></b>	
<b><u>Inhalation</u></b>	: Inhalation of this product may cause respiratory tract irritation and Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death.
<b><u>Ingestion</u></b>	: Ingestion of this product may cause gastro-intestinal irritation. Aspiration of this product may result in severe irritation or burns to the respiratory tract.
<b><u>Skin</u></b>	: Irritating to skin.
<b><u>Eyes</u></b>	: May cause eye irritation.
<b><u>Potential chronic health effects</u></b>	
<b><u>Chronic effects</u></b>	: No known significant effects or critical hazards.
<b><u>Carcinogenicity</u></b>	: Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.

## 2. Hazards identification

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

See toxicological information (section 11)

## 3. Composition/information on ingredients

<u>Name</u>	<u>CAS number</u>	<u>%</u>
Complex mixture of petroleum hydrocarbons (C6-C14)	64741-41-9	60 - 100
Benzene	71-43-2	0.1 - 0.5
Fuel System Icing Inhibitor (FSII) (if added**): (Diethylene Glycol Monomethyl Ether)	111-77-3	0.1 - 0.15
Anti-static, antioxidant, corrosion inhibitor and metal deactivator additives.	Not applicable	< 0.1

\*\* Please note that Jet B DI, JP-4, Jet F-40 and NATO F-40 all contain Fuel System Icing Inhibitor (FSII). corrosion inhibitor

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

## 4. First-aid measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognised skin cleanser. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
- Notes to physician** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

## 5. Fire-fighting measures

- Flammability of the product** : Flammable liquid (NFPA).
- Extinguishing media**
  - Suitable** : Use dry chemical, CO<sub>2</sub>, water spray (fog) or foam.
  - Not suitable** : Do not use water jet.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
- Products of combustion** : Carbon oxides (CO, CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), sulphur oxides (SO<sub>x</sub>), aldehydes, ketones, smoke and irritating vapours as products of incomplete combustion.

## 5 . Fire-fighting measures

- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- Special remarks on fire hazards** : Flammable in presence of open flames, sparks, and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. This product can accumulate static charge and ignite. May accumulate in confined spaces.
- Special remarks on explosion hazards** : Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

## 6 . Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
- Environmental precautions** : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Methods for cleaning up**
- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

## 7 . Handling and storage

- Handling** : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Avoid exposure during pregnancy. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. Ensure the storage containers are grounded/bonded.

## 8 . Exposure controls/personal protection

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

### Consult local authorities for acceptable exposure limits.

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

**Engineering measures** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

**Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

### Personal protection

#### Respiratory

: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommended: A NIOSH-approved air-purifying respirator with an organic vapour cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.

#### Hands

: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.  
 Recommended: polyvinyl alcohol (PVA), Viton. Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns. It should be realized that eventually any material regardless of their imperviousness, will get permeated by chemicals. Therefore, protective gloves should be regularly checked for wear and tear. At the first signs of hardening and cracks, they should be changed.

#### Eyes

: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

#### Skin

: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

#### Environmental exposure controls

: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## 9 . Physical and chemical properties

<b>Physical state</b>	: Clear liquid.
<b>Flash point</b>	: Closed cup: -31°C (-23.8°F) [NFPA]
<b>Auto-ignition temperature</b>	: 240°C (464°F) [NFPA]
<b>Flammable limits</b>	: Lower: 1.3% [NFPA] Upper: 8% [NFPA]
<b>Colour</b>	: Clear and colourless.
<b>Odour</b>	: Gasoline like.
<b>Odour threshold</b>	: Not available.
<b>pH</b>	: Not available.
<b>Boiling/condensation point</b>	: 50 to 270°C (122 to 518°F)
<b>Melting/freezing point</b>	: Not available.
<b>Relative density</b>	: 0.75 to 0.8 kg/L @ 15°C (59°F)
<b>Vapour pressure</b>	: 21.1 kPa (158 mm Hg) @ 37.8°C (100°F)
<b>Vapour density</b>	: 3.5 [Air = 1]
<b>Volatility</b>	: Not available.
<b>Evaporation rate</b>	: Not available.
<b>Viscosity</b>	: Not available.
<b>Pour point</b>	: Freezing point: <-51°C (<-60°F) for all types of Jet B including F40
<b>Solubility</b>	: Insoluble in water. Partially miscible in some alcohols. Miscible with other petroleum solvents.

## 10 . Stability and reactivity

<b>Chemical stability</b>	: The product is stable.
<b>Hazardous polymerisation</b>	: Under normal conditions of storage and use, hazardous polymerisation will not occur.
<b>Materials to avoid</b>	: Reactive with oxidising agents, diborane and halogen compounds.
<b>Hazardous decomposition products</b>	: May release CO <sub>x</sub> , NO <sub>x</sub> , SO <sub>x</sub> , aldehydes, ketones, smoke and irritating vapours when heated to decomposition.

## 11 . Toxicological information

### Acute toxicity

<b>Product/ingredient name</b>	<b>Result</b>	<b>Species</b>	<b>Dose</b>	<b>Exposure</b>
Complex mixture of petroleum hydrocarbons (C6-C14)	LD50 Dermal	Rabbit	>2000 mg/kg	-
Diethylene Glycol Monomethyl Ether	LD50 Oral	Rat	>5000 mg/kg	-
	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	4000 mg/kg	-
	LC50 Inhalation Vapour	Rat	>50000 mg/m <sup>3</sup>	4 hours
Benzene	LD50 Dermal	Rabbit	>9400 mg/kg	-
	LD50 Oral	Rat	930 mg/kg	-
	LC50 Inhalation Vapour	Rat	13200 ppm	4 hours

**Conclusion/Summary** : Not available.

### Chronic toxicity

**Conclusion/Summary** : Not available.

### Irritation/Corrosion

**Conclusion/Summary** : Not available.

### Sensitiser

**Conclusion/Summary** : Not available.

### Carcinogenicity

## 11 . Toxicological information

**Conclusion/Summary** : Not available.

### Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Complex mixture of petroleum hydrocarbons (C6-C14)	-	2A	-	-	-	-
Benzene	A1	1	A	+	Proven.	+

### Mutagenicity

**Conclusion/Summary** : Not available.

### Teratogenicity

**Conclusion/Summary** : Not available.

### Reproductive toxicity

**Conclusion/Summary** : Not available.

## 12 . Ecological information

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

### Aquatic ecotoxicity

**Conclusion/Summary** : Not available.

### Biodegradability

**Conclusion/Summary** : Not available.

## 13 . Disposal considerations

**Waste disposal** : The generation of waste should be avoided or minimised wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

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

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

## 14 . Transport information

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

PG\* : Packing group

## 15 . Regulatory information

### United States

**HCS Classification** : Flammable liquid  
Irritating material  
Carcinogen

### Canada

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

## 15 . Regulatory information

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

### International regulations

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

## 16 . Other information

- Label requirements** : EXTREMELY FLAMMABLE LIQUID AND VAPOUR. FLAMMABLE. VAPOUR MAY CAUSE FLASH FIRE. CAUSES SKIN IRRITATION. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER. POSSIBLE BIRTH DEFECT HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE BIRTH DEFECTS, BASED ON ANIMAL DATA.

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

Health	*	2
Flammability		3
Physical hazards		0
Personal protection		H

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



- References** : Available upon request.  
TM/MC Marque de commerce de Petro-Canada - Trademark
- Date of printing** : 12/7/2009.
- Date of issue** : 7 December 2009
- Date of previous issue** : No previous validation.
- Responsible name** : **Product Safety - DSR**
- Indicates information that has changed from previously issued version.
- For Copy of (M)SDS** : Internet: [www.petro-canada.ca/msds](http://www.petro-canada.ca/msds)

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

For Product Safety Information: (905) 804-4752

### Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.



## Avjet Holding Inc. Material Safety Data Sheet

Effective Date: 2016-01-01  
Supersedes: 2013-01-01



Class B3 Combustible Class D2B Other Toxic  
Liquid Effects - Skin Irritant

### 1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT:** JET A-1  
**SYNONYMS:** Aviation Turbine Fuel (Kerosene Type)  
 May contain anti-icing additive (Diethylene Glycol Monomethyl Ether)  
**PRODUCT USE:** Fuel Solvent  
**MSDS Number:** 142-011

**MANUFACTURER**  
Avjet Holding Inc.

**TELEPHONE NUMBERS**  
Avjet Emergency Number

1-866-472-0007

900, Lemire Boulevard  
Drummondville, QC Canada  
J2C 7W8

For general information:  
For MSDS information:

(819) 479-1000  
(819) 479-1000

This MSDS was prepared by the Toxicology and Product Stewardship Section of Avjet Holding Inc.

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS Number	% Range	WHMIS Controlled
Kerosene (Petroleum), Hydrodesulfurized	64742-81-0	60 - 100	Yes

See Section 8 for Occupational Exposure Guidelines.

### 3. HAZARDS IDENTIFICATION

**Physical Description:** Liquid Bright Clear Hydrocarbon Odour

**Routes of Exposure:** Exposure will most likely occur through skin contact or inhalation.

**Hazards:**

Combustible Liquid.  
Irritating to skin.  
Vapours are moderately irritating to the eyes.  
Ingestion may result in vomiting. Avoid aspiration of vomitus into lungs as small quantities may result in aspiration pneumonitis.  
Vapours are moderately irritating to the respiratory passages.

**Handling:** Eliminate all ignition sources.  
Avoid prolonged exposure to vapours.  
Wear suitable gloves and eye protection.  
Bond and ground transfer containers and equipment to avoid static accumulation.  
Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

For further information on health effects, see Section 11.

#### 4. FIRST AID

**Eyes:** Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

**Skin:** Wash contaminated skin with mild soap and water for 15 minutes. If irritation occurs and persists, obtain medical attention.

**Ingestion:** DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously keep head below hips to prevent aspiration of liquid into the lungs.

**Inhalation:** Remove victim from further exposure and restore breathing, if required. Obtain medical attention.

**Notes to Physician:** The main hazard following accidental ingestion is aspiration of the liquid into the lungs producing chemical pneumonitis. If more than 2.0 mL/kg has been ingested, vomiting should be induced with supervision. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before vomiting, gastric lavage with a cuffed endotracheal tube should be considered.

#### 5. FIRE FIGHTING MEASURES

**Extinguishing Media:** Carbon Dioxide  
Foam  
Dry Chemical  
Water Fog

**Firefighting Instructions:** Caution - Combustible. Vapour forms a flammable/explosive mixture with air between upper and lower flammable limits. Vapours may travel along ground and flashback along vapour trail may occur. Product will float and can be reignited on surface of water. Do not use a direct stream of water as it may spread fire. Containers exposed to intense heat from fires should be cooled with water to prevent vapour pressure buildup which could result in container rupture. Container areas exposed to direct flame contact should be cooled with large quantities of water as needed to prevent weakening of container structure. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus.

**Hazardous Combustion Products:** A complex mixture of airborne solid, liquid, particulates and gases will evolve when this material undergoes pyrolysis or combustion. Carbon dioxide, carbon monoxide and unidentified organic compounds may be formed upon combustion.

## 6. ACCIDENTAL RELEASE MEASURES

Issue warning "Combustible". Eliminate all ignition sources. Isolate hazard area and restrict access. Handling equipment must be grounded. Try to work upwind of spill. Avoid direct contact with material. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Dike and contain land spills; contain water spills by booming. Use water fog to knock down vapours; contain runoff. Absorb residue or small spills with absorbent material and remove to non-leaking containers for disposal. Recommended materials: Clay or Sand Flush area with water to remove trace residue. Dispose of recovered material as noted under Disposal Considerations. Notify appropriate environmental agency(ies).

## 7. HANDLING AND STORAGE

**Handling:** Avoid excessive heat, sparks, open flames and all other sources of ignition. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Vapours are heavier than air and will settle and collect in low areas and pits, displacing breathing air. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapours are gone. Vapours may accumulate and travel to distant ignition sources and flashback. Do not cut, drill, grind, weld or perform similar operations on or near containers. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. Do not pressurize drum containers to empty them. Wash with soap and water prior to eating, drinking, smoking, applying cosmetics or using toilet facilities. Launder contaminated clothing prior to reuse. Use good personal hygiene. Combustible.

**Storage:** Store in a cool, dry, well ventilated area, away from heat and ignition sources. Keep container tightly closed.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**THE FOLLOWING INFORMATION, WHILE APPROPRIATE FOR THIS PRODUCT, IS GENERAL IN NATURE. THE SELECTION OF PERSONAL PROTECTIVE EQUIPMENT WILL VARY DEPENDING ON THE CONDITIONS OF USE.**

### **OCCUPATIONAL EXPOSURE LIMITS (Current ACGIH TLV/TWA unless otherwise noted):**

Kerosene/Jet fuels, as total hydrocarbon vapour (skin) : 200 mg/m<sup>3</sup> ( Application restricted to conditions in which there are negligible aerosol exposures.)

Skin Notation: Absorption through skin, eyes and mucous membranes may contribute significantly to the total exposure.

**Mechanical Ventilation:** Use explosion-proof ventilation as required to control vapour concentrations. Concentrations in air should be maintained below the recommended threshold limit value if unprotected personnel are involved. Local ventilation recommended where mechanical ventilation is ineffective in controlling airborne concentrations below the recommended occupational exposure limit. Make up air should always be supplied to balance air exhausted (either generally or locally). For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere.

#### PERSONAL PROTECTIVE EQUIPMENT:

**Eye Protection:** Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes. Provide an eyewash station in the area.

**Skin Protection:** Avoid contact with skin. Use protective clothing and gloves manufactured from nitrile. Safety showers should be available for emergency use.

**Respiratory Protection:** Avoid breathing vapour or mists. If exposure has the potential to exceed occupational exposure limits, use an appropriate NIOSH-approved respirator. Use a NIOSH-approved chemical cartridge respirator with organic vapour cartridges or use a NIOSH-approved supplied-air respirator.

## 9. PHYSICAL DATA

**Physical State:** Liquid

**Appearance:** Bright Clear

**Odour:** Hydrocarbon Odour

**Odour Threshold:** Not available

**Freezing/Pour Point:** Freeze Point < -47 °C

**Boiling Point:** 145 - 300 °C

**Density:** 775 - 840 kg/m<sup>3</sup> @ 15 °C

**Vapour Density (Air = 1):** Not available

**Vapour Pressure (absolute):** 1 - 1.4 kPa @ 37.8 °C

**pH:** Not available

**Flash Point:** Tag Closed Cup > 43 °C

**Lower Explosion Limit:** 0.7 % (vol.)

**Upper Explosion Limit:** 5 % (vol.)

**Autoignition Temperature:** 210 °C

**Viscosity:** < 8 cSt @ -20 °C

**Evaporation Rate (n-BuAc = 1):** Not available

**Partition Coefficient (log K<sub>ow</sub>):** 3.3 - 6

**Water Solubility:** Insoluble

**Other Solvents:** Hydrocarbon Solvents

## 10. STABILITY AND REACTIVITY

**Chemically Stable:** Yes

**Hazardous Polymerization:** No

**Sensitive to Mechanical Impact:** No

**Sensitive to Static Discharge:** Yes

**Hazardous Decomposition Products:** Thermal decomposition products are highly dependent on combustion conditions.

**Incompatible Materials:** Avoid strong oxidizing agents.

**Conditions of Reactivity:** Avoid excessive heat, open flames and all ignition sources.

## 11. TOXICOLOGICAL INFORMATION

<b>Ingredient (or Product if not specified)</b>	<b>Toxicological Data</b>
Kerosene (Petroleum), Hydrodesulfurized	LD50 Dermal Rabbit > 2000 mg/kg LD50 Oral Rat > 5000 mg/kg

**Routes of Exposure:** Exposure will most likely occur through skin contact or inhalation.

**Irritancy:** This product is expected to be irritating to skin but is not predicted to be a skin sensitizer.

**Chronic Effects:** Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Prolonged exposure to high vapour concentration can cause headache, dizziness, nausea, blurred vision and central nervous system depression.

**Pre-existing Conditions:** Pre-existing eye, skin and respiratory disorders may be aggravated by exposure to this product.

**Carcinogenicity and Mutagenicity:** The International Agency for Research on Cancer (IARC) considers that this product is not classifiable as to its carcinogenicity to humans. Middle distillates have caused skin cancers in laboratory animals when applied repeatedly and left in place between applications. This effect is believed to be caused by the continuous irritation of the skin. Good personal hygiene should be maintained to avoid this risk.

## 12. ECOLOGICAL INFORMATION

Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Block off drains and ditches. Provincial regulations require and federal regulations may require that environmental and/or other agencies be notified of a spill incident. Spill area must be cleaned and restored to original condition or to the satisfaction of authorities. May cause physical fouling of aquatic organisms.

<b>Biodegradability:</b>	Not readily biodegradable. Rapid volatilization.
<b>Bioaccumulation:</b>	Potential for bioaccumulation.
<b>Partition Coefficient (log <math>K_{ow}</math>):</b>	3.3 - 6

### Aquatic Toxicity

Product is expected to be toxic to aquatic organisms.

<b>Ingredient:</b>	<b>Toxicological Data</b>
<b>Kerosene</b>	EL50 - growth rate (WAF method) Algae (72hr) 1 - 10 mg/L.
<b>(Petroleum),</b>	EL50 (WAF method) Daphnia Magna (48hr) 1 - 10 mg/L.
<b>Hydrodesulfurized</b>	LL50 (WAF method) Rainbow Trout (96hr) 1 - 10 mg/L.

**Definition(s):** LL and EL are the lethal loading concentration and effective loading concentration respectively. The concentration represents the amount of substance added to the system to obtain a toxic concentration. They replace the traditional LC and EC for low solubility substances.

WAF is the water accommodated fraction. A slightly soluble hydrocarbon is stirred into water and the insoluble portions are removed. The remaining solution is the water accommodated fraction.

### 13. DISPOSAL CONSIDERATIONS

Waste management priorities (depending on volumes and concentration of waste) are: 1. recycle (reprocess), 2. energy recovery (cement kilns, thermal power generation), 3. incineration, 4. disposal at a licenced waste disposal facility. Do not attempt to combust waste on-site. Incinerate at a licenced waste disposal site with approval of environmental authority.

### 14. TRANSPORTATION INFORMATION

#### Canadian Road and Rail Shipping Classification:

UN Number	UN1863
Proper Shipping Name	FUEL, AVIATION, TURBINE ENGINE
Hazard Class	Class 3 Flammable Liquids
Packing Group	PG III
Additional Information	Not Regulated in Containers Less Than or Equal to 450 Litres.
Shipping Description	FUEL, AVIATION, TURBINE ENGINE Class 3 UN1863 PG III Not Regulated in Containers Less Than or Equal to 450 Litres.

### 15. REGULATORY INFORMATION

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

<b>WHMIS Class:</b>	Class B3 Combustible Liquid Class D2B Other Toxic Effects - Skin Irritant
<b>DSL/NDSL Status:</b>	This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act.
<b>Other Regulatory Status:</b>	No Canadian federal standards.

### 16. ADDITIONAL INFORMATION

#### LABEL STATEMENTS

**Hazard Statement :** Combustible Liquid.  
Irritating to skin.

**Handling Statement:** Eliminate all ignition sources.  
Avoid prolonged exposure to vapours.  
Wear suitable gloves and eye protection.  
Bond and ground transfer containers and equipment to avoid static accumulation.  
Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

**First Aid Statement :** Wash contaminated skin with soap and water.  
Flush eyes with water.  
If overcome by vapours remove to fresh air.  
Do not induce vomiting.  
Obtain medical attention.

**Revisions:** This MSDS has been reviewed and updated.  
Changes have been made to:  
Section 3  
Section 4  
Section 5  
Section 7  
Section 8  
Section 9  
Section 12  
Section 14



## Avjet Holding Inc.

### Material Safety Data Sheet

Effective Date: 2016-01-01  
Supersedes: 2013-01-01



Class B3 Combustible Class D2B Other Toxic  
Liquid Effects - Skin Irritant

#### 1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT: **JET A-1 WITH AIA**  
 SYNONYMS: Aviation Turbine Fuel (Kerosene Type)  
 May contain anti-icing additive (Diethylene Glycol Monomethyl Ether)  
 PRODUCT USE: Fuel Solvent  
 MSDS Number: 142-017

**MANUFACTURER**  
Avjet Holding Inc.

**TELEPHONE NUMBERS**  
Avjet Emergency Number

1-866-472-0007

900, Lemire Boulevard  
Drummondville, QC Canada  
J2C 7W8

For general information:  
For MSDS information:

(819) 479-1000  
(819) 479-1000

This MSDS was prepared by the Toxicology and Product Stewardship Section of Avjet Holding Inc.

#### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS Number	% Range	WHMIS Controlled
Kerosene (Petroleum), Hydrodesulfurized	64742-81-0	60 - 100	Yes

See Section 8 for Occupational Exposure Guidelines.

#### 3. HAZARDS IDENTIFICATION

**Physical Description:** Liquid Bright Clear Hydrocarbon Odour

**Routes of Exposure:** Exposure will most likely occur through skin contact or inhalation.

**Hazards:**

Combustible Liquid.  
Irritating to skin.  
Vapours are moderately irritating to the eyes.  
Ingestion may result in vomiting. Avoid aspiration of vomitus into lungs as small quantities may result in aspiration pneumonitis.  
Vapours are moderately irritating to the respiratory passages.

**Handling:** Eliminate all ignition sources.  
Avoid prolonged exposure to vapours.  
Wear suitable gloves and eye protection.  
Bond and ground transfer containers and equipment to avoid static accumulation.  
Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

For further information on health effects, see Section 11.

#### 4. FIRST AID

**Eyes:** Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

**Skin:** Wash contaminated skin with mild soap and water for 15 minutes. If irritation occurs and persists, obtain medical attention.

**Ingestion:** DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously keep head below hips to prevent aspiration of liquid into the lungs.

**Inhalation:** Remove victim from further exposure and restore breathing, if required. Obtain medical attention.

**Notes to Physician:** The main hazard following accidental ingestion is aspiration of the liquid into the lungs producing chemical pneumonitis. If more than 2.0 mL/kg has been ingested, vomiting should be induced with supervision. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before vomiting, gastric lavage with a cuffed endotracheal tube should be considered.

#### 5. FIRE FIGHTING MEASURES

**Extinguishing Media:** Carbon Dioxide  
Foam  
Dry Chemical  
Water Fog

**Firefighting Instructions:** Caution - Combustible. Vapour forms a flammable/explosive mixture with air between upper and lower flammable limits. Vapours may travel along ground and flashback along vapour trail may occur. Product will float and can be reignited on surface of water. Do not use a direct stream of water as it may spread fire. Containers exposed to intense heat from fires should be cooled with water to prevent vapour pressure buildup which could result in container rupture. Container areas exposed to direct flame contact should be cooled with large quantities of water as needed to prevent weakening of container structure. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus.

**Hazardous Combustion Products:** A complex mixture of airborne solid, liquid, particulates and gases will evolve when this material undergoes pyrolysis or combustion. Carbon dioxide, carbon monoxide and unidentified organic compounds may be formed upon combustion.

## 6. ACCIDENTAL RELEASE MEASURES

Issue warning "Combustible". Eliminate all ignition sources. Isolate hazard area and restrict access. Handling equipment must be grounded. Try to work upwind of spill. Avoid direct contact with material. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Dike and contain land spills; contain water spills by booming. Use water fog to knock down vapours; contain runoff. Absorb residue or small spills with absorbent material and remove to non-leaking containers for disposal. Recommended materials: Clay or Sand Flush area with water to remove trace residue. Dispose of recovered material as noted under Disposal Considerations. Notify appropriate environmental agency(ies).

## 7. HANDLING AND STORAGE

**Handling:** Avoid excessive heat, sparks, open flames and all other sources of ignition. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Vapours are heavier than air and will settle and collect in low areas and pits, displacing breathing air. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapours are gone. Vapours may accumulate and travel to distant ignition sources and flashback. Do not cut, drill, grind, weld or perform similar operations on or near containers. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. Do not pressurize drum containers to empty them. Wash with soap and water prior to eating, drinking, smoking, applying cosmetics or using toilet facilities. Launder contaminated clothing prior to reuse. Use good personal hygiene. Combustible.

**Storage:** Store in a cool, dry, well ventilated area, away from heat and ignition sources. Keep container tightly closed.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**THE FOLLOWING INFORMATION, WHILE APPROPRIATE FOR THIS PRODUCT, IS GENERAL IN NATURE. THE SELECTION OF PERSONAL PROTECTIVE EQUIPMENT WILL VARY DEPENDING ON THE CONDITIONS OF USE.**

### **OCCUPATIONAL EXPOSURE LIMITS (Current ACGIH TLV/TWA unless otherwise noted):**

Kerosene/Jet fuels, as total hydrocarbon vapour (skin) : 200 mg/m<sup>3</sup> ( Application restricted to conditions in which there are negligible aerosol exposures.)

Skin Notation: Absorption through skin, eyes and mucous membranes may contribute significantly to the total exposure.

**Mechanical Ventilation:** Use explosion-proof ventilation as required to control vapour concentrations. Concentrations in air should be maintained below the recommended threshold limit value if unprotected personnel are involved. Local ventilation recommended where mechanical ventilation is ineffective in controlling airborne concentrations below the recommended occupational exposure limit. Make up air should always be supplied to balance air exhausted (either generally or locally). For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere.

#### PERSONAL PROTECTIVE EQUIPMENT:

**Eye Protection:** Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes. Provide an eyewash station in the area.

**Skin Protection:** Avoid contact with skin. Use protective clothing and gloves manufactured from nitrile. Safety showers should be available for emergency use.

**Respiratory Protection:** Avoid breathing vapour or mists. If exposure has the potential to exceed occupational exposure limits, use an appropriate NIOSH-approved respirator. Use a NIOSH-approved chemical cartridge respirator with organic vapour cartridges or use a NIOSH-approved supplied-air respirator.

## 9. PHYSICAL DATA

**Physical State:** Liquid

**Appearance:** Bright Clear

**Odour:** Hydrocarbon Odour

**Odour Threshold:** Not available

**Freezing/Pour Point:** Freeze Point < -47 °C

**Boiling Point:** 145 - 300 °C

**Density:** 775 - 840 kg/m<sup>3</sup> @ 15 °C

**Vapour Density (Air = 1):** Not available

**Vapour Pressure (absolute):** 1 - 1.4 kPa @ 37.8 °C

**pH:** Not available

**Flash Point:** Tag Closed Cup > 43 °C

**Lower Explosion Limit:** 0.7 % (vol.)

**Upper Explosion Limit:** 5 % (vol.)

**Autoignition Temperature:** 210 °C

**Viscosity:** < 8 cSt @ -20 °C

**Evaporation Rate (n-BuAc = 1):** Not available

**Partition Coefficient (log K<sub>ow</sub>):** 3.3 - 6

**Water Solubility:** Insoluble

**Other Solvents:** Hydrocarbon Solvents

## 10. STABILITY AND REACTIVITY

**Chemically Stable:** Yes

**Hazardous Polymerization:** No

**Sensitive to Mechanical Impact:** No

**Sensitive to Static Discharge:** Yes

**Hazardous Decomposition Products:** Thermal decomposition products are highly dependent on combustion conditions.

**Incompatible Materials:** Avoid strong oxidizing agents.

**Conditions of Reactivity:**

Avoid excessive heat, open flames and all ignition sources.

**11. TOXICOLOGICAL INFORMATION**

<b>Ingredient (or Product if not specified)</b>	<b>Toxicological Data</b>
Kerosene (Petroleum), Hydrodesulfurized	LD50 Dermal Rabbit > 2000 mg/kg LD50 Oral Rat > 5000 mg/kg

<b>Routes of Exposure:</b>	Exposure will most likely occur through skin contact or inhalation.
<b>Irritancy:</b>	This product is expected to be irritating to skin but is not predicted to be a skin sensitizer.
<b>Chronic Effects:</b>	Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Prolonged exposure to high vapour concentration can cause headache, dizziness, nausea, blurred vision and central nervous system depression.
<b>Pre-existing Conditions:</b>	Pre-existing eye, skin and respiratory disorders may be aggravated by exposure to this product.
<b>Carcinogenicity and Mutagenicity:</b>	The International Agency for Research on Cancer (IARC) considers that this product is not classifiable as to its carcinogenicity to humans. Middle distillates have caused skin cancers in laboratory animals when applied repeatedly and left in place between applications. This effect is believed to be caused by the continuous irritation of the skin. Good personal hygiene should be maintained to avoid this risk.

**12. ECOLOGICAL INFORMATION**

Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Block off drains and ditches. Provincial regulations require and federal regulations may require that environmental and/or other agencies be notified of a spill incident. Spill area must be cleaned and restored to original condition or to the satisfaction of authorities. May cause physical fouling of aquatic organisms.

<b>Biodegradability:</b>	Not readily biodegradable. Rapid volatilization.
<b>Bioaccumulation:</b>	Potential for bioaccumulation.
<b>Partition Coefficient (log <math>K_{ow}</math>):</b>	3.3 - 6

**Aquatic Toxicity**

Product is expected to be toxic to aquatic organisms.

<b>Ingredient:</b>	<b>Toxicological Data</b>
<b>Kerosene</b>	EL50 - growth rate (WAF method) Algae (72hr) 1 - 10 mg/L.
<b>(Petroleum),</b>	EL50 (WAF method) Daphnia Magna (48hr) 1 - 10 mg/L.
<b>Hydrodesulfurized</b>	LL50 (WAF method) Rainbow Trout (96hr) 1 - 10 mg/L.

**Definition(s):** LL and EL are the lethal loading concentration and effective loading concentration respectively. The concentration represents the amount of substance added to the system to obtain a toxic concentration. They replace the traditional LC and EC for low solubility substances.

WAF is the water accommodated fraction. A slightly soluble hydrocarbon is stirred into water and the insoluble portions are removed. The remaining solution is the water accommodated fraction.

### 13. DISPOSAL CONSIDERATIONS

Waste management priorities (depending on volumes and concentration of waste) are: 1. recycle (reprocess), 2. energy recovery (cement kilns, thermal power generation), 3. incineration, 4. disposal at a licenced waste disposal facility. Do not attempt to combust waste on-site. Incinerate at a licenced waste disposal site with approval of environmental authority.

### 14. TRANSPORTATION INFORMATION

#### Canadian Road and Rail Shipping Classification:

UN Number	UN1863
Proper Shipping Name	FUEL, AVIATION, TURBINE ENGINE
Hazard Class	Class 3 Flammable Liquids
Packing Group	PG III
Additional Information	Not Regulated in Containers Less Than or Equal to 450 Litres.
Shipping Description	FUEL, AVIATION, TURBINE ENGINE Class 3 UN1863 PG III Not Regulated in Containers Less Than or Equal to 450 Litres.

### 15. REGULATORY INFORMATION

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

<b>WHMIS Class:</b>	Class B3 Combustible Liquid Class D2B Other Toxic Effects - Skin Irritant
<b>DSL/NDSL Status:</b>	This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act.
<b>Other Regulatory Status:</b>	No Canadian federal standards.

### 16. ADDITIONAL INFORMATION

#### LABEL STATEMENTS

**Hazard Statement :** Combustible Liquid.  
Irritating to skin.

**Handling Statement:** Eliminate all ignition sources.  
Avoid prolonged exposure to vapours.  
Wear suitable gloves and eye protection.  
Bond and ground transfer containers and equipment to avoid static accumulation.  
Empty containers are hazardous, may contain flammable / explosive dusts,  
liquid residue or vapours. Keep away from sparks and open flames.

**First Aid Statement :** Wash contaminated skin with soap and water.  
Flush eyes with water.  
If overcome by vapours remove to fresh air.  
Do not induce vomiting.  
Obtain medical attention.

**Revisions:** This MSDS has been reviewed and updated.  
Changes have been made to:  
Section 3  
Section 4  
Section 5  
Section 7  
Section 8  
Section 9  
Section 12  
Section 14

# SAFETY DATA SHEET

## SUPREME<sup>TM/MC</sup> 5W-30



000003000704

Version 4.1

Revision Date 2017/03/02

Print Date 2017/03/02

### SECTION 1. IDENTIFICATION

Product name : SUPREME<sup>TM/MC</sup> 5W-30

Product code : MOSP53CBE, MOSP53P5R, MOSP53ICT, MOSP53IBC, MOSP53DRR, MOSP53DRM, MOSP53DCT, MOSP53C16, MOSP53C12, MOSP53, MOSP53BLK

Manufacturer or supplier's details  
Petro-Canada Lubricants Inc.  
2310 Lakeshore Road West  
Mississauga ON L5J 1K2  
Canada

Emergency telephone number  
Petro-Canada Lubricants Inc.: +1 905-403-5770;  
CHEMTREC Transport Emergency: 1-800-424-9300;  
Poison Control Centre: Consult local telephone directory for emergency number(s).

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

Recommended use : Supreme motor oils are for use in all engines fuelled with gasoline, gasoline-ethanol blends up to E85, propane or CNG where the manufacturer recommends the use of API SN or SM quality oils. SAE 5W-20, 5W-30 and 10W-30 grades also meet the requirements of ILSAC GF-5 and GF-4.

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

### SECTION 2. HAZARDS IDENTIFICATION

#### Emergency Overview

Appearance	viscous liquid
Colour	Light amber.
Odour	Mild petroleum oil like.

#### GHS Classification

Not a hazardous substance or mixture.

#### GHS label elements

Not a hazardous substance or mixture.

#### Potential Health Effects

Primary Routes of Entry : Eye contact  
Ingestion  
Inhalation  
Skin contact

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Aggravated Medical Condition : None known.

### Other hazards

None known.

### IARC

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

### ACGIH

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

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

### Hazardous components

Chemical name	CAS-No.	Concentration
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	70 - 90 %
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based	72623-87-1	5 - 10 %

## 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 eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.  
Wash skin thoroughly with soap and water or use recognized skin cleanser.  
Wash clothing before reuse.  
Seek medical advice.
- In case of eye contact : Remove contact lenses.  
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.  
Obtain medical attention.
- If swallowed : Rinse mouth with water.  
DO NOT induce vomiting unless directed to do so by a physician or poison control center.  
Never give anything by mouth to an unconscious person.

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Seek medical advice.

Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

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### SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : No information available.
- Specific hazards during fire-fighting : Cool closed containers exposed to fire with water spray.
- Hazardous combustion products : Carbon oxides (CO, CO<sub>2</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.
- 

### SECTION 6. ACCIDENTAL RELEASE MEASURES

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

### SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : For personal protection see section 8.  
Smoking, eating and drinking should be prohibited in the application area.  
In case of insufficient ventilation, wear suitable respiratory equipment.  
Avoid contact with skin, eyes and clothing.  
Do not ingest.  
Keep away from heat and sources of ignition.

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**SUPREME™/MC 5W-30**



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Keep container closed when not in use.

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

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Components with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	TWA (Mist)	5 mg/m <sup>3</sup>	CA AB OEL
		STEL (Mist)	10 mg/m <sup>3</sup>	CA AB OEL
		TWAEV (Mist)	5 mg/m <sup>3</sup>	CA QC OEL
		STEV (Mist)	10 mg/m <sup>3</sup>	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m <sup>3</sup>	ACGIH
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based	72623-87-1	TWA (Mist)	5 mg/m <sup>3</sup>	CA AB OEL
		STEL (Mist)	10 mg/m <sup>3</sup>	CA AB OEL
		TWAEV (Mist)	5 mg/m <sup>3</sup>	CA QC OEL
		STEV (Mist)	10 mg/m <sup>3</sup>	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m <sup>3</sup>	ACGIH

**Engineering measures** : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

**Personal protective equipment**

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

Filter type : organic vapour filter

Hand protection  
 Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).

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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 hands and face before breaks and immediately after handling the product. Wash contaminated clothing before re-use. Ensure that eyewash station and safety shower are proximal to the work-station location.
Hygiene measures	: Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash face, hands and any exposed skin thoroughly after handling.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: viscous liquid
Colour	: Light amber.
Odour	: Mild petroleum oil like.
Odour Threshold	: No data available
pH	: No data available
Pour point	: -45 °C (-49 °F)
Boiling point/boiling range	: No data available
Flash point	: 229 °C (444 °F) Method: Cleveland open cup
Fire Point	: No data available
Auto-Ignition Temperature	: No data available
Evaporation rate	: No data available
Flammability	: Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available

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Density	:	0.8517 kg/l (15 °C / 59 °F)
Solubility(ies)		
Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity		
Viscosity, kinematic	:	61.45 cSt (40 °C / 104 °F)
		10.69 cSt (100 °C / 212 °F)
Explosive properties	:	Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

### SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	:	Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	:	No data available
Incompatible materials	:	Reactive with oxidising agents and reducing agents.
Hazardous decomposition products	:	May release COx, H2S, metal oxides, smoke and irritating vapours when heated to decomposition.

### SECTION 11. TOXICOLOGICAL INFORMATION

#### Information on likely routes of exposure

Eye contact  
Ingestion  
Inhalation  
Skin contact

#### Acute toxicity

##### Product:

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

##### Components:

#### **lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based:**

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

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

### **lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based:**

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

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

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

### **Skin corrosion/irritation**

#### **Product:**

Remarks: No data available

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

#### **Product:**

Remarks: No data available

### **Respiratory or skin sensitisation**

No data available

### **Germ cell mutagenicity**

No data available

### **Carcinogenicity**

No data available

### **Reproductive toxicity**

No data available

### **STOT - single exposure**

No data available

### **STOT - repeated exposure**

No data available

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## **SECTION 12. ECOLOGICAL INFORMATION**

### **Ecotoxicity**

#### **Product:**

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Toxicity to fish :  
Remarks: No data available

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

Toxicity to algae :  
Remarks: No data available

Toxicity to bacteria : Remarks: No data available

### Persistence and degradability

#### Product:

Biodegradability : Remarks: No data available

### Bioaccumulative potential

No data available

### Mobility in soil

No data available

### Other adverse effects

No data available

---

## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

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

---

## SECTION 14. TRANSPORT INFORMATION

### International Regulations

#### IATA-DGR

Not regulated as a dangerous good

#### IMDG-Code

Not regulated as a dangerous good

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

Not applicable for product as supplied.

### National Regulations

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### TDG

Not regulated as a dangerous good

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## SECTION 15. REGULATORY INFORMATION

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

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

<b>DSL</b>	On the inventory, or in compliance with the inventory
<b>TSCA</b>	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
<b>IECSC</b>	On the inventory, or in compliance with the inventory
<b>ELINCS</b>	At least one component is not listed in EINECS but all such components are listed in ELINCS.

---

## SECTION 16. OTHER INFORMATION

For Copy of SDS : Internet: [lubricants.petro-canada.com/sds](http://lubricants.petro-canada.com/sds)  
Western Canada, telephone: 1-800-661-1199; fax: 1-800-378-4518  
Ontario & Central Canada, telephone: 1-800-268-5850; fax: 1-800-201-6285  
Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 1-800-201-6285  
For Product Safety Information: 1 905-804-4752

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

Revision Date : 2017/03/02

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

## DURON<sup>TM/MC</sup> -E 10W-30



000003001098

Version 3.0

Revision Date 2016/11/11

Print Date 2016/11/11

### SECTION 1. IDENTIFICATION

Product name : DURON<sup>TM/MC</sup> -E 10W-30

Product code : DE13ICT, DE13P5R, DE13P20, DE13IBC, DE13DRR, DE13DRM, DE13DCT, DE13C16, DE13C12, DE13, DE13BLK

Manufacturer or supplier's details  
Petro-Canada Lubricants Inc.  
2310 Lakeshore Road West  
Mississauga ON L5J 1K2  
Canada

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

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

Recommended use : A superior performance heavy duty engine oil suitable for 4-stroke diesel, gasoline and natural gas automotive applications where SAE 10W-30 is recommended. Applications include vehicles equipped with exhaust after-treatment devices such as diesel particulate filters and catalytic converters. It is suitable for wet clutch transmission and hydraulic applications in mobile equipment where a 10W-30 engine oil is recommended.

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

### SECTION 2. HAZARDS IDENTIFICATION

#### Emergency Overview

Appearance	viscous liquid
Colour	Light amber.
Odour	Mild petroleum oil like.

#### GHS Classification

Not a hazardous substance or mixture.

#### GHS label elements

Not a hazardous substance or mixture.

#### Potential Health Effects

Primary Routes of Entry : Eye contact

# SAFETY DATA SHEET

## DURON™/MC -E 10W-30



000003001098

Version 3.0

Revision Date 2016/11/11

Print Date 2016/11/11

Ingestion  
Inhalation  
Skin contact

Aggravated Medical Condition : None known.

### Other hazards

None known.

### IARC

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

### ACGIH

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

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

### Hazardous components

Chemical name	CAS-No.	Concentration
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	30 - 50 %
White mineral oil (petroleum)	8042-47-5	30 - 50 %
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity	72623-85-9	20 - 30 %
Zinc alkyldithiophosphate	113706-15-3	1 - 5 %

## 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 eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.  
Wash skin thoroughly with soap and water or use recognized skin cleanser.  
Wash clothing before reuse.  
Seek medical advice.

In case of eye contact : Remove contact lenses.  
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.  
Obtain medical attention.

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- If swallowed : Rinse mouth with water.  
DO NOT induce vomiting unless directed to do so by a physician or poison control center.  
Never give anything by mouth to an unconscious person.  
Seek medical advice.
- Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

### SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : No information available.
- 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>), phosphorus oxides (PO<sub>x</sub>), sulphur compounds (H<sub>2</sub>S), zinc oxides (ZnO<sub>x</sub>), metal oxides, hydrocarbons, smoke and irritating vapours as products of incomplete combustion.
- Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.

### SECTION 6. ACCIDENTAL RELEASE MEASURES

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

### SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : For personal protection see section 8.  
Smoking, eating and drinking should be prohibited in the ap-

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plication area.  
In case of insufficient ventilation, wear suitable respiratory equipment.  
Avoid contact with skin, eyes and clothing.  
Do not ingest.  
Keep away from heat and sources of ignition.  
Keep container closed when not in use.

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

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	TWA (Mist)	5 mg/m <sup>3</sup>	CA AB OEL
		STEL (Mist)	10 mg/m <sup>3</sup>	CA AB OEL
		TWAEV (Mist)	5 mg/m <sup>3</sup>	CA QC OEL
		STEV (Mist)	10 mg/m <sup>3</sup>	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m <sup>3</sup>	ACGIH
White mineral oil (petroleum)	8042-47-5	TWA (Mist)	5 mg/m <sup>3</sup>	CA AB OEL
		STEL (Mist)	10 mg/m <sup>3</sup>	CA AB OEL
		TWAEV (Mist)	5 mg/m <sup>3</sup>	CA QC OEL
		STEV (Mist)	10 mg/m <sup>3</sup>	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m <sup>3</sup>	ACGIH
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity	72623-85-9	TWA (Mist)	5 mg/m <sup>3</sup>	CA AB OEL
		STEL (Mist)	10 mg/m <sup>3</sup>	CA AB OEL
		TWAEV (Mist)	5 mg/m <sup>3</sup>	CA QC OEL
		STEV (Mist)	10 mg/m <sup>3</sup>	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m <sup>3</sup>	ACGIH

**Engineering measures** : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

#### Personal protective equipment

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- Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Filter type : organic vapour filter
- Hand protection  
Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).
- 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 hands and face before breaks and immediately after handling the product.  
Wash contaminated clothing before re-use.  
Ensure that eyewash station and safety shower are proximal to the work-station location.
- Hygiene measures : Remove and wash contaminated clothing and gloves, including the inside, before re-use.  
Wash face, hands and any exposed skin thoroughly after handling.
- 

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : viscous liquid
- Colour : Light amber.
- Odour : Mild petroleum oil like.
- Odour Threshold : No data available
- pH : No data available
- Pour point : -42 °C (-44 °F)
- Boiling point/boiling range : No data available
- Flash point : 220 °C (428 °F)  
Method: Cleveland open cup
- Fire Point : 241 °C (466 °F)

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Auto-Ignition Temperature	:	No data available
Evaporation rate	:	No data available
Flammability	:	Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	:	No data available
Lower explosion limit	:	No data available
Vapour pressure	:	No data available
Relative vapour density	:	No data available
Relative density	:	No data available
Density	:	0.8627 kg/l (15 °C / 59 °F)
Solubility(ies)		
Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity		
Viscosity, kinematic	:	80.1 cSt (40 °C / 104 °F) 12.00 cSt (100 °C / 212 °F)
Explosive properties	:	Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

---

### SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	:	Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	:	No data available
Incompatible materials	:	Reactive with oxidizing agents and water.
Hazardous decomposition products	:	May release CO <sub>x</sub> , H <sub>2</sub> S, smoke and irritating vapours when heated to decomposition.

---

### SECTION 11. TOXICOLOGICAL INFORMATION

#### Information on likely routes of exposure

Eye contact  
Ingestion  
Inhalation  
Skin contact

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### Acute toxicity

#### Product:

- Acute oral toxicity : Remarks: No data available
- Acute inhalation toxicity : Remarks: No data available
- Acute dermal toxicity : Assessment: The substance or mixture has no acute dermal toxicity

#### Components:

##### **lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based:**

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

##### **White mineral oil (petroleum):**

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

##### **lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity:**

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

### Skin corrosion/irritation

#### Product:

Remarks: No data available

### Serious eye damage/eye irritation

#### Product:

Remarks: No data available

### Respiratory or skin sensitisation

No data available

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### Germ cell mutagenicity

No data available

### Carcinogenicity

No data available

### Reproductive toxicity

No data available

### STOT - single exposure

No data available

### STOT - repeated exposure

No data available

---

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Product:

Toxicity to fish : Remarks: No data available

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

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

### Persistence and degradability

#### Product:

Biodegradability : Remarks: No data available

### Bioaccumulative potential

No data available

### Mobility in soil

No data available

### Other adverse effects

No data available

---

## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.  
Offer surplus and non-recyclable solutions to a licensed dis-

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posal company.  
Waste must be classified and labelled prior to recycling or disposal.  
Send to a licensed waste management company.  
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

---

### SECTION 14. TRANSPORT INFORMATION

#### International Regulations

##### IATA-DGR

Not regulated as a dangerous good

##### IMDG-Code

Not regulated as a dangerous good

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

Not applicable for product as supplied.

#### National Regulations

##### TDG

Not regulated as a dangerous good

---

### SECTION 15. REGULATORY INFORMATION

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

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

##### DSL

On the inventory, or in compliance with the inventory

##### TSCA

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

##### ELINCS

At least one component is not listed in EINECS but all such components are listed in ELINCS.

---

### SECTION 16. OTHER INFORMATION

For Copy of SDS

: Internet: [lubricants.petro-canada.ca/msds](http://lubricants.petro-canada.ca/msds)  
Western Canada, telephone: 1-800-661-1199; fax: 1-800-378-4518  
Ontario & Central Canada, telephone: 1-800-268-5850; fax: 1-800-201-6285  
Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 1-800-201-6285  
For Product Safety Information: 1 905-804-4752

Prepared by

: Product Safety: +1 905-804-4752

# SAFETY DATA SHEET

## DURON<sup>TM/MC</sup> -E 10W-30



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Revision Date : 2016/11/11

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.

# Material Safety Data Sheet

## TWO CYCLE MOTOR OIL



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### SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : TWO CYCLE MOTOR OIL

Product code : TWOCYCDRM, TWOCYCC12, TWOCYC, TWOCYCBLK

Manufacturer or supplier's details

Petro-Canada Lubricants Inc.  
2310 Lakeshore Road West  
Mississauga ON L5J 1K2  
Canada

Petro-Canada America Lubricants Inc.  
115N Oak Park Avenue #1C  
Oak Park IL 60301-1366  
United States

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

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

Recommended use : A low ash 2-cycle engine oil designed to lubricate conventional pre-mixed fuel/oil as well as oil injection lubricated engines powering air-cooled two-stroke cycle engines.

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

### SECTION 2. HAZARDS IDENTIFICATION

#### Emergency Overview

Form	viscous liquid
Colour	Blue-green.
Odour	Mild petroleum oil like.

#### Potential Health Effects

Primary Routes of Entry : Eye contact  
Ingestion  
Inhalation  
Skin contact

Aggravated Medical Condition : None known.

#### Carcinogenicity:

##### IARC

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

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<b>OSHA</b>	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
<b>NTP</b>	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
<b>ACGIH</b>	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

---

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

#### Hazardous components

No hazardous ingredients

---

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

---

### SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local

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## TWO CYCLE MOTOR OIL



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circumstances and the surrounding environment.

- Unsuitable extinguishing media : No information available.
- Specific hazards during firefighting : 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>), phosphorus oxides (PO<sub>x</sub>), hydrocarbons, aldehydes, smoke and irritating vapours as products of incomplete combustion.
- Specific extinguishing methods : Prevent fire extinguishing water from contaminating surface water or the ground water system.
- 

### SECTION 6. ACCIDENTAL RELEASE MEASURES

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

### SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : For personal protection see section 8.  
Smoking, eating and drinking should be prohibited in the application area.  
In case of insufficient ventilation, wear suitable respiratory equipment.  
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.

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### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

Contains no substances with occupational exposure limit values.

**Engineering measures** : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.  
Adequate ventilation to ensure that Occupational Exposure Limits are not exceeded.

#### Personal protective equipment

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

**Filter type** : organic vapour filter

#### Hand protection

**Material** : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).  
**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 if splashing hazard is likely.

**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 hands and face before breaks and immediately after handling the product.  
Wash contaminated clothing before re-use.  
Ensure that eyewash station and safety shower are proximal to the work-station location.

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

---

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance** : viscous liquid

**Colour** : Blue-green.

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Odour	: Mild petroleum oil like.
Odour Threshold	: No data available
pH	: No data available
Pour point	: -48 °C (-54 °F)
Boiling point/boiling range	: No data available
Flash point	: 149 °C (300 °F) Method: Cleveland open cup
Fire Point	: No data available
Auto-Ignition Temperature	: No data available
Evaporation rate	: No data available
Flammability	: Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Density	: 0.8508 kg/l (15 °C / 59 °F)
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 37.1 cSt (40 °C / 104 °F)  7.03 cSt (100 °C / 212 °F)
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

---

### SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.  No dangerous reaction known under conditions of normal use.
Conditions to avoid	: No data available
Incompatible materials	: Reactive with oxidising agents, reducing agents, and acids.
Hazardous decomposition	: May release CO <sub>x</sub> , NO <sub>x</sub> , SO <sub>x</sub> , aldehydes, methacrylate

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products

monomers, hydrocarbons, smoke and irritating vapours when heated to decomposition.

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### SECTION 11. TOXICOLOGICAL INFORMATION

#### Acute toxicity

**Product:**

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

#### Skin corrosion/irritation

**Product:**

Result: Mild skin irritation

#### Serious eye damage/eye irritation

**Product:**

Result: Mild eye irritation

#### Respiratory or skin sensitisation

No data available

#### Germ cell mutagenicity

No data available

#### Carcinogenicity

No data available

#### Reproductive toxicity

No data available

#### STOT - single exposure

No data available

#### STOT - repeated exposure

No data available

#### Aspiration toxicity

No data available

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### SECTION 12. ECOLOGICAL INFORMATION

#### Ecotoxicity

Internet: [lubricants.petro-canada.ca/msds](http://lubricants.petro-canada.ca/msds)  
Petro-Canada is a Suncor Energy business.

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### 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

No data available

### **Bioaccumulative potential**

#### Product:

- Partition coefficient: n-octanol/water : Remarks: No data available

### **Mobility in soil**

No data available

### **Other adverse effects**

No data available

#### Product:

- Additional ecological information : No data available

---

## **SECTION 13. DISPOSAL CONSIDERATIONS**

### **Disposal methods**

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

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## **SECTION 14. TRANSPORT INFORMATION**

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### International Regulation

**IATA-DGR**

Not regulated as a dangerous good

**IMDG-Code**

Not regulated as a dangerous good

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

Not applicable for product as supplied.

**49 CFR**

Not regulated as a dangerous good

**TDG**

Not regulated as a dangerous good

### Special precautions for user

Not applicable

---

## SECTION 15. REGULATORY INFORMATION

**OSHA Hazards** : This material is non-hazardous as defined by the American OSHA Hazard Communication Standard.

**WHMIS Classification** : Not Rated

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

**DSL** On the inventory, or in compliance with the inventory  
**TSCA** All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.

**ELINCS** At least one component is not listed in EINECS but all such components are listed in ELINCS.

**IECSC** On the inventory, or in compliance with the inventory

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## SECTION 16. OTHER INFORMATION

# Material Safety Data Sheet

## TWO CYCLE MOTOR OIL



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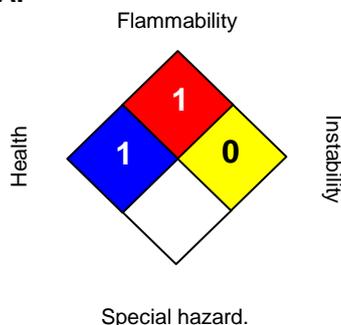
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### Further information

#### NFPA:



#### HMIS III:

HEALTH	1
FLAMMABILITY	1
PHYSICAL HAZARD	0
PERSONAL PROTECTION	B

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

For Copy of (M)SDS

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

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

Western Canada, telephone: 1-800-661-1199; fax: 1-800-378-4518

Ontario & Central Canada, telephone: 1-800-268-5850; fax: 1-800-201-6285

Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 1-800-201-6285

United States, telephone: 1-800-268-5850; fax: 1-800-201-6285

For Product Safety Information: 1 905-804-4752

Prepared by

: Product Safety: +1 905-804-4752

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.

**SECTION 1 – PRODUCT INFORMATION**

Product Name: Propane  
 Trade Name: LPG (Liquefied Petroleum Gas), LP-Gas  
 Chemical Formula: C<sub>3</sub>H<sub>8</sub>  
 WHMIS Classification: Class A – Compressed Gas  
 Class B, Division 1 – Flammable G  
 Supplier: Superior Propane  
 A Division of Superior Plus LP  
 1111 - 49th Avenue N.E.  
 Calgary, AB T2E 8V2  
 Business: (403) 730-7500  
 24-Hour  
 Emergency Contact: Canutec (613) 996-6666  
 Application and Use: Propane is commonly used as a fuel for heating, cooking, automobiles, forklift trucks, crop drying and welding and cutting operations. Propane is used in industry as a refrigerant, solvent and as a chemical feedstock.

**SECTION 2 – HAZARDOUS INGREDIENTS**

COMPONENTS	CAS No	% VOLUME (v/v)	LD 50 (RAT, ORAL)
Propane	74-98-6	90% -99%	Not Applicable
Propylene	115-07-1	0% - 5%	Not Applicable
Ethane	74-84-0	0% - 5%	Not Applicable
Butane and heavier hydro carbons	106-97-8	0% - 2.5%	Not Applicable

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

**SECTION 3 – CHEMICAL AND PHYSICAL DATA**

Form: Liquid and vapour while stored under pressure  
 Boiling Point: -42°C @ 1 atm  
 Freezing Point: -188°C  
 Evaporation Rate: Rapid (Gas at normal ambient conditions)  
 Vapour Pressure: 1435 kPa (maximum) @ 37.8°C  
 Vapour Density: 1.52 (Air = 1)  
 pH: Not available  
 Solubility in Water: Slight, 6.1% by volume @ 17.8°C  
 Specific Gravity: 0.51 (water = 1)  
 Appearance/Odour: Colourless liquid and vapour while stored under pressure. Colourless and odourless gas in natural state at any concentration. Commercial propane has an odourant added, ethyl mercaptan, which has an odour similar to boiling cabbage.  
 Coefficient of Water/Oil Distribution: Not available  
 Odour Threshold: 4800 ppm  
 With proper handling, transportation and storage, adding a chemical odourant such as ethyl mercaptan has proven to be a very effective warning device, but all odourants have certain limitations. The effectiveness of the odourant may be diminished by a person's sense of smell, by competing odours and by oxidation which may cause a potentially dangerous situation.

**SECTION 4 – FIRE OR EXPLOSION HAZARD**

Flash Point: -103.4°C  
 Method: Closed cup  
 Flammable Limits: Lower 2.4%, Upper 9.5%  
 Auto Ignition Temperature: 432 °C  
 Hazardous Combustion Products: Carbon monoxide can be produced when primary air and secondary air are deficient while combustion is taking place.  
 Fire and Explosive Hazards: Explosive air - vapour allowed to leak to atmosphere.  
 Sensitivity to Impact: No  
 Sensitivity to Static Discharge: Yes  
 Fire Extinguishing Precautions: Use water spray to cool exposed cylinders or tanks. Do not extinguish fire unless the source of the escaping gas that is fueling the fire can be turned off. Fire can be extinguished with carbon dioxide and/or dry chemical (BC). Container metal shells require cooling with water to prevent impingement and the weakening of metal. If sufficient water is not available to protect the container shell from weakening, the area will be required to be evacuated. If gas has not ignited, liquid or vapour may be dispersed by water spray or flooding.  
 Special Fire Fighting Equipment: Protective clothing, hose monitors, fog nozzles, self-contained breathing apparatus material, drains and openings to building

**SECTION 5 – REACTIVITY DATA**

**Stability: Stable**  
 Conditions to Avoid: Keep separate from oxidizing agents. Gas explodes spontaneously when mixed with chloride dioxide.  
 Incompatibility: Remove sources of ignition and observe distance requirements for storage tanks from combustible  
 Hazardous Decomposition Products: Deficient primary and secondary air can produce carbon monoxide.  
 Hazardous Polymerization: Will not occur.

## SECTION 6 – TOXICOLOGICAL PROPERTIES OF MATERIAL

Routes of Entry: Skin Contact, Eye Contact, Inhalation

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

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

Ingestion: Not considered to be a hazard.

Acute Exposure: Contact with Liquefied Petroleum Gas may cause frostbite or cold burns. Propane acts as a simple asphyxiant as oxygen content in air is displaced by the propane. At increasing concentration levels, propane may cause dizziness, headaches, loss of coordination, fatigue, unconsciousness and death.

Chronic Exposure: No reported effects from long term low level exposure.

Sensitization to Product: Not known to be a sensitizer.

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

ACGIH TLV: 1000 ppm

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

Other Toxicological Effects: None

## SECTION 7 – PREVENTATIVE MEASURES

Eyes: Safety glasses or chemical goggles are recommended when transferring product.

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

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

Ventilation: Use in well-ventilated areas. Use with explosion proof mechanical ventilation in confined spaces or poorly ventilated areas.

## SECTION 8 – EMERGENCY AND FIRST AID PROCEDURES

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

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

Ingestion: None considered necessary.

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

Spill or Leak: Eliminate leak if possible. Eliminate source of ignition. Ensure cylinder is upright. Disperse vapours with hose streams using fog nozzles. Monitor low areas as propane is heavier than air and can settle into low areas. Remain upwind of leak. Keep people away. Prevent vapour and/or liquid from entering into sewers, basements or confined areas.

## SECTION 9 – TRANSPORTATION, HANDLING AND STORAGE

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

Transportation of Dangerous Goods (TDG)  
TDG Classification: Flammable Gas 2.1

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

TDG Shipping Name: Liquefied Petroleum Gas (Propane)  
PIN Number: UN1075

## SECTION 10 – PREPARATION INFORMATION

Prepared by: Superior Propane  
Health Safety and Environment Team

Telephone: (403) 730-7500  
Revision: January 17, 2014  
Supersedes: January 17, 2011

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

## **Appendix 3: Immediately Reportable Spill Quantities**

<b>Item No.</b>	<b>TDGA Class</b>	<b>Description of Contaminant</b>	<b>Amount Spilled</b>
1	1	Explosives	Any amount
2	2.1	Compressed gas (flammable)	Any amount of gas from containers with a capacity > 100 L
3	2.2	Compressed gas (non-corrosive, non-flammable)	Any amount of gas from containers with a capacity > 100 L
4	2.3	Compressed gas (toxic)	Any amount
5	2.4	Compressed gas (corrosive)	Any amount
6	3.1, 3.2, 3.3	Flammable liquid	> 100 L
7	4.1	Flammable solid	> 25 kg
8	4.2	Spontaneously combustible solids	> 25 kg
9	4.3	Water reactant solids	> 25 kg
10	5.1	Oxidizing substances	> 50 L or 50 kg
11	5.1	Organic Peroxides	> 1 L or 1 kg
12	6.1	Poisonous substances	> 5 L or 5 kg
13	6.2	Infectious substances	Any amount
14	7	Radioactive	Any amount
15	8	Corrosive substances	> 5 L or 5 kg
16	9.1 (in part)	Miscellaneous products or substances, excluding PCB mixtures	> 50 L or 50 kg
17	9.2	Environmentally hazardous	> 1 L or 1 kg
18	9.3	Dangerous wastes	> 5 L or 5 kg
19	9.1 (in part)	PCB mixtures of 5 or more parts per million	> 0.5 L or 0.5 kg
20	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
21	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
22	None	Unknown substance	Any amount

In addition, all releases of harmful substances, regardless of quantity, are to be reported to the NT-NU 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 4: NT-NU Spill Report Form**

Instructions for Completing the NT-NU Spill Report Form

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

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

Dewar Lakes Camp Spill Prevention and Response Plan



Canada

**NT-NU SPILL REPORT**

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130

FAX: (867) 873-6924

EMAIL: spills@gov.nt.ca

A	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 LINE USE ONLY</b>  REPORT NUMBER _____
	B	OCCURRENCE DATE: MONTH – DAY – YEAR		OCCURRENCE TIME		
C	LAND USE PERMIT NUMBER (IF APPLICABLE)			WATER LICENCE NUMBER (IF APPLICABLE)		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION				REGION <input type="checkbox"/> NWT <input type="checkbox"/> NUNAVUT <input type="checkbox"/> ADJACENT JURISDICTION OR OCEAN	
E	LATITUDE DEGREES                      MINUTES                      SECONDS			LONGITUDE DEGREES                      MINUTES                      SECONDS		
F	RESPONSIBLE PARTY OR VESSEL NAME		RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION			
G	ANY CONTRACTOR INVOLVED		CONTRACTOR ADDRESS OR OFFICE LOCATION			
H	PRODUCT SPILLED		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES		U.N. NUMBER	
	SECOND PRODUCT SPILLED (IF APPLICABLE)		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES		U.N. NUMBER	
I	SPILL SOURCE		SPILL CAUSE		AREA OF CONTAMINATION IN SQUARE METRES	
J	FACTORS AFFECTING SPILL OR RECOVERY		DESCRIBE ANY ASSISTANCE REQUIRED		HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT	
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS					
L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE	
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE	
<b>REPORT LINE USE ONLY</b>						
N	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						
THIRD SUPPORT AGENCY						