Public Services and Procurement Canada

SPILL CONTINGENCY PLAN

Mould Bay Causeway Reconstruction

043-P-0018885-0-01-001-EN-R-0204-00

April 2019
Summary

Mould Bay, located on Prince Patrick Island, is the site of 1 of 5 High Arctic Weather Stations constructed jointly by the American and Canadian governments in 1948. Along with Eureka, Resolute, Isachen and Alert, the Mould Bay Weather station allowed us to better understand the impact of Arctic weather systems on the rest of North America, overtime improving our ability to accurately predict weather in the south. Mould Bay is in one of the least accessible locations in Canada; inaccessible by sealift or icebreaker due to an ever-present ice pack, the site is only accessible by air, making it unique when compared to most government installations in the north.

The site was manned until 1997 when it was replaced by an automated system. Since closure, the weather station has fallen under disrepair, including site buildings and infrastructure. The causeway connecting the weather station to the main airstrip has since washed out and is to be repaired as part of this project.

Englobe Corporation (Englobe) was awarded the Mould Bay Causeway Reconstruction Project, in April 2019. The Client is Public Services and Procurement Canada (PSPC) and the Project owner is Environment and Climate Change Canada (ECCC). The project scope is to reconstruct approximately 400 meters of watercourse crossing roadway, crossing the Station River, connecting the former Mould Bay Weather Station infrastructure and causeway to the airstrip. It will consist of mobilization and demobilization of personnel, equipment, support facilities and materials, installing and operating temporary camp facilities, upgrading of site roads, repairing the existing causeway, installing culverts to build a watercourse crossing, dewatering and re-grading of areas designated for soil removal and developing borrow sources, construction of engineered soil covers, soil excavation, collection and off-site disposal of wastes. Equipment and supplies will be mobilized before the spring freshet, in June 2019, and the field work is slated to begin in August 2019 and end in September 2019.
# Production Team

### Client

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSPC Project Manager</td>
<td>Claudia Simonato</td>
</tr>
<tr>
<td></td>
<td>Edward Domijan</td>
</tr>
<tr>
<td>ECCC Representative</td>
<td>John Tufts</td>
</tr>
<tr>
<td>Departmental Representative(s)</td>
<td>Arlen Foster, P. Eng</td>
</tr>
<tr>
<td>Authorised personnel: STANTEC</td>
<td></td>
</tr>
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</table>

### Englobe Corp.

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Manager</td>
<td>Alexandre Leclair, P.Eng.</td>
</tr>
<tr>
<td>Project Coordinator</td>
<td>Katheryne Budd, B.A.</td>
</tr>
<tr>
<td>Production Assistant</td>
<td>Julie Léveillé</td>
</tr>
</tbody>
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Revision and Publication Register

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<th>Revision N°</th>
<th>Date</th>
<th>Modification and/or Publication Details</th>
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<tr>
<td>0A</td>
<td>2019-04-23</td>
<td>Preliminary Version</td>
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<tr>
<td>0B</td>
<td>2019-04-25</td>
<td>Preliminary Version</td>
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<td>Preliminary Version</td>
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Distribution

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</tr>
</thead>
<tbody>
<tr>
<td>1 pdf</td>
</tr>
<tr>
<td>Claudia Simonato</td>
</tr>
</tbody>
</table>

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Englobe’s subcontractors who have carried out on-site or laboratory work are duly assessed according to the purchase procedure of our quality system. For further information, please contact your project manager.”
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1 Corporate Details

1.1 Company Name, Location and Mailing Address

Englobe Corp.
1200 Saint-Martin Blvd., Suite 400
Laval, Quebec H7S 2E4
Phone: (514) 281-5151 Fax (450) 668-5532
Email: alexandre.leclair@englobecorp.com
Attention: Alexander Leclair, Project Manager

1.2 Effective Date of Spill Contingency Plan and Revision

The effective date of the Spill Contingency Plan will be April 2019.

1.3 Company Environmental Policy

Please refer to Appendix 1 for Englobe's Environmental policy.

2 Introduction

2.1 Purpose

The purpose of this fuel and hazardous Spill Contingency Plan is to identify measures to reduce the possibility of occurrence of spills of contaminants associated with the Mould Bay Causeway Reconstruction (MBCR) Project and to identify measures to be taken should a spill occur, in order to minimize impacts to the environment and human health. This plan has been developed to provide details on Englobe’s procedure for responding to spills of any size that may occur during the dismantling of previous infrastructure and the reconstruction of the causeway at Mould Bay, Northwest Territories. This plan identifies the following:

► The roles and responsibilities of key response personnel in regard to spill response;
► Resources available to respond to a spill; and,
► Spill response procedures.

This spill contingency plan is part of the Environmental Protection and Sustainability Plan, a physical copy will be available in Englobe’s Superintendent’s office, and in the fuel storage area.

2.2 Revisions

This Spill Contingency Plan has been finalized for regulatory approval by Englobe, the contractor selected by Environment and Climate Change Canada to complete the MBCR
Project. All preventative measures, monitoring and response procedures reflect Englobe’s current Environmental, Health and Safety policies. A revision registry is presented on page viii of this document.

### 2.3 Responsibilities

This Spill Contingency Plan applies to Englobe and its subcontractors for all aspects of the MBCR Project. The Project Owner is Environment and Climate Change Canada (ECCC), the departmental representative is Public Services and Procurement Canada, and the departmental representatives authorized personnel are Stantec.

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Phone / Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Claudia Simonato</td>
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<td>403-613-6328 ; <a href="mailto:Claudia.Simonato@pwgsc-tpsgc.gc.ca">Claudia.Simonato@pwgsc-tpsgc.gc.ca</a></td>
</tr>
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<td>780-720-5893 ; <a href="mailto:Edward.Domijan@pwgsc-tpsgc.gc.ca">Edward.Domijan@pwgsc-tpsgc.gc.ca</a></td>
</tr>
<tr>
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<td>ECCC Project Manager</td>
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<tr>
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<td>Departmental Representative’s Authorized Personnel : Stantec</td>
<td>867-446-0568 ; <a href="mailto:Arlen.Foster@stantec.com">Arlen.Foster@stantec.com</a></td>
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<tr>
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<td>Alexandre Leclair</td>
<td>Englobe Project Manager</td>
<td>514-972-4418 ; <a href="mailto:alexandre.leclair@englobecorp.com">alexandre.leclair@englobecorp.com</a></td>
</tr>
<tr>
<td>Brandon MacKay</td>
<td>Site Superintendent</td>
<td>Satellite phone number to be confirmed <a href="mailto:Brandon.Mackay@englobecorp.com">Brandon.Mackay@englobecorp.com</a></td>
</tr>
<tr>
<td>Benoit Lefebvre</td>
<td>Site Supervisor</td>
<td>Satellite phone number to be confirmed <a href="mailto:Benoit.Lefebvre@englobecorp.com">Benoit.Lefebvre@englobecorp.com</a></td>
</tr>
</tbody>
</table>

### 2.4 Training

All project personnel will receive training on the purpose and procedures provided in this Spill Contingency Plan. The SCP will be presented in the Worker Orientation Seminar (WOS) and the Site-Specific Health and Safety Plan (SSHSP).

All personnel will receive training in safe work procedures related to handling of petroleum products and refuelling equipment. Preventative measures, monitoring and response procedures relating to hazardous liquid storage, transport and handling will be elaborated in the Fuel Management Plan (FMP), which is included in the Site-Specific Health and Safety Plan and reviewed in daily toolbox meetings.
3 Spill Prevention

3.1 Materials and Equipment Storage

3.1.1 Inventory of Hazardous Materials

Hazardous materials on-site will be primarily limited to fuel. Additional hazardous materials may include small amounts of POL wastes (Petroleum, Oil and Lubricant). All hazardous materials will be stored securely to prevent spills.

Table 2 below details the quantities of all materials of concern that will be on-site in large quantities. Fuel to be used throughout the 2019 work season will be transported by Hercules in June and used up during daily operations, any remaining fuel will be returned at the end of the project.

This section will be updated when final fuel volumes become available.

<table>
<thead>
<tr>
<th>Material</th>
<th>Storage Container</th>
<th>Maximum On-site</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel Fuel</td>
<td>205 L drum</td>
<td>14,760 L</td>
<td>Power equipment and camp generators</td>
</tr>
<tr>
<td></td>
<td>1000 L gen-set tank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gasoline</td>
<td>205 L drum</td>
<td>1,640 L</td>
<td>Power ATV and gas-powered pumps</td>
</tr>
<tr>
<td>Stove fuel</td>
<td>205 L drum</td>
<td>9,840 L</td>
<td>Camp heat and kitchen operations</td>
</tr>
<tr>
<td>Hydraulic Oil</td>
<td>205 L drum</td>
<td>410 L</td>
<td>Equipment maintenance and repair</td>
</tr>
<tr>
<td>Motor Oil</td>
<td>205 L barrels</td>
<td>410 L</td>
<td>Equipment maintenance and repair</td>
</tr>
<tr>
<td>Lubricants</td>
<td>14 oz. tubes</td>
<td>140 oz.</td>
<td>Equipment maintenance and repair</td>
</tr>
<tr>
<td>Propane</td>
<td>45 kg tanks</td>
<td>990 kg</td>
<td>Equipment maintenance and repair</td>
</tr>
</tbody>
</table>

Safety Data Sheets (SDS) of all hazardous materials on site during the MBCR Project are available in Appendix 2. Copies of the SDS’s will be included in the containers and storage areas housing all hazardous products, including but not limited to: the Fuel Storage Area and the Camp kitchen.

Fuels and oils/lubricants must be stored more than 50 m from the bank of a watercourse or waterbody. All fuels and lubricants will be stored in drums within secondary containment capable of retaining 110% of the capacity of the drums. All fuels and oils/lubricants will be stored in the fuel storage area which will be built to provide secondary containment over the entire area of occupation.

Drip trays will be placed under any mobile equipment while it is parked and maintained daily. Fuel-fired equipment such as generators and pumps will have secondary containment installed capable of containing fuel drips or leaks during refueling. Furthermore, the refuelling zone will be built to provide secondary containment over the entire area of occupation.

Mobile equipment will be refueled at least 50 m away from the bank of a watercourse or waterbody.
3.1.2 Inventory of Wastewater and Sewage

Sewage will be collected in bags with the Pacto toilet system. Bags will be stored in sealed 205 L open top plastic barrels until it can be transported back to Inuvik for disposal on a weekly basis.

Greywater will be eliminated by the sump and in accordance with the land-use permit.

Table 3: Inventory of Wastewater Generated by Site Activities

<table>
<thead>
<tr>
<th>Material</th>
<th>Storage Container</th>
<th>Maximum On-site</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sewage</td>
<td>205 L barrels</td>
<td>1050 L</td>
<td>Sewage containment</td>
</tr>
</tbody>
</table>

3.2 Monitoring and Prevention

3.2.1 Monitoring

Englobe’s qualified personnel will conduct daily visual inspections to check for leaks and damage to the fuel and/or wastewater storage containers and transfer equipment, as well as check for stained or discoloured soils around the fuel storage areas and motorized equipment. Vehicles will be checked daily prior to operation for evidence of leaking hoses or tanks, and leaks will be repaired promptly.

The visual inspections and actions taken will be recorded as part of the Site Superintendent’s (or designated qualified personnel) daily pre-op check. For example, lids and caps are checked for tight seals and damaged containers will be replaced and contents transferred. Regular maintenance and oil checks of all motorized equipment will also be undertaken to avoid preventable leaks.

Appropriate PPE will be used while handling all materials of concern. Routine maintenance will be performed by mechanics to help prevent leaks of lubricants or fuel.

3.2.2 Prevention

Planning for an emergency situation is imperative, due to the nature of the materials stored on-site as well as the remoteness of the site. Along with the preventative measures outlined below, adequate training of staff and subcontractors is paramount.

As outlined in the LUP, bulk fuel storage areas are to be in accordance with the National Fire Code of Canada (2015) and the Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products.

Handling of hazardous material will be supervised by Englobe’s qualified personnel and/or the DR. Anyone handling hazardous material on-site will be required to wear all necessary personal protective equipment (PPE). At storage locations, the spill prevention and response measures listed below will be in place.
Designated hazardous material storage and transfer areas will be established at a distance of at least 100 m from any local high-water mark. Final locations can be approved by a land use inspector;

Designated hazardous material storage and transfer areas will be constructed of impermeable material;

According to the Workplace Hazardous Materials Information System (WHMIS) and/or Transportation of Dangerous Goods (TDG) standards, TDG placard and signs (Warning of danger) will be posted at all designated hazardous material storage and transfer areas with the product name;

Designated hazardous material storage and transfer areas will have secondary containment (i.e., berms or doubled-walled tanks) and/or will be equipped with drip trays, spill pads and/or mats. Holding capacity of berms will be 110% capacity of the largest storage container. And,

Designated hazardous material transfer areas will be equipped with drip trays, spill kits, and spill pads and/or mats.

Designated hazardous material storage areas will be equipped with drip trays, spill kits, and spill pads and/or mats.

To avoid any leaks from fuel transmission, all fuel lines, hoses, fittings and valves are to meet or exceed industry standards.

Spill kits are to be located wherever fuel is stored or transferred. Portable drip trays are to be used when refueling ATVs to avoid any leaks/drips onto the land. Fuel transfer and storage for the proposed activities of the MBCR Project will be conducted by Englobe’s qualified personnel in accordance to the following regulations, under the supervision of the DR:

- Transportation of Dangerous Goods Act (1992)
- Transportation of Dangerous Goods Regulations
  - CEPA Petroleum and Allied Petroleum Products Storage Tanks Regulations

## 4 Spill Response

### 4.1 Response Equipment

Emergency spill kits will be maintained at the following locations:

- Camp kitchen
- Camp generator
- Fuel Storage Areas
- Designated refueling areas

Spill kit contents, as listed below, may exceed; however, industry standards must be maintained. Items will be stored in overpack plastic drums:

Standard Contents of Conventional Spill Kits,
5 Tyvek coveralls
► 10 pairs of disposable gloves
► 2 x 100 absorbent pad packs
► 1 x 20 kg granular absorbent bag
► 4 x 2” diam. Floating absorbent booms
► 10 yellow storage bags
► One shovel

Additionally, each vehicle will be equipped with a spill kit, to include:
► 4 pairs disposable gloves
► 20 absorbent pads
► 2 clear or yellow storage bags

5 Specific Procedures in Case of a Spill

The following are general procedures that apply immediately in the case of a spill of any size, Appendix 3 presents a flowchart outlining Englobe’s Spill Response Procedure. Steps are listed in the order of importance; however, depending on the circumstances, conditions, and potential injuries, this order may need to be altered to meet specific needs:

► Stop, look, assess and control site hazards and risks to personnel.
  ▪ Is there a fire or explosion hazard?
  ▪ Are there people nearby? Sound the alarm and evacuate the area, if necessary.
  ▪ What is the spilled material? Is additional PPE needed?

► Isolate or eliminate all sources of ignition and identify the spilled material, if possible.
► Plug or isolate the source of the spill, prevent the spill from spreading if possible or safe to do so.
► Ensure adequate use of spill response equipment.
► Report the following to the Site Superintendent:
  ▪ The location of the spill;
  ▪ The known or suspected time of the spill;
  ▪ The substance spilled;
  ▪ The estimated volume spilled;
  ▪ The cause of the spill, if possible;
  ▪ The flow direction of the spill.

► Contact NWT Spill Hotline, if necessary;
► Document all events and measures taken.
► Contact with the IWB Inspector required within 24 hours of the release.
AT ALL TIMES: CONSIDER YOUR PERSONAL SAFETY AND THOSE OF YOUR CO-WORKERS BEFORE PROCEEDING WITH ANY ACTION

Depending on the physical location of the spill, specific supplemental precautions must be taken with regards to the spill response procedures.

5.1 Procedures in Case of a Spill

Spill on Land

► Determine the likely movement of the spill overland and into the ground.
► Prevent spilled material from entering water using booms, creating berms or using absorbents
► Use absorbents to collect free product
► Excavate affected soil into empty drum or lined containers, while minimizing destruction of root zone

Spill on or Near Water

► Block entry into water using booms and absorbent pads or other barriers
► Contain a spill in water with absorbent boom or other barrier.
► Remove minor spills with sorbent pads.
► Major spill in water will require pumping and disposal of contaminated water and other actions as determined in discussion with regulatory authorities.

Spill on Ice

► Evaluate ice conditions before proceeding
► Use snow or ice berms to prevent spill from spreading
► Use booms to contain free product
► Manually remove contaminated snow and ice from surface

5.2 Remediation

In all cases, spills will be cleaned up and the affected area reclaimed to the satisfaction of the inspector.

5.3 Spill Reporting Procedures

Report all spills immediately to the Site Superintendent and the ECCC DR, and to ECCC. Spills will be reported to the IWB Inspector within 24 hours. A written spill report will be submitted to the DR within 24 hours of the incident, a detailed report will be submitted to the IWB inspector within 30 days of the initial report. The DR, and IWB inspector will be informed of all spills, regardless of size. The site surveyor will record the location of all site spills for record keeping and reporting purposes.
For every spill exceeding the quantity specified in Table 4, the form “NWT-NU Spill Report” (Appendix 4), must be completed and transmitted within 12 h of the incident to spills@gov.nt.ca. Spills will be reported to the NWT Spill Line (867) 920-8130 and the IWB Inspector within 24 hours. The forms can be found on site in each spill kit, as well as with the Site Superintendent. Pictures must be taken during and after the cleanup progress. The GPS coordinates of the spill location must be recorded. All information and pictures will be used for the spill report.

The person preparing the spill report shall give as much of the following information as possible. Reportable information includes but is not limited to the following:

- Date and time of spill
- Direction spill is moving (or if it has stopped)
- Name and phone number of persons close to the location of the spill
- Type of contaminant spilled and quantity spilled
- Cause of spill
- Whether the spill is continuing or has stopped
- Description of the existing containment
- Actions taken to recover, clean-up and dispose of spilled contaminant
- Name, address and phone number of person reporting the spill
- Name of person in charge of management or control at time of spill

### Table 4: Reportable Spill Quantities in NWT

<table>
<thead>
<tr>
<th>Substance</th>
<th>Reportable Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explosives</td>
<td>Any amount</td>
</tr>
<tr>
<td>Compressed gas (toxic/corrosive)</td>
<td></td>
</tr>
<tr>
<td>Infectious substances</td>
<td></td>
</tr>
<tr>
<td>Sewage and Wastewater (unless otherwise authorized)</td>
<td></td>
</tr>
<tr>
<td>Radioactive materials</td>
<td></td>
</tr>
<tr>
<td>Unknown substance</td>
<td></td>
</tr>
<tr>
<td>Compressed gas (Flammable)</td>
<td>Any amount of gas from containers with a capacity greater than 100L</td>
</tr>
<tr>
<td>Compressed gas (Non-corrosive, non-flammable)</td>
<td></td>
</tr>
<tr>
<td>Flammable liquid</td>
<td>≥100 L</td>
</tr>
<tr>
<td>Flammable solid</td>
<td></td>
</tr>
<tr>
<td>Substances liable to spontaneous combustion</td>
<td>≥ 25 kg</td>
</tr>
<tr>
<td>Water reactant substances</td>
<td></td>
</tr>
<tr>
<td>Oxidizing substances</td>
<td>≥ 50 L or 50 kg</td>
</tr>
<tr>
<td>Organic peroxides</td>
<td></td>
</tr>
<tr>
<td>Environmentally hazardous substances intended for disposal</td>
<td>≥1 L or 1 kg</td>
</tr>
</tbody>
</table>
Toxic substances ≥ 5 L or 5 kg
Corrosive substances Miscellaneous products, substances or organisms ≥ 5 L or 5 kg
PCB mixtures of 5 or more ppm ≥ 0.5 L or 0.5 kg
Other contaminants—for example, crude oil, drilling fluid, produced water, waste or spent chemicals, used or waste oil, vehicle fluids, wastewater. ≥ 100 L or 100 kg
Sour natural gas (i.e., contains H₂S) Sweet natural gas
Uncontrolled release or sustained flow of 10 minutes or more
Flammable liquid Vehicle fluid ≥ 20 L When released on a frozen water body that is being used as a working surface
Reported releases or potential releases of any size that:
• are near (within 30 m of a waterbody) or in an open water body;
• are near (within 30 m of a waterbody) or in a designated sensitive environment or habitat;
• Pose an imminent threat to human health or safety; or
• Pose an imminent threat to a listed species at risk or its critical habitat
Any amount

6 Emergency Contact Call-Down List in Case of a Spill

Table 6-1 : Emergency Call Down List Contact Information

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
<th>Emergency Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brandon MacKay</td>
<td>Englobe Site Superintendent</td>
<td>Satellite phone number to be determined at the beginning of operations</td>
</tr>
<tr>
<td>Benoit Lefebvre</td>
<td>Englobe Site Supervisor</td>
<td>Satellite phone number to be determined at the beginning of operations</td>
</tr>
<tr>
<td>Arlen Foster</td>
<td>ECCC Departmental Representative Authorised Personnel</td>
<td>867 446-0568</td>
</tr>
<tr>
<td>John Tufts</td>
<td>Environment Climate Change Canada</td>
<td>819-420-7982</td>
</tr>
<tr>
<td>Resource Management Officer</td>
<td>Inuvialuit Water Board</td>
<td>867-445-7935</td>
</tr>
<tr>
<td>Claudia Simonato</td>
<td>PSPC Project Manager</td>
<td>403-613-6328</td>
</tr>
<tr>
<td>NWT/NU Spill Reporting Line</td>
<td></td>
<td>867-920-8130</td>
</tr>
</tbody>
</table>

Above to confirm if spill is reportable prior to continuing with call-down
7 Off-Site Resources

Appendix 5 presents the Emergency Contact List and Project Management Team. Additional off-site resources will become available prior to mobilization, including but not limited to; Departmental Representative, Site Superintendent, and Health and Safety Officer/First Aid Personnel.

8 Training Program

During the Worker Orientation Seminar (WOS) in which all site personnel are required to participate, the Site Specific Health and Safety Plan, the Spill Contingency Plan, and the Emergency Response Plan will be presented and reviewed. The location of all spill response resources will also be reviewed. Site personnel will also be shown the contents of a spill kit and the function of the contents will be explained. Specific training sessions, including mock spill exercises, are scheduled for individuals directly involved in handling hazardous materials to ensure they know all steps to be undertaken in handling these materials, as well as the steps involved in the event of a spill, including the proper use of spill kits.

All employees and subcontractors are required to have their basic first aid training, as well as WHMIS training, before working on the site. Supervisors are required to have first aid training. Employees selected to act as Hazardous Waste Management Technician will also receive the Hazardous Waste Operation and Emergency Response Training (HAZWOPER).
Appendix 1  Englobe’s Environmental Policy
The senior management of Englobe Corp. (Englobe), one of Canada's leaders in soil, materials and environmental engineering, having additional places of business in France and the United Kingdom and completing projects on an international scale, considers quality, occupational health & safety as well as the protection of the environment to be fundamental priorities for the company.

Englobe is committed to the highest standards concerning ethical professional practices and business conduct as well as:

<table>
<thead>
<tr>
<th>OCCUPATIONAL HEALTH &amp; SAFETY</th>
<th>QUALITY</th>
<th>ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Taking the necessary steps to ensure that all operations are conducted in the safest possible manner for the prevention of work-related injuries and illnesses as well as promoting personal well-being</td>
<td>• Maintaining reliable and quality services that meet the needs of its clients</td>
<td>• Reducing environmental nuisances and the impact of their activities</td>
</tr>
<tr>
<td>• Providing human, financial and material resources to develop and implement a core prevention program to eliminate any risks that could endanger the physical health, safety and integrity of employees or other individuals in the workplace in addition to overseeing its application and applying corrective measures when necessary</td>
<td>• Determining and communicating objectives and periodically assessing and reviewing results to determine whether objectives are being met and ensure the continuous improvement of its management system</td>
<td>• Ensuring that we comply with legal requirements and regulations in effect in areas where our operations are conducted and with rules, instructions, procedures and methods established by the company and its clients as well as all permits, organizations and certifications to which we subscribe</td>
</tr>
<tr>
<td>• Providing employees with all necessary training, information, tools, protective equipment and coaching required to work safely</td>
<td>• Ensuring that we comply with rules, instructions, procedures and methods established by the company and its clients as well as organizations and certifications to which we subscribe</td>
<td>• Ensuring that we comply with legal requirements and regulations in effect in areas where our operations are conducted and with rules, instructions, procedures and methods established by the company and its clients as well as all permits, organizations and certifications to which we subscribe</td>
</tr>
<tr>
<td>• Ensuring that we comply with legal requirements and regulations in effect in areas where our operations are conducted and with rules, instructions, procedures and methods established by the company and its clients as well as all permits, organizations and certifications to which we subscribe</td>
<td>• Determining and communicating objectives and periodically assessing and reviewing results to determine whether objectives are being met and ensure the continuous improvement of its management system</td>
<td>• Ensuring that subcontractors are properly informed of the company policy and that they agree to adopt the same principles</td>
</tr>
<tr>
<td>• Ensuring that subcontractors are properly informed of the company policy and that they agree to adopt the same principles</td>
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</tr>
</tbody>
</table>

Each employee is responsible to apply the established rules and report events that could adversely affect quality, occupational health & safety and the environment. All members of the organization must actively participate in the success of this policy by seriously considering quality, occupational health & safety and the environment as well as continuous improvement when conducting daily activities.

This policy is reviewed annually, communicated to all personnel and displayed. It is also made available to all interested parties.

PL-01-AD-001-EN04 (2019.03.12)
Appendix 2  Safety Data Sheets
SECTION 1. PRODUCT AND COMPANY 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

Product code: 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;
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

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Bright oily liquid.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Clear to yellow (This product may be dyed red for taxation purposes).</td>
</tr>
<tr>
<td>Odour</td>
<td>Mild petroleum oil like.</td>
</tr>
<tr>
<td>Hazard Summary</td>
<td>Combustible liquid. May cause cancer. Irritating to eyes and skin.</td>
</tr>
</tbody>
</table>
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,
vomiting and diarrhoea.
Aspiration hazard if swallowed - can enter lungs and cause
damage.

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.

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

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>kerosine (petroleum), hydrodesulfurized</td>
<td>64742-81-0</td>
<td>70 - 100 %</td>
</tr>
<tr>
<td>kerosine (petroleum)</td>
<td>8008-20-6</td>
<td></td>
</tr>
<tr>
<td>Fuels, diesel</td>
<td>68334-30-5</td>
<td></td>
</tr>
<tr>
<td>fuel oil no. 2</td>
<td>68476-30-2</td>
<td></td>
</tr>
<tr>
<td>Alkanes, C10-20-branched and linear</td>
<td>928771-01-1</td>
<td>0 - 25 %</td>
</tr>
<tr>
<td>Soybean oil, Methyl ester</td>
<td>67784-80-9</td>
<td>0 - 5 %</td>
</tr>
<tr>
<td>Rape oil, Methyl ester</td>
<td>73891-99-3</td>
<td></td>
</tr>
</tbody>
</table>
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 (CO2) 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, CO2), nitrogen oxides (NOx), sulphur oxides (SOx), sulphur compounds (H2S), smoke and irritating vapours as products of incomplete combustion.

Further information: Prevent fire extinguishing water from contaminating surface water or the ground water system.

Special protective equipment: Wear self-contained breathing apparatus for firefighting if
for firefighters necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

- Use personal protective equipment.
- Ensure adequate ventilation.
- Evacuate personnel to safe areas.
- Material can create slippery conditions.

Environmental precautions

- If the product contaminates rivers and lakes or drains inform respective authorities.

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/PERSOAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>kerosine (petroleum),</td>
<td>64742-81-0</td>
<td>TWA</td>
<td>200 mg/m3</td>
<td>ACGIH</td>
</tr>
</tbody>
</table>
### Material Safety Data Sheet

**DIESEL FUEL**

0000030000395

**Version 1.0**  
Revision Date 2015/05/14  
Print Date 2015/05/14

<table>
<thead>
<tr>
<th>Substance</th>
<th>Classification</th>
<th>ACGIH</th>
<th>Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td>hydrodesulfurized</td>
<td></td>
<td>TWA</td>
<td>200 mg/m³ (As total hydrocarbon vapour)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ACGIH</td>
</tr>
<tr>
<td>kerosine (petroleum)</td>
<td></td>
<td>TWA</td>
<td>200 mg/m³ (As total hydrocarbon vapour)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CA BC OEL</td>
</tr>
</tbody>
</table>

**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.

**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

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 COx, NOx, SOx, H2S, 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), hydrosulfurized:
Acute oral toxicity: LD50 Rat: > 5,000 mg/kg,
Acute inhalation toxicity: LC50 Rat: > 5.2 mg/l
Exposure time: 4 hrs
Test atmosphere: dust/mist
Acute dermal toxicity: LD50 Rabbit: > 2,000 mg/kg,

Kerosine (petroleum):
Acute oral toxicity: LD50 Rat: > 5,000 mg/kg,
Acute inhalation toxicity: LC50 Rat: > 5 mg/l
Material Safety Data Sheet

DIESEL FUEL
000003000395

Version 1.0                   Revision Date 2015/05/14       Print Date 2015/05/14

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

**Aspiration toxicity**
No data available
SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

**Product:**
- Toxicity to fish: Remarks: No data available
- Toxicity to daphnia and other aquatic invertebrates: Remarks: No data available
- Toxicity to algae: Remarks: No data available
- Toxicity to bacteria: Remarks: No data available

**Persistence and degradability**

**Product:**
- Biodegradability: Remarks: No data available

**Bioaccumulative potential**
No data available

**Mobility in soil**
No data available

**Other adverse effects**
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

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

- Contaminated packaging: Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

**International Regulation**

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

IMDG-Code
UN number : 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
Not applicable for product as supplied.

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

Special precautions for user
Not applicable

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

SECTION 16. OTHER INFORMATION

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

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

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 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

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Clear liquid.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Clear to slightly yellow or green, undyed liquid. May be dyed red for taxation purposes.</td>
</tr>
<tr>
<td>Odour</td>
<td>Gasoline</td>
</tr>
</tbody>
</table>

GHS Classification

<table>
<thead>
<tr>
<th>Flammable liquids</th>
<th>Category 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>Category 1B</td>
</tr>
</tbody>
</table>
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
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

**ACGIH**
- Confirmed human carcinogen

**Benzene**

Internet: www.petro-canada.ca/msds
Petro-Canada is a Suncor Energy business.
Confirmed animal carcinogen with unknown relevance to humans

Ethanol 64-17-5
Gasoline, natural 8006-61-9

OSHA
OSHA specifically regulated carcinogen

Benzene 71-43-2

NTP
Known to be human carcinogen

Benzene 71-43-2

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture: Mixture

Hazardous components

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>gasoline, natural</td>
<td>8006-61-9</td>
<td>95 - 100 %</td>
</tr>
<tr>
<td>toluene</td>
<td>108-88-3</td>
<td>1 - 40 %</td>
</tr>
<tr>
<td>benzene</td>
<td>71-43-2</td>
<td>0,5 - 1,5 %</td>
</tr>
<tr>
<td>ethanol</td>
<td>64-17-5</td>
<td>0,1 - 0,3 %</td>
</tr>
</tbody>
</table>

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 contact lenses with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.

If swallowed: Rinse mouth with water. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person.
Seek medical advice.

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

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media: Dry chemical
Carbon dioxide (CO2)
Water fog.
Foam

Unsuitable extinguishing media: Do NOT use water jet.

Specific hazards during firefighting: Cool closed containers exposed to fire with water spray.

Hazardous combustion products: Carbon oxides (CO, CO2), nitrogen oxides (NOx), 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**

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>300 ppm 900 mg/m3</td>
<td>OSHA P0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>500 ppm 1,500 mg/m3</td>
<td>OSHA P0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>500 ppm 2,000 mg/m3</td>
<td>OSHA Z-1</td>
</tr>
<tr>
<td>toluene</td>
<td>108-88-3</td>
<td>TWA</td>
<td>20 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>100 ppm 375 mg/m3</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ST</td>
<td>150 ppm 560 mg/m3</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>200 ppm</td>
<td>OSHA Z-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CEIL</td>
<td>300 ppm</td>
<td>OSHA Z-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Peak</td>
<td>500 ppm</td>
<td>OSHA Z-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>100 ppm 375 mg/m3</td>
<td>OSHA P0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>150 ppm 560 mg/m3</td>
<td>OSHA P0</td>
</tr>
<tr>
<td>benzene</td>
<td>71-43-2</td>
<td>TWA</td>
<td>0.5 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>2.5 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>0.1 ppm</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ST</td>
<td>1 ppm</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>10 ppm</td>
<td>OSHA Z-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CEIL</td>
<td>25 ppm</td>
<td>OSHA Z-2</td>
</tr>
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<td></td>
<td></td>
<td>Peak</td>
<td>50 ppm</td>
<td>OSHA Z-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PEL</td>
<td>1 ppm</td>
<td>OSHA CARC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>5 ppm</td>
<td>OSHA CARC</td>
</tr>
<tr>
<td>ethanol</td>
<td>64-17-5</td>
<td>TWA</td>
<td>1,000 ppm 1,900 mg/m3</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>1,000 ppm 1,900 mg/m3</td>
<td>OSHA Z-1</td>
</tr>
</tbody>
</table>
### Biological occupational exposure limits

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

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

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

Protective measures : Wash contaminated clothing before re-use.

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

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Clear liquid.

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

Odour : Gasoline

Odour Threshold : No data available

pH : No data available

Pour point : No data available

Boiling point/boiling range : 25 - 225 °C (77 - 437 °F)

Flash point : -50 - -38 °C (-58 - -36 °F)
               Method: Tagliabue.

Auto-Ignition Temperature : 257 °C (495 °F)

Evaporation rate : No data available

Flammability : Extremely flammable in presence of open flames, sparks, shocks, and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. Rapid escape of vapour may generate static charge causing ignition. May accumulate in confined spaces.

Upper explosion limit : 7.6 % (V)

Lower explosion limit : 1.3 % (V)

Vapour pressure : < 802.5 mmHg (20 °C / 68 °F)

Relative vapour density : 3

Relative density : 0.685 - 0.8

Solubility(ies) :
Water solubility: insoluble
Partition coefficient: n-octanol/water: No data available

Viscosity

Explosive properties: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Containers may explode in heat of fire. Vapours may form explosive mixtures with air.

SECTION 10. STABILITY AND REACTIVITY

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

Conditions to avoid: Extremes of temperature and direct sunlight.

Incompatible materials: Reactive with oxidising agents, acids and interhalogens.

Hazardous decomposition products: May release COx, NOx, 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:
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
Reproductive toxicity
No data available

STOT - single exposure
No data available

STOT - repeated exposure
No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:
Toxicity to fish : Remarks: No data available
Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available
Toxicity to algae : Remarks: No data available
Toxicity to bacteria : Remarks: No data available

Persistence and degradability

Product:
Biodegradability : Remarks: No data available

Bioaccumulative potential
No data available

Mobility in soil
No data available

Other adverse effects
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

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

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
Further information

NFPA:

Flammability

Health

2

3

0

Instability

Special hazard.

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
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

JET A/A-1 AVIATION TURBINE FUEL

0000030001081

Version 1.0          Revision Date 2015/05/14          Print Date 2015/05/14

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

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

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

Product code : 101851, 100123

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

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

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

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

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Clear liquid.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Clear and colourless</td>
</tr>
<tr>
<td>Odour</td>
<td>Kerosene-like.</td>
</tr>
</tbody>
</table>

GHS Classification

<table>
<thead>
<tr>
<th>Flammable liquids</th>
<th>Category 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>Category 2</td>
</tr>
<tr>
<td>Specific target organ toxicity - single exposure</td>
<td>Category 3 (Central nervous system)</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>Category 1</td>
</tr>
</tbody>
</table>

Internet: www.petro-canada.ca/msds
Petro-Canada is a Suncor Energy business.

TM Trademark of Suncor Energy Inc. Used under licence.
SAFETY DATA SHEET

JET A/A-1 AVIATION TURBINE FUEL

000003001081

Version 1.0 Revision Date 2015/05/14 Print Date 2015/05/14

GHS Label element
Hazard pictograms :

Signal word : Danger

Hazard statements : H226 Flammable liquid and vapour.
H304 May be fatal if swallowed and enters airways.
H315 Causes skin irritation.
H336 May cause drowsiness or dizziness.
H361 Suspected of damaging fertility or the unborn child.

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.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
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 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

Inhalation: Inhalation may cause central nervous system effects. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.

Skin: May irritate skin.

Eyes: May irritate eyes.

Ingestion: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Aspiration hazard if swallowed - can enter lungs and cause damage.

Aggravated Medical Condition: None known.

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.

ACGIH: Confirmed animal carcinogen with unknown relevance to humans

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

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

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture: Mixture

Hazardous components

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>kerosine (petroleum)</td>
<td>8008-20-6</td>
<td>90 - 100 %</td>
</tr>
<tr>
<td>2-(2-methoxyethoxy)ethanol</td>
<td>111-77-3</td>
<td>0 - 0.2 %</td>
</tr>
</tbody>
</table>
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 (CO2)
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, CO₂), nitrogen oxides (NOₓ), sulphur
oxides (SOₓ), smoke and irritating vapours as products of
incomplete combustion.

Further information : Prevent fire extinguishing water from contaminating surface
water or the ground water system.

Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if
necessary.
SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Material can create slippery conditions.

Environmental precautions

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

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

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>kerosine (petroleum)</td>
<td>8008-20-6</td>
<td>TWA</td>
<td>100 mg/m³</td>
<td>NIOSH REL</td>
</tr>
</tbody>
</table>

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.

**Eye protection**

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

**Skin and body protection**

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

**Protective measures**

Wash contaminated clothing before re-use.

**Hygiene measures**

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

---

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance**

Clear liquid.

**Colour**

Clear and colourless
SAFETY DATA SHEET

JET A/A-1 AVIATION TURBINE FUEL

000003001081

Version 1.0  Revision Date 2015/05/14  Print Date 2015/05/14

Odour
: Kerosene-like.

Odour Threshold
: No data available

pH
: No data available

Pour point
: -51 °C (-60 °F) No data available

Boiling point/boiling range
: 140 - 300 °C (284 - 572 °F)

Flash point
: > 38 °C (100 °F)
   Method: Tagliabue

Auto-Ignition Temperature
: 210 °C (410 °F)

Evaporation rate
: No data available

Flammability
: Flammable in presence of open flames, sparks and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. This product can accumulate static charge and ignite. May accumulate in confined spaces.

Upper explosion limit
: 5 % (V)

Lower explosion limit
: 0.7 % (V)

Vapour pressure
: 5.25 mmHg (20 °C / 68 °F)

Relative vapour density
: 4.5

Relative density
: 0.775 - 0.84 (15 °C / 59 °F)

Solubility(ies)

Water solubility
: No data available

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

Viscosity

Viscosity, kinematic
: 1.0 - 1.9 cSt (40 °C / 104 °F)

Explosive properties
: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Containers may explode in heat of fire.

SECTION 10. STABILITY AND REACTIVITY

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

Conditions to avoid
: Extremes of temperature and direct sunlight.
SECTION 11. TOXICOLOGICAL INFORMATION

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

Acute toxicity

Product:
Acute oral toxicity
Remarks: No data available

Acute inhalation toxicity
Remarks: No data available

Acute dermal toxicity
Remarks: No data available

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

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

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

Skin corrosion/irritation

Product:
Remarks: No data available

Serious eye damage/eye irritation

Product:
Remarks: No data available

Respiratory or skin sensitisation
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
No data available

Reproductive toxicity
No data available

STOT - single exposure
No data available

STOT - repeated exposure
No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:
- Toxicity to fish: Remarks: No data available
- Toxicity to daphnia and other aquatic invertebrates: Remarks: No data available
- Toxicity to algae: Remarks: No data available
- Toxicity to bacteria: Remarks: No data available

Persistence and degradability

Product:
- Biodegradability: Remarks: No data available

Bioaccumulative potential
No data available

Mobility in soil
No data available

Other adverse effects
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods
- Waste from residues: The product should not be allowed to enter drains, water courses or the soil. Offer surplus and non-recyclable solutions to a licensed disposal company. Waste must be classified and labelled prior to recycling or disposal. Send to a licensed waste management company. Dispose of 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: Empty pressure vessels should be returned to the supplier.
Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International Regulation

<table>
<thead>
<tr>
<th>IATA-DGR</th>
<th>UN/ID No.</th>
<th>1863</th>
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<tbody>
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<td>Fuel, aviation, turbine engine</td>
<td></td>
</tr>
<tr>
<td>Class</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Packing group</td>
<td>III</td>
<td></td>
</tr>
<tr>
<td>Labels</td>
<td>3</td>
<td></td>
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<tr>
<td>Packing instruction (cargo aircraft)</td>
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<table>
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<th>1863</th>
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<td></td>
</tr>
<tr>
<td>Class</td>
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<td></td>
</tr>
<tr>
<td>Packing group</td>
<td>III</td>
<td></td>
</tr>
<tr>
<td>Labels</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EmS Code</td>
<td>F-E, S-E</td>
<td></td>
</tr>
<tr>
<td>Marine pollutant</td>
<td>no</td>
<td></td>
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</table>

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

Not applicable for product as supplied.

<table>
<thead>
<tr>
<th>49 CFR</th>
<th>UN/ID/NA number</th>
<th>1863</th>
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</thead>
<tbody>
<tr>
<td>Proper shipping name</td>
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</tr>
<tr>
<td>Class</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Packing group</td>
<td>III</td>
<td></td>
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<td>ERG Code</td>
<td>128</td>
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</tr>
<tr>
<td>Marine pollutant</td>
<td>no</td>
<td></td>
</tr>
</tbody>
</table>

Special precautions for user

Not applicable

SECTION 15. REGULATORY INFORMATION

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

<table>
<thead>
<tr>
<th>DSL</th>
<th>On the inventory, or in compliance with the inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSCA</td>
<td>All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA inventory exemption.</td>
</tr>
<tr>
<td>EINECS</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
</tbody>
</table>

SECTION 16. OTHER INFORMATION
Further information

NFPA:

Health: 2
Flammability: 2
Instability: 0
Special hazard:

HMIS III:

<table>
<thead>
<tr>
<th>Category</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEALTH</td>
<td>2*</td>
</tr>
<tr>
<td>FLAMMABILITY</td>
<td>2</td>
</tr>
<tr>
<td>PHYSICAL HAZARD</td>
<td>0</td>
</tr>
<tr>
<td>PERSONAL PROTECTION</td>
<td>H</td>
</tr>
</tbody>
</table>

0 = not significant, 1 = slight, 2 = moderate, 3 = high, 4 = extreme, * = chronic

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

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

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
Oxygen

Section 1. Identification

GHS product identifier: Oxygen
Chemical name: oxygen
Other means of identification:
- Molecular oxygen; Oxygen molecule; Pure oxygen; O2; UN 1072; Dioxygen; Oxygen
- USP, Aviator’s Breathing Oxygen (ABO)
Product use: Synthetic/Analytical chemistry.
Synonym: Molecular oxygen; Oxygen molecule; Pure oxygen; O2; UN 1072; Dioxygen; Oxygen
- USP, Aviator’s Breathing Oxygen (ABO)
SDS #: 001043
Supplier’s details: Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5283
24-hour telephone: 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture:
- OXIDIZING GASES - Category 1
- GASES UNDER PRESSURE - Compressed gas

GHS label elements

Hazard pictograms: 🎮 ⚠

Signal word: Danger
Hazard statements:
- May cause or intensify fire; oxidizer.
- Contains gas under pressure; may explode if heated.
Precautionary statements

General: Read and follow all Safety Data Sheets (SDS’S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Open valve slowly. Use only with equipment cleaned for Oxygen service.
Prevention: Keep away from clothing, incompatible materials and combustible materials. Keep reduction valves, valves and fittings free from oil and grease.
Response: In case of fire: Stop leak if safe to do so.
Storage: Protect from sunlight when ambient temperature exceeds 52°C/125°F. Store in a well-ventilated place.
Disposal: Not applicable.
Hazard not otherwise classified: None known.
Section 3. Composition/information on ingredients

Substance/mixture : Substance
Chemical name     : oxygen
Other means of identification: Molecular oxygen; Oxygen molecule; Pure oxygen; O2; UN 1072; Dioxygen; Oxygen USP, Aviator’s Breathing Oxygen (ABO)

CAS number/other identifiers
CAS number       : 7782-44-7
Product code     : 001043

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>%</th>
<th>CAS number</th>
</tr>
</thead>
<tbody>
<tr>
<td>oxygen</td>
<td>100</td>
<td>7782-44-7</td>
</tr>
</tbody>
</table>

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

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.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : As this product is a gas, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.
Inhalation  : No known significant effects or critical hazards.
Skin contact: Contact with rapidly expanding gas may cause burns or frostbite.
Frostbite   : Try to warm up the frozen tissues and seek medical attention.
Ingestion   : As this product is a gas, refer to the inhalation section.

Over-exposure signs/symptoms

Eye contact : No specific data.
Inhalation  : No specific data.
Skin contact: No specific data.
Ingestion   : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments : No specific treatment.

Date of issue/Date of revision : 8/26/2015  Date of previous issue : No previous validation  Version : 0.01  2/11
Section 4. First aid measures

Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media: Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media: None known.

Specific hazards arising from the chemical:

Contains gas under pressure. Oxidizing material. This material increases the risk of fire and may aid combustion. Contact with combustible material may cause fire. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

Hazardous thermal decomposition products: No specific data.

Special protective actions for fire-fighters:

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk.

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.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel:

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders:

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions:

Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill:

Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Large spill:

Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling
Section 7. Handling and storage

Protective measures: Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid contact with eyes, skin and clothing. Avoid breathing gas. Keep away from clothing, incompatible materials and combustible materials. Keep reduction valves free from grease and oil. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Advice on general occupational hygiene: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities: 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). Separate from acids, alkalis, reducing agents and combustibles. Keep container tightly closed and sealed until ready for use. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

oxygen None.

Appropriate engineering controls: Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

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.

Individual protection measures

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.

Eye/face protection: 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, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection: 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. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection: 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.
Section 8. Exposure controls/personal protection

Other skin protection: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection: 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.

Section 9. Physical and chemical properties

Appearance

Physical state: Gas. [Compressed gas.]
Color: Colorless. Blue.
Molecular weight: 32 g/mole
Molecular formula: O2
Boiling/condensation point: -183°C (-297.4°F)
Melting/freezing point: -218.4°C (-361.1°F)
Critical temperature: -118.15°C (-180.7°F)

Odor: Odorless.
Odor threshold: Not available.
pH: Not available.
Flash point: [Product does not sustain combustion.]
Burning time: Not applicable.
Burning rate: Not applicable.
Evaporation rate: Not available.
Flammability (solid, gas): Extremely flammable in the presence of the following materials or conditions: reducing materials, combustible materials and organic materials.

Lower and upper explosive (flammable) limits: Not available.
Vapor pressure: Not available.
Vapor density: 1.1 (Air = 1)
Specific Volume (ft³/lb): 12.0482
Gas Density (lb/ft³): 0.083
Relative density: Not applicable.
Solubility: Not available.
Solubility in water: Not available.
Partition coefficient: n-octanol/water: 0.65
Auto-ignition temperature: Not available.
Decomposition temperature: Not available.
SADT: Not available.
Viscosity: Not available.

Section 10. Stability and reactivity

Reactivity: No specific test data related to reactivity available for this product or its ingredients.

Chemical stability: The product is stable.
Section 10. Stability and reactivity

Possibility of hazardous reactions: Hazardous reactions or instability may occur under certain conditions of storage or use. Conditions may include the following:
- contact with combustible materials
- Reactions may include the following:
- risk of causing fire

Conditions to avoid: No specific data.

Incompatible materials: Highly reactive or incompatible with the following materials:
- combustible materials
- reducing materials
- grease
- oil

Hazardous decomposition products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization: Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity
Not available.

Irritation/Corrosion
Not available.

Sensitization
Not available.

Mutagenicity
Not available.

Carcinogenicity
Not available.

Reproductive toxicity
Not available.

Teratogenicity
Not available.

Specific target organ toxicity (single exposure)
Not available.

Specific target organ toxicity (repeated exposure)
Not available.

Aspiration hazard
Not available.

Information on the likely routes of exposure

Potential acute health effects

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

Inhalation: No known significant effects or critical hazards.
Section 11. Toxicological information

Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.
Ingestion : As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.
Inhalation : No specific data.
Skin contact : No specific data.
Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure
Potential immediate effects : Not available.
Potential delayed effects : Not available.

Long term exposure
Potential immediate effects : Not available.
Potential delayed effects : Not available.

Potential chronic health effects
Not available.

General : No known significant effects or critical hazards.
Carcinogenicity : No known significant effects or critical hazards.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates
Not available.

Section 12. Ecological information

Toxicity
Not available.

Persistence and degradability
Not available.

Bioaccumulative potential

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>LogP_{ow}</th>
<th>BCF</th>
<th>Potential</th>
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</thead>
<tbody>
<tr>
<td>oxygen</td>
<td>0.65</td>
<td>-</td>
<td>low</td>
</tr>
</tbody>
</table>

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.
Section 12. Ecological information

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

Section 13. Disposal considerations

Disposal methods: 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. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

<table>
<thead>
<tr>
<th></th>
<th>DOT</th>
<th>TDG</th>
<th>Mexico</th>
<th>IMDG</th>
<th>IATA</th>
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<td>2.2 (5.1)</td>
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<td>Packing group</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Additional information</td>
<td>Limited quantity Yes.</td>
<td>Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2), 2.23-2.25 (Class 5).</td>
<td>-</td>
<td>Passenger and Cargo Aircraft Quantity Limitation: 75 kg</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Packaging instruction</td>
<td>Explosive Limit and Limited Quantity Index 0.125</td>
<td>-</td>
<td>Cargo Aircraft Only Quantity limitation: 150 kg</td>
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</tr>
<tr>
<td></td>
<td>Passenger aircraft</td>
<td>FRAP Index 3000</td>
<td>-</td>
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</tr>
<tr>
<td></td>
<td>Quantity limitation: 75 kg</td>
<td>Passenger Carrying Ship Index 50</td>
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<td>Cargo aircraft</td>
<td>Quantity limitation: 150 kg</td>
<td>Passenger Carrying Road or Rail Index 75</td>
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<tr>
<td>Special provisions</td>
<td>A52</td>
<td>Special provisions 42</td>
<td>-</td>
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</tr>
</tbody>
</table>

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Special precautions for user: Transport within user’s premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.
Section 14. Transport information

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not available.

Section 15. Regulatory information

U.S. Federal regulations:
- TSCA 8(a) CDR Exempt/Partial exemption: This material is listed or exempted.
- United States inventory (TSCA 8b): This material is listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs): Not listed

Clean Air Act Section 602 Class I Substances: Not listed

Clean Air Act Section 602 Class II Substances: Not listed

DEA List I Chemicals (Precursor Chemicals): Not listed

DEA List II Chemicals (Essential Chemicals): Not listed

SARA 302/304

Composition/information on ingredients
No products were found.

SARA 304 RQ: Not applicable.

SARA 311/312
Classification: Sudden release of pressure

Composition/information on ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>%</th>
<th>Fire hazard</th>
<th>Sudden release of pressure</th>
<th>Reactive</th>
<th>Immediate (acute) health hazard</th>
<th>Delayed (chronic) health hazard</th>
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</thead>
<tbody>
<tr>
<td>oxygen</td>
<td>100</td>
<td>No.</td>
<td>Yes.</td>
<td>No.</td>
<td>No.</td>
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</table>

State regulations
- Massachusetts: This material is listed.
- New York: This material is not listed.
- New Jersey: This material is listed.
- Pennsylvania: This material is listed.

International regulations

International lists

National inventory

Australia: This material is listed or exempted.
Canada: This material is listed or exempted.
China: This material is listed or exempted.
Europe: This material is listed or exempted.
Japan: Not determined.
Malaysia: Not determined.
New Zealand: This material is listed or exempted.
Philippines: This material is listed or exempted.
Republic of Korea: This material is listed or exempted.
Taiwan: This material is listed or exempted.
**Section 15. Regulatory information**

**Canada**

WHMIS (Canada) : Class A: Compressed gas.
                 Class C: Oxidizing material.

CEPA Toxic substances: This material is not listed.
Canadian ARET: This material is not listed.
Canadian NPR: This material is not listed.
Alberta Designated Substances: This material is not listed.
Ontario Designated Substances: This material is not listed.
Quebec Designated Substances: This material is not listed.

**Section 16. Other information**

Canada Label requirements : Class A: Compressed gas.
                           Class C: Oxidizing material.

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

<table>
<thead>
<tr>
<th>Health</th>
<th>Flammability</th>
<th>Physical hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on SDSs under 29 CFR 1910, 1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

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

Health 0
Flammability
Instability/Reactivity
Special

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

**Procedure used to derive the classification**

<table>
<thead>
<tr>
<th>Classification</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ox. Gas 1, H270 Press. Gas Comp. Gas, H280</td>
<td>Expert judgment According to package</td>
</tr>
</tbody>
</table>

**History**

Date of printing : 8/26/2015
Date of issue/Date of revision : 8/26/2015
Date of previous issue : No previous validation
Version : 0.01
Section 16. Other information

Key to abbreviations
- ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- LogPow = logarithm of the octanol/water partition coefficient
- UN = United Nations

References
- Not available.

✓ Indicates information that has changed from previously issued version.

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.
MATERIAL SAFETY DATA SHEET

SECTION 1 — PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NUMBER
KWBC03501

PRODUCT NAME
KRYLON® Industrial QUIK-MARK™ Water-Based Inverted Marking Chalk, APWA Orange

MANUFACTURER’S NAME
Krylon Products Group
Cleveland, OH 44115

Telephone Numbers and Websites

<table>
<thead>
<tr>
<th>Product Information</th>
<th>(800) 247-3266</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.krylonindustrial.com">www.krylonindustrial.com</a></td>
<td></td>
</tr>
</tbody>
</table>

| Regulatory Information | (216) 566-2902 |
| Medical Emergency      | (216) 566-2917 |

| Transportation Emergency | (800) 424-9300 |

*For Chemical Emergency ONLY (spill, leak, fire, exposure, or accident)

SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>% by Weight</th>
<th>CAS Number</th>
<th>Ingredient</th>
<th>Units</th>
<th>Vapor Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>67-63-0</td>
<td>2-Propanol</td>
<td></td>
<td>33 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACGIH TLV</td>
<td>200 PPM</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACGIH TLV</td>
<td>400 PPM</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PEL</td>
<td>400 PPM</td>
<td></td>
</tr>
</tbody>
</table>

| 30          | 115-10-5   | Dimethyl Ether         | Not Available | 760 mm         |
|             |            | ACGIH TLV              | Not Available |
|             |            | OSHA PEL               | Not Available |

| 2           | 124-68-5   | 2-Amino-2-Methyl-1-Propanol | Not Available | 0.8 mm         |
|             |            | ACGIH TLV              | Not Available |
|             |            | OSHA PEL               | Not Available |

SECTION 3 — HAZARDS IDENTIFICATION

ROUTES OF EXPOSURE
INHALATION of vapor or spray mist.
EYE or SKIN contact with the product, vapor or spray mist.

EFFECTS OF OVEREXPOSURE
EYES: Irritation.
SKIN: Prolonged or repeated exposure may cause irritation.

INHALATION: Irritation of the upper respiratory system.

May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

SIGNS AND SYMPTOMS OF OVEREXPOSURE
Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists.
Redness and itching or burning sensation may indicate eye or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
None generally recognized.

CANCER INFORMATION
For complete discussion of toxicology data refer to Section 11.

SECTION 4 — FIRST AID MEASURES

EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention.
SKIN: Wash affected area thoroughly with soap and water.
Remove contaminated clothing and launder before re-use.
INHALATION: If affected, remove from exposure. Restore breathing. Keep warm and quiet.
INGESTION: Do not induce vomiting. Get medical attention immediately.
SECTION 5 — FIRE FIGHTING MEASURES

FLASH POINT LEL UEL
Propellant < 0 °F 2.0 27.0

EXTINGUISHING MEDIA
Carbon Dioxide, Dry Chemical, Alcohol Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS
Closed containers may explode (due to the build-up of pressure) when exposed to extreme heat. Application to hot surfaces requires special precautions. During emergency conditions, exposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

SPECIAL FIRE FIGHTING PROCEDURES
Full protective equipment including self-contained breathing apparatus should be used. Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Remove all sources of ignition. Ventilate the area.
Remove with inert absorbent.

SECTION 7 — HANDLING AND STORAGE

STORAGE CATEGORY
Not Available

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Keep away from heat, sparks, and open flame. Vapors will accumulate readily and may ignite explosively.
During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition.
Consult NFPA Code. Use approved Bonding and Grounding procedures.
Contents under pressure. Do not puncture, incinerate, or expose to temperature above 120°F. Heat from sunlight, radiators, stoves, hot water, and other heat sources could cause container to burst. Do not take internally. Keep out of the reach of children.

SECTION 8 — EXPOSURE CONTROLS/PERSOAL PROTECTION

PRECAUTIONS TO BE TAKEN IN USE
Use only with adequate ventilation.
Avoid contact with skin and eyes. Avoid breathing vapor and spray mist.
Wash hands after using.
This coating may contain materials classified as nuisance particulates (listed as Dust in Section 2) which may be present at hazardous levels only during sanding or abrading of the dried film. If no specific dusts are listed in Section 2, the applicable limits for nuisance dusts are ACGIH TLV 10 mg/m³ (total dust), 3 mg/m³ (respirable fraction), OSHA PEL 15 mg/m³ (total dust), 5 mg/m³ (respirable fraction).

VENTILATION
Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

RESPIRATORY PROTECTION
If personal exposure cannot be controlled below applicable limits by ventilation, wear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section 2.
When sanding or abrading the dried film, wear a dust/mist respirator approved by NIOSH/MSHA for dust which may be generated from this product, underlyng paint, or the abrasive.

PROTECTIVE GLOVES
None required for normal application of aerosol products where minimal skin contact is expected. For long or repeated contact, wear chemical resistant gloves.

EYE PROTECTION
Wear safety spectacles with unperforated side shields.

OTHER PRECAUTIONS
Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.
SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

PRODUCT WEIGHT 7.32 lb/gal 877 g/l
SPECIFIC GRAVITY 0.88
BOILING POINT <0 - 335 °F <18 - 168 °C
MELTING POINT Not Available
VOLATILE VOLUME 92%
EVAPORATION RATE Faster than ether
VAPOR DENSITY Heavier than air
SOLUBILITY IN WATER Not Available
pH > 2.0, < 11.5

VOLATILE ORGANIC COMPOUNDS (VOC Theoretical - As Packaged)
Volatile Weight 45.08% Less Water and Federally Exempt Solvents

SECTION 10 — STABILITY AND REACTIVITY

STABILITY — Stable
CONDITIONS TO AVOID None known.
INCOMPATIBILITY None known.
HAZARDOUS DECOMPOSITION PRODUCTS By fire: Carbon Dioxide, Carbon Monoxide
HAZARDOUS POLYMERIZATION Will not occur

SECTION 11 — TOXICOLOGICAL INFORMATION

CHRONIC HEALTH HAZARDS
No ingredient in this product is an IARC, NTP or OSHA listed carcinogen.
Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

TOXICOLOGY DATA

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Ingredient Name</th>
<th>LC50 RAT</th>
<th>LD50 RAT</th>
<th>4HR</th>
<th>Not Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-63-0</td>
<td>2-Propanol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>115-10-6</td>
<td>Dimethyl Ether</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>124-68-5</td>
<td>2-Amino-2-Methyl-1-Propanol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION 12 — ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION
No data available.

SECTION 13 — DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD
Waste from this product may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261.
Waste must be tested for ignitability to determine the applicable EPA hazardous waste numbers.
Do not incinerate. Depressurize container. Dispose of in accordance with Federal, State/Provincial, and Local regulations regarding pollution.

SECTION 14 — TRANSPORT INFORMATION

Multi-modal shipping descriptions are provided for informational purposes and do not consider container sizes. The presence of a shipping description for a particular mode of transport (ocean, air, etc.), does not indicate that the product is packaged suitably for that mode of transport. All packaging must be reviewed for suitability prior to shipment, and compliance with the applicable regulations is the sole responsibility of the person offering the product for transport.

US Ground (DOT)
May be classed as LTD, QTY, OR ORM-D
UN1950, AEROSOLS, 2.1, LIMITED QUANTITY, (ERG#126)
Canada (TDG)
May be classed as LTD. QTY. OR ORM-D
UN1950, AEROSOLS, 2.1, LIMITED QUANTITY, (ERG#126)

IMO
May be shipped as Limited Quantity
UN1950, AEROSOLS, 2.1, LIMITED QUANTITY, EmS F-D, S-U

IATA/ICAO
UN1950, AEROSOLS, FLAMMABLE, 2.1, LIMITED QUANTITY

SECTION 15 — REGULATORY INFORMATION

SARA 313 (40 CFR 372.65C) SUPPLIER NOTIFICATION

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>CHEMICAL/COMPOUND</th>
<th>% by WT</th>
<th>% Element</th>
</tr>
</thead>
</table>

No ingredients in this product are subject to SARA 313 (40 CFR 372.65C) Supplier Notification.

CALIFORNIA PROPOSITION 65

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

TSCA CERTIFICATION

All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

SECTION 16 — OTHER INFORMATION

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

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.
SECTION 1. IDENTIFICATION

Product name : PROPANE
Synonyms : Propane HD-5, Propane commercial, Liquified Petroleum Gas (LPG), C3H8, CGSB Propane Grade 1, CGSB Propane Grade 2, odorized propane, stenched 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

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

GHS Classification

<table>
<thead>
<tr>
<th>Flammable gases</th>
<th>Category 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gases under pressure</td>
<td>Liquefied gas</td>
</tr>
<tr>
<td>Simple Asphyxiant</td>
<td>Category 1</td>
</tr>
</tbody>
</table>

GHS label elements
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.
SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>propane</td>
<td>74-98-6</td>
<td>90 - 100 %</td>
</tr>
<tr>
<td>propylene</td>
<td>115-07-1</td>
<td>1 - 5 %</td>
</tr>
<tr>
<td>butane</td>
<td>106-97-8</td>
<td>1 - 2.5 %</td>
</tr>
<tr>
<td>ethane</td>
<td>74-84-0</td>
<td>1 - 1.5 %</td>
</tr>
<tr>
<td>methane</td>
<td>74-82-8</td>
<td>0.1 - 0.2 %</td>
</tr>
</tbody>
</table>

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 firefighting : 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, CO2), smoke and irritating vapours as
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.
Ensure the storage containers are grounded/bonded.

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>propane</td>
<td>74-98-6</td>
<td>TWA</td>
<td>1,000 ppm</td>
<td>CA AB OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>1,000 ppm</td>
<td>CA BC OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA EV</td>
<td>1,000 ppm / 1,800 mg/m3</td>
<td>CA QC OEL</td>
</tr>
<tr>
<td>propylene</td>
<td>115-07-1</td>
<td>TWA</td>
<td>500 ppm / 860 mg/m3</td>
<td>CA AB OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>500 ppm</td>
<td>CA BC OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>500 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td>butane</td>
<td>106-97-8</td>
<td>TWA</td>
<td>1,000 ppm</td>
<td>CA AB OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>600 ppm</td>
<td>CA BC OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>750 ppm</td>
<td>CA BC OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA EV</td>
<td>800 ppm / 1,900 mg/m3</td>
<td>CA QC OEL</td>
</tr>
<tr>
<td>ethane</td>
<td>74-84-0</td>
<td>TWA</td>
<td>1,000 ppm</td>
<td>CA AB OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>1,000 ppm</td>
<td>CA BC OEL</td>
</tr>
</tbody>
</table>

**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.
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):
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

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

### SECTION 12. ECOLOGICAL INFORMATION

#### Ecotoxicity

**Product:**

<table>
<thead>
<tr>
<th>Product</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to fish</td>
<td>No data available</td>
</tr>
<tr>
<td>Toxicity to daphnia and other aquatic invertebrates</td>
<td>No data available</td>
</tr>
<tr>
<td>Toxicity to algae</td>
<td>No data available</td>
</tr>
<tr>
<td>Toxicity to bacteria</td>
<td>No data available</td>
</tr>
</tbody>
</table>

#### Persistence and degradability

**Product:**

<table>
<thead>
<tr>
<th>Product</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biodegradability</td>
<td>No data available</td>
</tr>
</tbody>
</table>

#### Bioaccumulative potential

No data available

#### Mobility in soil

No data available
Other adverse effects
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

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

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR
UN/ID No.: UN 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
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:

<table>
<thead>
<tr>
<th>Inventory</th>
<th>Reporting Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSL</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>TSCA</td>
<td>All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.</td>
</tr>
<tr>
<td>EINECS</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
</tbody>
</table>

SECTION 16. OTHER INFORMATION

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

Prepared by : Product Safety: +1 905-804-4752
Revision Date : 2016/07/20

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 AND COMPANY IDENTIFICATION

Product name : DURON™/MC -E 10W-30


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;
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

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Viscous liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Light amber.</td>
</tr>
<tr>
<td>Odour</td>
<td>Mild petroleum oil like.</td>
</tr>
</tbody>
</table>

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.

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
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.
Material Safety Data Sheet
DURON™/MC - E 10W-30

000003001098

Version 2.0 Revision Date 2015/01/27 Print Date 2015/01/27

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, CO2), sulphur oxides (SOx), calcium oxides (CaOx), aldehydes, 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.
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
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.

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 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:
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: 235 °C (455 °F)
   Method: Cleveland open cup

Fire Point: 262 °C (504 °F)
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: 0.864 kg/l (15 °C / 59 °F)

Solubility(ies)
Water solubility: insoluble
Partition coefficient: n-octanol/water: No data available

Viscosity
Viscosity, kinematic: 79.0 cSt (40 °C / 104 °F)
   11.80 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, acids, halogens and halogenated compounds.
Hazardous decomposition products: May release COx, H2S, aldehydes, alkyl mercaptans, sulfides, methacrylate monomers, 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

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

Aspiration toxicity

No data available

SECTION 12. ECOLOGICAL INFORMATION
Ecotoxicity

**Product:**
- Toxicty to fish: Remarks: No data available
- Toxicty to daphnia and other aquatic invertebrates: Remarks: No data available
- Toxicty to algae: Remarks: No data available
- Toxicty 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 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 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.
SECTION 15. REGULATORY INFORMATION

**WHMIS Classification**: Not Rated

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.
- **IECSC**: On the inventory, or in compliance with the inventory
- **ELINCS**: At least one component is not listed in EINECS but all such components are listed in ELINCS.

SECTION 16. OTHER INFORMATION

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 AND COMPANY IDENTIFICATION

Product name: SUPREME™/MC 10W-40

Product code: MOSP14DRM, MOSP14C16, MOSP14C12, MOSP14, MOSP14BLK

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;
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

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Viscous liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Light amber.</td>
</tr>
<tr>
<td>Odour</td>
<td>Mild petroleum oil like</td>
</tr>
</tbody>
</table>

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.
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
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 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 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, CO₂), 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 application 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
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.

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. No special protective equipment required.

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: 206 °C (403 °F)
Method: Pensky-Martens closed 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
Density: 0.8634 kg/l (15 °C / 59 °F)

Solubility(ies)
Water solubility: insoluble
Partition coefficient: n-octanol/water: No data available

Viscosity
Viscosity, kinematic: 105.4 cSt (40 °C / 104 °F)
15.4 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, reducing agents, acids and alkalis.
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

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

Aspiration toxicity
No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:
Toxicity to fish : Remarks: No data available
Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available
Toxicity to algae: Remarks: No data available
Toxicity to bacteria: Remarks: No data available

Persistence and degradability
Product:
Biodegradability: Remarks: No data available

Bioaccumulative potential
No data available

Mobility in soil
No data available

Other adverse effects
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

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

SECTION 14. TRANSPORT INFORMATION

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

WHMIS Classification: Not Rated

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.

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

- ELINCS
  - On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

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 AND COMPANY IDENTIFICATION

Product name: DURON™/MC -E 15W-40


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;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use
Recommended use: DURON-E 15W-40 is a superior quality heavy duty diesel engine oil specifically designed for '07 EPA engine requirements along with improved performance benefits in legacy engines. Application includes modern low emission diesel engines with cooled exhaust gas recirculation and exhaust after treatment technology. It is suitable also for passenger car and light truck diesel engines, and spark ignition engines.

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

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Viscous liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Light amber.</td>
</tr>
<tr>
<td>Odour</td>
<td>Mild petroleum oil like.</td>
</tr>
</tbody>
</table>

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.

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  
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.
Material Safety Data Sheet
DURON™/MC -E 15W-40

Version 3.0 Revision Date 2015/11/17 Print Date 2015/11/17

No information available.

Cool closed containers exposed to fire with water spray.

Carbon oxides (CO, CO2), sulphur oxides (SOx), calcium oxides (CaOx), aldehydes, smoke and irritating vapours as products of incomplete combustion.

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.
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.

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 according to the amount and concentration of the dangerous substance at the 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 : Wash face, hands and any exposed skin thoroughly after handling. Remove and wash contaminated clothing and gloves, including the inside, before re-use.

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: 235 °C (455 °F)
Method: Cleveland open cup

Fire Point: 239 °C (462 °F)

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: 0.8727 kg/l (15 °C / 59 °F)

Solubility(ies)
Water solubility: insoluble
Partition coefficient: n-octanol/water: No data available

Viscosity
Viscosity, kinematic: 118.2 cSt (40 °C / 104 °F)
15.6 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, acids, halogens and halogenated compounds.

Hazardous decomposition products: May release COx, H2S, aldehydes, alkyl mercaptans, sulfides, methacrylate monomers, 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

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

Aspiration toxicity
No data available

SECTION 12. ECOLOGICAL INFORMATION
Ecotoxicity

**Product:**
- Toxicity to fish: Remarks: No data available
- Toxicity to daphnia and other aquatic invertebrates: Remarks: No data available
- Toxicity to algae: Remarks: No data available
- Toxicity to bacteria: Remarks: No data available

**Persistence and degradability**

**Product:**
- Biodegradability: Remarks: No data available

**Bioaccumulative potential**
No data available

**Mobility in soil**
No data available

**Other adverse effects**
No data available

### SECTION 13. DISPOSAL CONSIDERATIONS

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

### SECTION 14. TRANSPORT INFORMATION

**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**
SECTION 15. REGULATORY INFORMATION

WHMIS Classification : Not Rated

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.
- **IECSC**: On the inventory, or in compliance with the inventory
- **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 (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
- **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

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
PETRO-CANADA ANTIFREEZE
0000030000606
Version 2.0 Revision Date 2016/03/07 Print Date 2016/03/07

SECTION 1. IDENTIFICATION

Product name : PETRO-CANADA ANTIFREEZE
Product code : RADDRX, RAD, RADC4U

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

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

Recommended use of the chemical and restrictions on use
Recommended use : Used as an engine antifreeze coolant.
Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Clear liquid.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>green</td>
</tr>
<tr>
<td>Odour</td>
<td>No data available</td>
</tr>
<tr>
<td>Hazard Summary</td>
<td>Toxic if swallowed. May cause teratogenicity/embryotoxicity</td>
</tr>
</tbody>
</table>

Potential Health Effects

Primary Routes of Entry : Eye contact
Ingestion
Inhalation
Skin contact

Inhalation : May cause respiratory tract irritation.

Eyes : May cause eye irritation.
Ingestion: Toxic if swallowed. Ingestion of this product may cause Central Nervous System (CNS) Depression, symptoms of which may include: weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death.

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

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>ethanediol</td>
<td>107-21-1</td>
<td>60 - 100 %</td>
</tr>
</tbody>
</table>

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 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: 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: Carbon dioxide (CO2)
Dry chemical
Foam

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, CO2), smoke and irritating vapours as products of incomplete combustion.

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.
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: Smoking, eating and drinking should be prohibited in the application area.
Do not ingest.
Avoid contact with skin, eyes and clothing.
Use only with adequate ventilation.
In case of insufficient ventilation, wear suitable respiratory equipment.
Ensure all equipment is electrically grounded before beginning transfer operations.
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

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>ethanediol</td>
<td>107-21-1</td>
<td>Ceiling</td>
<td>100 mg/m³</td>
<td>CA AB OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (particulate)</td>
<td>10 mg/m³</td>
<td>CA BC OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL (particulate)</td>
<td>20 mg/m³</td>
<td>CA BC OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ceiling (aerosol)</td>
<td>100 mg/m³</td>
<td>CA BC OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ceiling (Vapour)</td>
<td>50 ppm</td>
<td>CA BC OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ceiling (Vapour and mist)</td>
<td>50 ppm 127 mg/m³</td>
<td>CA QC OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ceiling (Aerosol only)</td>
<td>100 mg/m³</td>
<td>ACGIH</td>
</tr>
</tbody>
</table>

Engineering measures:
- Adequate ventilation to ensure that Occupational Exposure Limits are not exceeded.

Personal protective equipment

Respiratory protection:
- 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.

Filter type:
- organic vapour filter

Hand protection
Material:
- nitrile rubber. 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 permea-
ed 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 ne-
cessary.

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 conce-

tration and amount of dangerous substances, and to the spe-
cific work-place.

Protective measures : Wash contaminated clothing before re-use.

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

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Clear liquid.

Colour : green

Odour : No data available

Odour Threshold : No data available

pH : No data available

Melting point/range : -13 °C (9 °F)

Boiling point/boiling range : 197 °C (387 °F)

Flash point : 111 °C (232 °F)
Method: closed cup

Fire Point : No data available

Auto-Ignition Temperature : 398 °C (748 °F)

Evaporation rate : < 0.01

Flammability : May be combustible at high temperature.

Upper explosion limit : 21.6 - 22.0 %(V)

Lower explosion limit : 3.2 %(V)
Vapour pressure: 0.09 mmHg (20 °C / 68 °F)
Relative vapour density: estimated 2.14
Air = 1
Relative density: 1.12 - 1.15 (20 °C / 68 °F)
Water = 1
Solubility(ies):
Water solubility: No data available
Partition coefficient: n-octanol/water: log Pow: -1.36 (20 °C)
Viscosity:
Viscosity, kinematic: estimated 18.86 mm²/s (20 °C / 68 °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:
Heat, flames and sparks.
Avoid temperatures above 111°C.
Incompatible materials:
Reactive with oxidising agents, acids and alkalis.
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
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:
ethanediol:
Acute oral toxicity: LD50 (Rat): 4,700 mg/kg,
LD50 (Mouse): 5,500 mg/kg,
Acute inhalation toxicity: LC50 (Rat): 2.725 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Acute dermal toxicity: LD50 (Rabbit): 9,530 mg/kg,

Skin corrosion/irritation
Components:
ethanediol:
Result: Mild skin irritation

Serious eye damage/eye irritation
Components:
ethanediol:
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

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

Components:
ethanediol:
Partition coefficient: n-octanol/water: log Pow: -1.36

Mobility in soil
No data available

Other adverse effects

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.

SECTION 14. TRANSPORT INFORMATION

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.

National Regulations

TDG
Not regulated as a dangerous good

SECTION 15. REGULATORY INFORMATION

WHMIS Classification
D1B: Toxic Material Causing Immediate and Serious Toxic Effects
D2A: Very 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.

SECTION 16. OTHER INFORMATION

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

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

Revision Date
2016/03/07

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.
1. Identification

Product identifier: Brakleen® Brake Parts Cleaner

Other means of identification:
- Product code: 05089, 05089T, 85089, 85089AZ

Recommended use: Brake cleaner

Recommended restrictions: None known.

Manufacturer/Importer/Supplier/Distributor information

Manufactured or sold by:
- Company name: CRC Industries, Inc.
- Address: 885 Louis Dr. Warminster, PA 18974 US

Telephone
- General Information: 215-674-4300
- Technical Assistance: 800-521-3168
- Customer Service: 800-272-4620
- 24-Hour Emergency (CHEMTREC): 800-424-9300 (US) 703-527-3887 (International)

Website: www.crcindustries.com

2. Hazard(s) identification

Physical hazards
- Compressed gas

Health hazards
- Category 2: Skin corrosion/irritation
- Category 1B: Carcinogenicity
- Category 2: Specific target organ toxicity, single exposure
- Category 3: Narcotic effects

Environmental hazards
- Category 2: Harmful to the aquatic environment, long-term hazard

OSHA defined hazards: Not classified.

Label elements

Signal word: Danger

Hazard statement: Contains gas under pressure; may explode if heated. Causes skin irritation. May cause drowsiness or dizziness. May cause cancer. Toxic to aquatic life with long-lasting effects.

Precautionary statement

Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not puncture or incinerate container. Do not expose to heat or store at temperatures above 49°C/120°F. Use with adequate ventilation. Open doors and windows or use other means to ensure a fresh air supply during use and while product is drying. If you experience any symptoms listed on this label, increase ventilation or leave the area. Avoid breathing mist or vapor. Avoid breathing gas. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.

Response: If on skin: Wash with plenty of water. If skin irritation occurs: Get medical attention. Take off contaminated clothing and wash before reuse. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. If exposed or concerned: Get medical attention. Collect spillage.

Storage: Store locked up. Protect from sunlight. Store in a well-ventilated place. Exposure to high temperature may cause can to burst.
3. Composition/information on ingredients

Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrachloroethylene</td>
<td>Perchloroethylene</td>
<td>127-18-4</td>
<td>90 - 100</td>
</tr>
<tr>
<td>Carbon dioxide</td>
<td></td>
<td>124-38-9</td>
<td>1 - 5</td>
</tr>
</tbody>
</table>

Specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin contact: Remove contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Eye contact: Rinse with water. Get medical attention if irritation develops and persists.

Ingestion: In the unlikely event of swallowing contact a physician or poison control center. Rinse mouth.


Indication of immediate medical attention and special treatment needed: Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

General information: IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media: Dry chemical, CO2, or water spray.

Unsuitable extinguishing media: Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical: Contents under pressure. Exposure to high temperature may cause can to burst. When exposed to extreme heat or hot surfaces, vapors may decompose to harmful or fatal corrosive gases such as hydrogen chloride and possibly phosgene.

Special protective equipment and precautions for firefighters: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

Fire fighting equipment/instructions: In case of fire: Stop leak if safe to do so. Move containers from fire area if you can do so without risk. Containers should be cooled with water to prevent vapor pressure build up.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist or vapor. Avoid breathing gas. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up: Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. This material is classified as a water pollutant under the Clean Water Act and should be prevented from contaminating soil or from entering sewage and drainage systems which lead to waterways. Stop the flow of material, if this is without risk. Collect spillage. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. For waste disposal, see section 13 of the SDS.

Environmental precautions: Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.
7. Handling and storage

Precautions for safe handling
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Pressurized container: Do not pierce or burn, even after use. Do not use if spray button is missing or defective. Do not spray on a naked flame or any other incandescent material. Do not smoke while using or until sprayed surface is thoroughly dry. Use with adequate ventilation. Open doors and windows or use other means to ensure a fresh air supply during use and while product is drying. If you experience any symptoms listed on this label, increase ventilation or leave the area. Do not cut, weld, solder, drill, grind, or expose containers to heat, flame, sparks, or other sources of ignition. Use caution around energized equipment. The metal container will conduct electricity if it contacts a live source. This may result in injury to the user from electrical shock and/or flash fire. Avoid breathing mist or vapor. Avoid breathing gas. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Use only in well-ventilated areas. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. Avoid release to the environment. Do not empty into drains. For product usage instructions, please see the product label.

Conditions for safe storage, including any incompatibilities
Level 1 Aerosol.
Contents under pressure. Do not puncture or incinerate container. Do not expose to heat or store at temperatures above 49 °C/120 °F. Do not handle or store near an open flame, heat or other sources of ignition. Exposure to high temperature may cause can to burst. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

<table>
<thead>
<tr>
<th>US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)</th>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Carbon dioxide (CAS 124-38-9)</td>
<td>PEL</td>
<td>9000 mg/m3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5000 ppm</td>
</tr>
<tr>
<td>US. OSHA Table Z-2 (29 CFR 1910.1000)</td>
<td>Tetrachloroethylene (CAS 127-18-4)</td>
<td>Ceiling</td>
<td>200 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>100 ppm</td>
</tr>
<tr>
<td>US. ACGIH Threshold Limit Values</td>
<td>Carbon dioxide (CAS 124-38-9)</td>
<td>STEL</td>
<td>30000 ppm</td>
</tr>
<tr>
<td></td>
<td>Tetrachloroethylene (CAS 127-18-4)</td>
<td>TWA</td>
<td>5000 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>100 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>25 ppm</td>
</tr>
<tr>
<td>US. NIOSH: Pocket Guide to Chemical Hazards</td>
<td>Carbon dioxide (CAS 124-38-9)</td>
<td>STEL</td>
<td>54000 mg/m3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30000 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>9000 mg/m3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5000 ppm</td>
</tr>
</tbody>
</table>

Biological limit values

<table>
<thead>
<tr>
<th>ACGIH Biological Exposure Indices</th>
<th>Components</th>
<th>Value</th>
<th>Determinant</th>
<th>Specimen</th>
<th>Sampling Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tetrachloroethylene (CAS 127-18-4)</td>
<td>0.5 mg/l</td>
<td>Tetrachloroethylene</td>
<td>Blood</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 ppm</td>
<td>Tetrachloroethylene</td>
<td>End-exhaled air</td>
<td>*</td>
</tr>
</tbody>
</table>

* - For sampling details, please see the source document.
Exposure guidelines

US - Minnesota Haz Subs: Skin designation applies

Tetrachloroethylene (CAS 127-18-4) Skin designation applies.

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower should be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection

Wear protective gloves such as: Viton®, Polyvinyl alcohol (PVA), Nitrile, Silver Shield®

Other

Wear appropriate chemical resistant clothing.

Respiratory protection

If engineering controls are not feasible or if exposure exceeds the applicable exposure limits, use a NIOSH-approved cartridge respirator with an organic vapor cartridge. Use a self-contained breathing apparatus in confined spaces and for emergencies. Air monitoring is needed to determine actual employee exposure levels.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state: Liquid.
Form: Aerosol.
Color: Colorless.
Odor: Irritating.
Odor threshold: 50 ppm
pH: Not available.
Melting point/freezing point: -8.1 °F (-22.3 °C) estimated
Initial boiling point and boiling range: 250.3 °F (121.3 °C) estimated
Flash point: None (Tag Closed Cup)
Evaporation rate: Very fast.
Flammability (solid, gas): Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%): Not available.
Flammability limit - upper (%): Not available.

Vapor pressure: 1352.4 hPa estimated
Vapor density: 5.76 (air = 1)
Relative density: 1.62
Solubility (water): 0.02 % (77 °F (25 °C))
Partition coefficient (n-octanol/water): Not available.
Auto-ignition temperature: Not available.
Decomposition temperature: Not available.
Viscosity (kinematic): Not available.
Percent volatile: 97.7 % estimated

Other information

Partition coefficient (oil/water): 2.88
10. Stability and reactivity

Reactivity
The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability
Material is stable under normal conditions.

Possibility of hazardous reactions
No dangerous reaction known under conditions of normal use.

Conditions to avoid
Heat, flames and sparks. Contact with incompatible materials. When exposed to extreme heat or hot surfaces, vapors may decompose to harmful or fatal corrosive gases such as hydrogen chloride and possibly phosgene.

Incompatible materials

Hazardous decomposition products

11. Toxicological information

Information on likely routes of exposure

Inhalation
Prolonged inhalation may be harmful. May cause drowsiness and dizziness. Headache. Nausea, vomiting.

Skin contact
Causes skin irritation.

Eye contact
Direct contact with eyes may cause temporary irritation.

Ingestion
Ingestion of large amounts may produce gastrointestinal disturbances including irritation, nausea, and diarrhea.

Symptoms related to the physical, chemical and toxicological characteristics

Information on toxicological effects

Acute toxicity
Narcotic effects.

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brakleen® Brake Parts Cleaner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td>Rabbit</td>
<td>3305 mg/kg estimated</td>
</tr>
<tr>
<td>LD50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>20 mg/l, 4 Hours estimated</td>
</tr>
<tr>
<td>Oral</td>
<td>Rat</td>
<td>2692 mg/kg estimated</td>
</tr>
<tr>
<td>LD50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation
Causes skin irritation.

Serious eye damage/eye irritation
Direct contact with eyes may cause temporary irritation.

Respiratory sensitization
Not available.

Skin sensitization
This product is not expected to cause skin sensitization.

Germ cell mutagenicity
No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity
May cause cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity
Tetrachloroethylene (CAS 127-18-4) 2A Probably carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens
Tetrachloroethylene (CAS 127-18-4) Reasonably Anticipated to be a Human Carcinogen.

Reproductive toxicity
This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure
May cause drowsiness and dizziness.

Specific target organ toxicity - repeated exposure
Not classified.

Aspiration hazard
May be an aspiration hazard.
Chronic effects
Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.

12. Ecological information

Ecotoxicity
Toxic to aquatic life with long lasting effects. Accumulation in aquatic organisms is expected.

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brakleen® Brake Parts Cleaner</td>
<td>Aquatic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fish</td>
<td>LC50 Fish</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19.1805 mg/l, 96 hours estimated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrachloroethylene (CAS 127-18-4)</td>
<td>Aquatic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fish</td>
<td>LC50 Rainbow trout,donaldson trout (Oncorhynchus mykiss)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.73 - 5.27 mg/l, 96 hours</td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

Persistence and degradability
Not available.

Bioaccumulative potential
Not available.

Partition coefficient n-octanol / water (log Kow)
Tetrachloroethylene 2.88

Mobility in soil
No data available.

Other adverse effects
No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal of waste from residues / unused products
This material and its container must be disposed of as hazardous waste. Consult authorities before disposal. Contents under pressure. Do not puncture, incinerate or crush. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose in accordance with all applicable regulations.

Hazardous waste code
D039: Waste Tetrachloroethylene
F001: Waste Halogenated Solvent - Spent Halogenated Solvent Used in Degreasing
F002: Waste Halogenated Solvent - Spent Halogenated Solvent

US RCRA Hazardous Waste U List: Reference
Tetrachloroethylene (CAS 127-18-4) U210

Contaminated packaging
Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT
UN number: UN1950
UN proper shipping name: Aerosols, poison, Packing Group III, Limited Quantity
Transport hazard class(es)
Class: 2.2
Subsidiary risk: 6.1(PGIII)
Label(s): 2.2, 6.1
Packing group: Not applicable.
Special precautions for user
Read safety instructions, SDS and emergency procedures before handling.
Packing exceptions: 306
Packaging non bulk: None
Packaging bulk: None

IATA
UN number: UN1950
UN proper shipping name: Aerosols, non-flammable, containing substances in Division 6.1, Packing Group III, Limited Quantity
Transport hazard class(es)
Class: 2.2
Subsidiary risk: 6.1
Packing group: Not applicable.
### Environmental hazards
No.

### ERG Code
2P

### Special precautions for user
Read safety instructions, SDS and emergency procedures before handling.

### Other information

**Passenger and cargo aircraft**
Allowed with restrictions.

**Cargo aircraft only**
Allowed with restrictions.

### IMDG

<table>
<thead>
<tr>
<th>UN number</th>
<th>UN1950</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>AEROSOLS</td>
</tr>
</tbody>
</table>

### Transport hazard class(es)

- **Class**: 2
- **Subsidiary risk**: 6.1

### Packaing group
Not applicable.

### Environmental hazards
No.

### EmS
Not available.

### Special precautions for user
Read safety instructions, SDS and emergency procedures before handling.

### 15. Regulatory information

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

- **TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**
  Not regulated.

  Not listed.

- **SARA 304 Emergency release notification**
  Not regulated.

- **US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance**
  Tetrachloroethylene (CAS 127-18-4) LISTED

- **CERCLA Hazardous Substance List (40 CFR 302.4)**
  Tetrachloroethylene (CAS 127-18-4) Listed.

- **CERCLA Hazardous Substances: Reportable quantity**
  Tetrachloroethylene (CAS 127-18-4) 100 LBS
  Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center (800-424-8802) and to your Local Emergency Planning Committee.

- **Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**
  Tetrachloroethylene (CAS 127-18-4)

- **Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)**
  Not regulated.

- **Safe Drinking Water Act (SDWA)**
  Not regulated.

- **Food and Drug Administration (FDA)**
  Not regulated.

#### Superfund Amendments and Reauthorization Act of 1986 (SARA)

<table>
<thead>
<tr>
<th>Hazard categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate Hazard - Yes</td>
</tr>
<tr>
<td>Delayed Hazard - Yes</td>
</tr>
<tr>
<td>Fire Hazard - No</td>
</tr>
<tr>
<td>Pressure Hazard - Yes</td>
</tr>
<tr>
<td>Reactivity Hazard - No</td>
</tr>
</tbody>
</table>

- **SARA 302 Extremely hazardous substance**
  No

#### US state regulations

- **US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))**
  Tetrachloroethylene (CAS 127-18-4)

- **US. New Jersey Worker and Community Right-to-Know Act**
  Carbon dioxide (CAS 124-38-9)
US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)
Not listed.

US. Massachusetts RTK - Substance List
Carbon dioxide (CAS 124-38-9)
Tetrachloroethylene (CAS 127-18-4)

US. New Jersey Worker and Community Right-to-Know Act
Tetrachloroethylene (CAS 127-18-4)

US. Pennsylvania Worker and Community Right-to-Know Law
Tetrachloroethylene (CAS 127-18-4)

US. Rhode Island RTK
Tetrachloroethylene (CAS 127-18-4)

US. Pennsylvania Worker and Community Right-to-Know Law
Carbon dioxide (CAS 124-38-9)

US. California Proposition 65
WARNING: This product contains a chemical known to the State of California to cause cancer.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance
Tetrachloroethylene (CAS 127-18-4) Listed: April 1, 1988

Volatile organic compounds (VOC) regulations

EPA
VOC content (40 CFR 51.100(s)) 0 %
Consumer products (40 CFR 59, Subpt. C) Not regulated

State
Consumer products This product is regulated as a Brake Cleaner. This product is not compliant to be sold for use in California and New Jersey. This product is compliant in all other states.
VOC content (CA) 0 %
VOC content (OTC) 0 %

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

<table>
<thead>
<tr>
<th>Issue date</th>
<th>12-20-2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision date</td>
<td>10-29-2015</td>
</tr>
<tr>
<td>Prepared by</td>
<td>Allison Cho</td>
</tr>
<tr>
<td>Version #</td>
<td>03</td>
</tr>
<tr>
<td>Further information</td>
<td>CRC # 491G</td>
</tr>
</tbody>
</table>
HMIS® ratings
- Health: 2*
- Flammability: 0
- Physical hazard: 0
- Personal protection: B

NFPA ratings
- Health: 2
- Flammability: 0
- Instability: 0

Disclaimer
The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. This information is accurate to the best of CRC Industries' knowledge or obtained from sources believed by CRC to be accurate. Before using any product, read all warnings and directions on the label. For further clarification of any information contained on this (M)SDS consult your supervisor, a health & safety professional, or CRC Industries.
Appendix 3  Spill Report Procedure
SPILL RESPONSE PROCEDURE

PERSON DISCOVERING SPILL

SITE SUPERVISOR
BENOIT LEBEBVRE
IN PERSON

IDENTIFY, EVALUATE, AND ELIMINATE ALL IGNITION SOURCES

LIMIT ACCESS AND DELINEATE IMPACTED AREA

STOP LEAKAGE / FLOW AND SOURCE

STABILIZE AND CONTAIN SPILLED SUBSTANCES

RECOVER SPILLED SUBSTANCES

LABEL & STORE RECOVERED SUBSTANCE

ACCESS ENVIRONMENTAL MEDIA (IF ANY) AFFECTED

SITE SUPERINTENDENT
BRANDON MACKAY
IN PERSON

PROJECT MANAGERS
ALEXANDRE LECLAIR
514 – 972 - 4418

PSPC

CLAUDIA SIMONATO
403 – 613 - 6328

ECCC DRAP
ARLEN FOSTER
867 – 446 - 0568

NWT SPILL REPORTING LINE
867 – 920 - 8130

IWB INSPECTOR
867 – 445 - 7935

PRODUCT AND QUANTITY
PERSONAL PROTECTION EQUIPMENT
POTENTIAL IMPACTS
CLEANUP EQUIPMENT
IGNITION SOURCES

LOCATE SAFETY PERIMETER
LOCATE ENTRANCE AND EXIT
LOCATE DECONTOAMINATION AREA

IF UNCONTROLLED RELEASE OF GASES, ISOLATE AREA AND ELIMINATE ALL IGNITION SOURCES

LIQUIDS – USE ABSORBENTS
CORROSIVES – USE ACID / BASES NEUTRALIZING AGENTS

SOLIDS – OPEN TOP 205 LITER DRUM OR 3.1 M³ CONTAINER
LIQUIDS – 205 LITER DRUM
Appendix 4  NT Spill Report
## 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:
- **MM** DD YY

### B Occurrence Date:
- **MM** DD YY

### C Land Use Permit Number (if applicable):

### D Geographic Place Name or Distance and Direction from the Named Location:

### E Latitude: Degrees Minutes Seconds

### F Responsible Party or Vessel Name:

### G Any Contractor Involved:

### H Product Spilled:
- Potential Spill

### I Spill Source:

### J Factors Affecting Spill or Recovery:

### K Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials:

### L Reported to Spill Line by:
- Position:
- Employer:
- Location Calling From:
- Telephone:

### M Any Alternate Contact:
- Position:
- Employer:
- Alternate Contact Location:
- Alternate Telephone:

---

**REPORT LINE USE ONLY**

### N Received at Spill Line by:
- Position:
- Employer:
- Location Called:
- Report Line Number:

### Lead Agency:
- EC
- CCG/TCMSS
- GNWT
- GN
- ILA
- AANDC
- NEB
- Other: ____________

### Significance:
- Minor
- Major
- Unknown

### File Status:
- Open
- Closed

**Agency:**

**Contact Name:**

**Contact Time:**

**Remarks:**

**Lead Agency:**

**First Support Agency:**

**Second Support Agency:**

**Third Support Agency:**
Appendix 5  Emergency Contact List
<table>
<thead>
<tr>
<th>Resource</th>
<th>Contact/Location</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Phones</td>
<td>Will be added once site communications are installed</td>
<td></td>
</tr>
<tr>
<td>Air Transportation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lynden Air cargo</td>
<td>Anchorage</td>
<td>907-243-7248</td>
</tr>
<tr>
<td>Buffalo Airways</td>
<td>Yellowknife</td>
<td>867-873-6112</td>
</tr>
<tr>
<td>Air Tindi</td>
<td>Yellowknife</td>
<td>867-669-8201</td>
</tr>
<tr>
<td>Summit Airlines</td>
<td>Yellowknife</td>
<td>855-355-5527</td>
</tr>
<tr>
<td>Fire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local Fire Department</td>
<td>Inuvik</td>
<td>867-777-2222</td>
</tr>
<tr>
<td></td>
<td></td>
<td>867-872-7700</td>
</tr>
<tr>
<td>Police</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RCMP</td>
<td>24 hour emergency call centre</td>
<td>867-777-1111</td>
</tr>
<tr>
<td>Hospitals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inuvik Regional Hospital</td>
<td>EMERGENCY ROOM</td>
<td>011-8816-316-54822</td>
</tr>
<tr>
<td></td>
<td></td>
<td>867-777-8000</td>
</tr>
<tr>
<td>Advanced Medical Solutions (ambulance)</td>
<td>Inuvik</td>
<td>867-777-4444</td>
</tr>
<tr>
<td>Sachs Harbor Medical Center</td>
<td>Sachs Harbor</td>
<td>867-690-4181</td>
</tr>
<tr>
<td></td>
<td></td>
<td>867-690-4077</td>
</tr>
<tr>
<td></td>
<td></td>
<td>011-8816-326-17089</td>
</tr>
<tr>
<td>Environmental Emergency (cont.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24-hour Spill Line</td>
<td>NWT/Nunavut</td>
<td>867-920-8130</td>
</tr>
<tr>
<td>Canadian Transport Emergency Centre (CANUTEC)</td>
<td></td>
<td>24-hour service 867-996-6666</td>
</tr>
<tr>
<td>Environment and Natural Resources, GNWT</td>
<td>Inuvik Regional Office</td>
<td>867-678-6650</td>
</tr>
<tr>
<td>INAC Resource Officers (Inspectors)</td>
<td>Tim Morton - Yellowknife</td>
<td>Tel.: 867-669-2442</td>
</tr>
<tr>
<td></td>
<td>Devin Penney – Yellowknife</td>
<td>Tel.: 867-669-2468</td>
</tr>
<tr>
<td>Health and Safety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workers’ Compensation Board 24-hour Accident Reporting Line</td>
<td>Centre Square Tower, 5th Floor 5022 49 Street Box 8888, Yellowknife, NT X1A 2R3</td>
<td>867-920-3888</td>
</tr>
<tr>
<td>Wildlife Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment and Natural Resources, GNWT</td>
<td>Inuvik Regional Office</td>
<td>867-678-0289</td>
</tr>
<tr>
<td>Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment and Climate Change Canada DR</td>
<td>Arlen Foster</td>
<td>867-446-0568</td>
</tr>
<tr>
<td></td>
<td>Erica Bonhomme</td>
<td>867-445-7388</td>
</tr>
<tr>
<td>PWGSC Project Management Office</td>
<td>Claudia Simonato, Project Manager</td>
<td>403-613-6328</td>
</tr>
<tr>
<td></td>
<td>Edward Domijan, Project Officer</td>
<td>780-720-5893</td>
</tr>
<tr>
<td>IWB Inspector</td>
<td></td>
<td>867-446-7935</td>
</tr>
<tr>
<td>Englobe Project Management</td>
<td>Alexandre Leclair – Project Manager</td>
<td>514-972-4418</td>
</tr>
<tr>
<td></td>
<td>Katheryne Budd - Project Coordinator</td>
<td>514-260-8208</td>
</tr>
</tbody>
</table>
Figure 1
Camp Location

MOULD BAY CAUSEWAY RECONSTRUCTION
Mould Bay, Northwest Territories