# Shell Canada Limited

## Material Safety Data Sheet

Effective Date: 2002-08-14
Supersedes: 2001-01-08

Class B2 Flammable Liquid

Class D2A Other Toxic Effects - Carcinogen

## 1. PRODUCT AND COMPANY IDENTIFICATION

| | |
|---|---|
| PRODUCT: | **REGULAR UNLEADED GASOLINE** |
| SYNONYMS: | Automotive Fuel<br>Petrol |
| PRODUCT USE: | Fuel |
| MSDS Number: | 211-001 |

| **MANUFACTURER** | **TELEPHONE NUMBERS** | |
|---|---|---|
| **Shell Canada Limited** | **Shell Emergency Number** | 1-800-661-7378 |
| P.O. Box 100, Station M | **CANUTEC 24 HOUR EMERGENCY NUMBER** | 613-996-6666 |
| 400-4th Ave. S.W. | | |
| Calgary, AB Canada | For general information: | 1-800-661-1600 |
| T2P 2H5 | For MSDS information: | 403-691-3982 |
| | (From 7:30 to 4:30 Mountain Time) | 403-691-2220 |

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

*An asterisk in the product name designates a trade-mark(s) of Shell Canada Limited, used under license by Shell Canada Products.

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

| Component Name | CAS Number | % Range | WHMIS Controlled |
|---|---|---|---|
| Gasoline, Natural | 8006-61-9 | 80 - 100 | Yes |
| Benzene | 71-43-2 | <1.5 | Yes |

See Section 8 for Occupational Exposure Guidelines.

## 3. HAZARDS IDENTIFICATION

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

**Routes of Exposure:** Exposure may occur via inhalation, ingestion, skin absorption and skin or eye contact.

**Hazards:**

Flammable Liquid.
May cause cancer.
Vapours are moderately irritating to the eyes.
Ingestion may result in vomiting. Avoid aspiration of vomitus into lungs as small quantities may result in aspiration pneumonitis.
May be absorbed by skin contact. Prolonged immersion in liquid may lead to chemical burns.
Vapours are moderately irritating to the respiratory passages. The liquid when accidently aspirated into the lungs can cause a severe inflammation of the lung.
Excessive exposure to benzene may cause leukemia in man.

**Handling:**

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

For further information on health effects, see Section 11.

## 4. FIRST AID

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

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

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

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

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

## 5. FIRE FIGHTING MEASURES

**Extinguishing Media:**

Dry Chemical
Carbon Dioxide
Foam
Water Fog

| | |
|---|---|
| **Firefighting Instructions:** | Extremely flammable. Vapour forms a flammable/explosive mixture with air between upper and lower flammable limits. Vapours may travel along ground and flashback along vapour trail may occur. Product will float and can be reignited on surface of water. Do not use water except as a fog. Container areas exposed to direct flame contact should be cooled with large quantities of water as needed to prevent weakening of container structure. Containers exposed to intense heat from fires should be cooled with water to prevent vapour pressure buildup which could result in container rupture. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus. |
| **Hazardous Combustion Products:** | Carbon dioxide, carbon monoxide and unidentified organic compounds may be formed upon combustion. |

## 6. ACCIDENTAL RELEASE MEASURES

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

## 7. HANDLING AND STORAGE

| | |
|---|---|
| **Handling:** | Extremely flammable. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Avoid all direct contact with this material. Avoid prolonged or repeated inhalation of vapours. Vapours may accumulate and travel to distant ignition sources and flashback. Do not cut, drill, grind, weld or perform similar operations on or near containers. Do not use as a cleaning solvent. Never siphon by mouth. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. Launder contaminated clothing prior to reuse. Wash with soap and water prior to eating, drinking, smoking, applying cosmetics or using toilet facilities. |
| **Storage:** | Store in a cool, dry, well ventilated area, away from heat and ignition sources. Protect against physical damage to containers. |

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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

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

Gasoline: 300 ppm (STEL: 500 ppm)
Benzene (skin) : 0.5 ppm (STEL: 2.5 ppm)
Skin Notation: The occupational exposure limit is based on the fact that skin and/or eye is a major route of exposure through absorption.

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

**PERSONAL PROTECTIVE EQUIPMENT:**

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

**Skin Protection:** Impervious gloves should be worn at all times when handling this product. PVC or nitrile rubber gloves are recommended. In confined spaces or where the risk of skin exposure is much higher, impervious clothing should be worn. Safety showers should be available for emergency use.

**Respiratory Protection:** If exposure exceeds occupational exposure limits, use an appropriate NIOSH-approved respirator. Use a NIOSH-approved chemical cartridge respirator with organic vapour cartridges. For high airborne concentrations, use a NIOSH-approved supplied-air respirator, either self-contained or airline breathing apparatus, operated in positive pressure mode.

## 9. PHYSICAL DATA

| | |
|---|---|
| **Physical State:** | Liquid |
| **Appearance:** | Clear |
| **Odour:** | Typical Gasoline Odour |
| **Odour Threshold:** | <0.25 ppm |
| **Freezing/Pour Point:** | Not available |
| **Boiling Point:** | 35 - 220 degrees C |
| **Density:** | 720 - 730 kg/m3 @ 15 degrees C |
| **Vapour Density (Air = 1):** | 3.5 |
| **Vapour Pressure (absolute):** | Not available |
| **pH:** | Not applicable |
| **Flash Point:** | Method Tag Closed Cup -30 degrees C |
| **Lower Explosion Limit:** | 1.4 % (vol.) |
| **Upper Explosion Limit:** | 7.6 % (vol.) |
| **Autoignition Temperature:** | 280 degrees C |
| **Viscosity:** | <1 cSt @ 38 degrees C |
| **Evaporation Rate (n-BuAc = 1):** | Not available |
| **Partition Coefficient ($K_{ow}$):** | 200 |
| **Water Solubility:** | Insoluble |
| **Other Solvents:** | Hydrocarbon Solvents |

## 10. STABILITY AND REACTIVITY

| | |
|---|---|
| **Chemically Stable:** | Yes |
| **Hazardous Polymerization:** | No |
| **Sensitive to Mechanical Impact:** | No |
| **Sensitive to Static Discharge:** | Yes |
| **Incompatible Materials:** | Avoid strong oxidizing agents. |

**Conditions of Reactivity:** Avoid excessive heat, formation of vapours or mists.

## 11. TOXICOLOGICAL INFORMATION

| Ingredient (or Product if not specified) | Toxicological Data |
|---|---|
| Gasoline, Natural | LD50 Oral Rat = 18800 mg/kg |
| | LD50 Dermal Rabbit >8000 mg/kg |
| Benzene | LD50 Oral Rat = 930 - 5600 mg/kg |
| | LC50 Inhalation Rat = 13700 ppm for 4 hours |

**Routes of Exposure:** Exposure may occur via inhalation, ingestion, skin absorption and skin or eye contact.

**Irritancy:** Based on testing with similar materials, this product is not expected to be a primary skin irritant after exposure of short duration, would not be a skin sensitizer and would not be irritating to the eye.

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

**Carcinogenicity and Mutagenicity:** According to the International Agency for Research on Cancer (IARC) this product is considered to be possibly carcinogenic to humans. Epidemiological studies indicate that long term inhalation of benzene vapour can cause leukaemia in man. Benzene has also produced chromosomal aberrations in peripheral blood lymphocytes.

## 12. ECOLOGICAL INFORMATION

**Environmental Effects:** Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Block off drains and ditches. Provincial regulations require and federal regulations may require that environmental and/or other agencies be notified of a spill incident. Spill area must be cleaned and restored to original condition or to the satisfaction of authorities. May be harmful to aquatic life. Fish Toxicity: 5 to 40 ppm | 96 hr TLm | Rainbow Trout | Freshwater

**Biodegradability:** Not readily biodegradable. Potential for bioaccumulation. Rapid volatilization.

## 13. DISPOSAL CONSIDERATIONS

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

## 14. TRANSPORTATION INFORMATION

**Canadian Road and Rail Shipping Classification:**

| | |
|---|---|
| UN Number | UN1203 |

| | |
|---|---|
| Proper Shipping Name | GASOLINE |
| Hazard Class | Class 3 Flammable Liquids |
| Packing Group | PG II |
| Additional Information | Marine Pollutant |
| Shipping Description | GASOLINE Class 3 UN1203 PG II<br>Marine Pollutant |

## 15. REGULATORY INFORMATION

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

| | |
|---|---|
| **WHMIS Class:** | Class B2 Flammable Liquid<br>Class D2A Other Toxic Effects - Carcinogen |
| **DSL/NDSL Status:** | This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act. This product and/or all components are listed on the U.S. EPA TSCA Inventory. |
| **Other Regulatory Status:** | No Canadian federal standards. |

## 16. ADDITIONAL INFORMATION

**LABEL STATEMENTS**

| | |
|---|---|
| **Hazard Statement :** | Flammable Liquid.<br>May cause cancer. |
| **Handling Statement:** | Eliminate all ignition sources.<br>Wear suitable gloves and eye protection.<br>Bond and ground transfer containers and equipment to avoid static accumulation.<br>Avoid prolonged exposure to vapours.<br>Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames. |
| **First Aid Statement :** | Wash contaminated skin with soap and water.<br>Flush eyes with water.<br>If overcome by vapours remove to fresh air.<br>Do not induce vomiting.<br>Obtain medical attention. |
| **Revisions:** | This MSDS has been reviewed and updated.<br>Changes have been made to:<br>Section 1<br>Section 2<br>Section 14 |

# IMPERIAL OIL
# MATERIAL SAFETY DATA SHEET

## TURBINE FUEL TYPE AVIATION, WIDE CUT

Date Prepared: December 03, 2003
Superseded: May 31, 2003
MSDS Number: 08524

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## 1. PRODUCT INFORMATION

Product Identifier: TURBINE FUEL AVIATION, WIDE CUT TYPE
ESSO TURBO FUEL B
ESSO JET B
JET B
TURBO FUEL B
TURBO FUEL B F40
TURBO FUEL B JP4
ESSO TURBO FUEL B (FSII)
JET B (FSII)
AVIATION TURBINE FUEL (JP4)
CAN/CGSB-3.22 GRADE F40
ESSO JET B (FSII)

Application and Use:
Aviation turbine fuel

Product Description:

A mixture of aliphatic and aromatic hydrocarbons and additives.

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REGULATORY CLASSIFICATION

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

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

TDG INFORMATION (RAIL/ROAD):

| | |
|---|---|
| Shipping Name: | FUEL, AVIATION, TURBINE ENGINES |
| Class: | 3 |
| Packing Group: | II |
| PIN Number: | UN1863 |
| Marine Pollutant: | Not applicable |

Please be aware that other regulations may apply.

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TELEPHONE NUMBERS MANUFACTURER/SUPPLIER:

| | | |
|---|---|---|
| Emergency 24 hr. | (519) 339-2145 | IMPERIAL OIL |
| Technical Info. | (800) 268-3183 | Products Division |
| | | 111 St Clair Avenue West |
| | | Toronto, Ontario |
| | | M5W 1K3 |
| | | (416) 968-4441 |

## 2. REGULATED COMPONENTS

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

| NAME | % | CAS # | |
|---|---|---|---|
| Kerosene, straight run | 40-70 V/V | 8008-20-6 | LD50:>5g/kg,oral,rat |
| Naphtha, full range | 30-60 V/V | 64741-42-0 | |
| Diethylene glycol monomethyl ether | 0-0.15 V/V | 111-77-3 | LD50:7g/kg,orl,rat<br>LD50:>2.0/kg,skn.rbt |

## 3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: 0.60 cSt at 40 deg C
Vapour Density: 4
Boiling Point: 40 to 270 deg C
Evaporation rate: <1 (1= n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: -58 deg C ASTM D 2386
Odour Threshold: not available
Vapour Pressure: 21 kPa at 38 deg C
Density: 0.78 g/cc at 15 deg C
Appearance/odour: White or pale yellow liquid, petroleum odour

## 4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

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

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

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

INGESTION:

Low toxicity.

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

CHRONIC:

Contains benzene. Human health studies (epidemiology) indicate that prolonged and/or repeated overexposures to benzene may cause damage to the blood producing system and serious blood disorders, including leukemia.
Animal tests suggest that prolonged and/or repeated overexposures to benzene may damage the embryo/fetus. The relationship of these animal studies to humans has not been fully established.
Contains n-hexane. Prolonged and/or repeated exposures may cause damage to the peripheral nervous system (e.g. fingers, feet, arms etc.).
Contains diethylene glycol monomethyl ether (DIEGME). Prolonged and repeated exposure through inhalation or extensive skin contact with DIEGME may result in toxic effects on the kidneys, the reproductive system and/or the embryo/fetus.

ACUTE TOXICITY DATA:

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

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

OCCUPATIONAL EXPOSURE LIMIT:

Manufacturer Recommends:
100 ppm based on composition.

ACGIH recommends:
For n-Hexane (skin), 50 ppm (176 mg/m3).
For Benzene, ACGIH recommends a TWA of 0.5 ppm (1.6 mg/m3), (skin), and categorizes it as a confirmed human carcinogen.

Local regulated limits may vary.

## 5. FIRST AID MEASURES

INHALATION:

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

EYE CONTACT:

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

SKIN CONTACT:

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

INGESTION:

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

## 6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.
In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves.
Where only incidental contact is likely, wear safety goggles, long sleeves, and chemical-resistant gloves.
Where concentrations in air may exceed the occupational exposure limits given in Section 4 and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

ENGINEERING CONTROLS:

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

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care.
Store in a cool, well ventilated place away from incompatible materials.
In keeping with good personal hygiene practices, wash hands thoroughly after handling the material.
Store and load at normal (up to 38 deg C) temperature and at atmospheric pressure.
Material will accumulate static charges which may cause a spark. Static charge build-up could become an ignition source. Use proper relaxation and grounding procedures.
Empty containers may contain product residue. Do not pressurize cut, heat, or weld empty containers. Do not reuse empty containers without commercial cleaning or reconditioning.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard.
Vapours or dust may be harmful or fatal. Warn occupants of downwind areas.

Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust.
Recover by pumping (use an explosion proof motor or hand pump), or by using a suitable absorbent.
Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately.
Take all additional action necessary to prevent and remedy the adverse effects of the spill.

WATER SPILL:

Eliminate all sources of ignition. Vapours or dust may be harmful or fatal. Warn occupants and shipping in downwind areas.
Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately.
Take all additional action necessary to prevent and remedy the adverse effects of the spill.

## 7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: -18 deg C COC ASTM D92

Autoignition: NA Flammable Limits: LEL: 0.6% UEL: 8.0%

GENERAL HAZARDS:

Extremely flammable; material will readily ignite at normal temperatures.
Flammable Liquid; may release vapours that form flammable mixtures at or above the flash point.
Decomposes; flammable/toxic gases will form at elevated temperatures (thermal decomposition).
Toxic gases will form upon combustion.
Static Discharge; material may accumulate static charges which may cause a fire.

FIRE FIGHTING:

# Shell Canada Limited
## Material Safety Data Sheet

Effective Date: 2002-08-14
Supersedes: 2001-01-08

Class A Compressed Gas

Class B1 Flammable Gas

Class B2 Flammable Liquid

## 1. PRODUCT AND COMPANY IDENTIFICATION

| | |
|---|---|
| PRODUCT: | **PROPANE** |
| SYNONYMS: | Dimethylmethane |
| PRODUCT USE: | Fuel |
| MSDS Number: | 251-300 |

**MANUFACTURER**
**Shell Canada Limited**
P.O. Box 100, Station M
400-4th Ave. S.W.
Calgary, AB Canada
T2P 2H5

**TELEPHONE NUMBERS**

| | |
|---|---|
| **Shell Emergency Number** | 1-800-661-7378 |
| **CANUTEC 24 HOUR EMERGENCY NUMBER** | 613-996-6666 |
| For general information: | 1-800-661-1600 |
| For MSDS information: | 403-691-3982 |
| (From 7:30 to 4:30 Mountain Time) | 403-691-2220 |

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

*An asterisk in the product name designates a trade-mark(s) of Shell Canada Limited, used under license by Shell Canada Products.

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

| Component Name | CAS Number | % Range | WHMIS Controlled |
|---|---|---|---|
| Propane | 74-98-6 | >90 | Yes |
| Propylene | 115-07-1 | <5 | Yes |
| Hydrocarbons, C4 and up | 68476-44-8 | <2.5 | Yes |

See Section 8 for Occupational Exposure Guidelines.

## 3. HAZARDS IDENTIFICATION

**Physical Description:** Liquefied Compressed Gas Colourless Mercaptan Odor.

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

Compressed Gas.
Flammable Gas.
Flammable Liquid.
The gas is an asphyxiant and may also have a mild narcotic effect.
Direct contact with liquefied gas can result in burns to skin and eyes.
Exposure to rapidly expanding gas may cause frost burns to the eyes. As a gas, is non-irritating to the eyes.
Exposure to rapidly expanding gas may cause frost burns to the skin. As a gas, is non-irritating to the skin.
At very high concentrations this product can have an anesthetic (drowsiness, weakness) and asphyxiant effect. As a gas, is non-irritating to the throat. While there is no evidence that exposure to industrially acceptable levels of hydrocarbons have produced cardiac effects in humans, animal studies have shown that inhalation of high vapour levels of low molecular weight hydrocarbons has produced cardiac sensitization. Such sensitization may cause fatal changes in heart rhythms.

**Handling:** Eliminate all ignition sources.
Wear insulated gloves to avoid freezing burns from liquid.
Wear an approved respirator to prevent overexposure.
Bond and ground transfer containers and equipment to avoid static accumulation.
Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

For further information on health effects, see Section 11.

## 4. FIRST AID

**Eyes:** Flush eyes with water for at least 15 minutes while holding eyelids open. If frostbite or burn occurs, get medical attention.

**Skin:** If victim has received cold burns, treat by immersing in lukewarm water (32 to 43 deg C) for 30-45 minutes. Remove contaminated clothing unless stuck to a burn area in which case cut around it. Obtain medical attention as soon as possible after first aid has been initiated and completed.

**Ingestion:** Not applicable.

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

**Notes to Physician:** Inhalation of product may have a narcotic effect. Assess central nervous system and cardio-respiratory status.

## 5. FIRE FIGHTING MEASURES

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

**Firefighting Instructions:** Extremely flammable. Vapour forms a flammable/explosive mixture with air between upper and lower flammable limits. Evacuate hazard area. Vapours may travel along ground and flashback along vapour trail may occur. Containers exposed to intense heat may rupture. Allow gas to burn if flow cannot be shut off safely. Use water fog to disperse vapours. Containers exposed to intense heat from fires should be cooled with water to prevent vapour pressure buildup which could result in container rupture. Container areas exposed to direct flame contact should be cooled with large quantities of water as needed to prevent weakening of container structure. Always stay away from ends of containers due to explosive potential. Fight fire from maximum distance. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus. Shut off source of gas.

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

## 6. ACCIDENTAL RELEASE MEASURES

Issue warning "Flammable". Evacuate personnel not equipped with protective clothing and NIOSH approved respiratory protection. Isolate hazard area and restrict access. Avoid direct contact with material. Stop leak only if safe to do so. Eliminate all ignition sources. Handling equipment must be grounded. Use water fog to knock down vapours; contain runoff.

## 7. HANDLING AND STORAGE

**Handling:** Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Vapours may accumulate and travel to distant ignition sources and flashback. Do not cut, drill, grind, weld or perform similar operations on or near containers. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. Do not pressurize drum containers to empty them. Hot surfaces may be sufficient to ignite liquid even in the absence of sparks or flames. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapours are gone. Vapours are heavier than air and will settle and collect in low areas and pits, displacing breathing air.

**Storage:** Store cylinders upright, secured in position with cylinder valve cap on. Store in a cool, dry, well ventilated area, away from heat and ignition sources. Protect against physical damage to containers.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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

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

Propane: 2500 ppm

**Mechanical Ventilation:** Use explosion-proof ventilation as required to control vapour concentrations. Make up air should always be supplied to balance air exhausted (either generally or locally). For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere.

**PERSONAL PROTECTIVE EQUIPMENT:**

**Eye Protection:** Chemical safety goggles should be worn. Provide an eyewash station in the area.

**Skin Protection:** Due to cryogenic properties of liquid product wear insulated gloves suitable for low temperatures, and coveralls. Safety showers should be available for emergency use.

**Respiratory Protection:** Use a NIOSH-approved chemical cartridge respirator with organic vapour cartridges or use a NIOSH-approved supplied-air respirator. For high airborne concentrations, use a NIOSH-approved supplied-air respirator, either self-contained or airline breathing apparatus, operated in positive pressure mode.

## 9. PHYSICAL DATA

| | |
|---|---|
| **Physical State:** | Liquefied Compressed Gas |
| **Appearance:** | Colourless |
| **Odour:** | Mercaptan Odor. |
| **Odour Threshold:** | Not available |
| **Freezing/Pour Point:** | <-188 degrees C |
| **Boiling Point:** | -42 degrees C |
| **Density:** | Not available |
| **Vapour Density (Air = 1):** | 1.5 |
| **Vapour Pressure (absolute):** | >400 mm Hg @ -56 degrees C |
| **pH:** | Not applicable |
| **Flash Point:** | Method Tag Closed Cup -104 degrees C |
| **Lower Explosion Limit:** | 2.1 % (vol.) |
| **Upper Explosion Limit:** | 9.5 % (vol.) |
| **Autoignition Temperature:** | 432 degrees C |
| **Viscosity:** | Not applicable |
| **Evaporation Rate (n-BuAc = 1):** | Not available |
| **Partition Coefficient ($K_{ow}$):** | 229 |
| **Water Solubility:** | Slight |
| **Other Solvents:** | Alcohol, Ether |
| **Molecular Weight:** | 44.1 grams |
| **Formula:** | CH3CH2CH3 |

## 10. STABILITY AND REACTIVITY

| | |
|---|---|
| **Chemically Stable:** | Yes |
| **Hazardous Polymerization:** | No |
| **Sensitive to Mechanical Impact:** | No |
| **Sensitive to Static Discharge:** | Yes |
| **Incompatible Materials:** | Avoid strong oxidizing agents. |
| **Conditions of Reactivity:** | Avoid excessive heat, open flames and all ignition sources. May explode if ignited in an enclosed area. |

## 11. TOXICOLOGICAL INFORMATION

| Ingredient (or Product if not specified) | Toxicological Data |
|---|---|
| Propane | |
| Propylene | |
| Hydrocarbons, C4 and up | |

**Routes of Exposure:** Exposure will most likely occur through skin contact or inhalation.
**Irritancy:** No irritation effects with the gas have been reported but in liquid form contact with skin or eyes may result in freezing burns.

## 12. ECOLOGICAL INFORMATION

**Environmental Effects:** Provincial regulations require and federal regulations may require that environmental and/or other agencies be notified of a spill incident.
**Biodegradability:** Not available. Rapid volatilization.

## 13. DISPOSAL CONSIDERATIONS

Incinerate at a licenced waste disposal site with approval of environmental authority.

## 14. TRANSPORTATION INFORMATION

**Canadian Road and Rail Shipping Classification:**

| | |
|---|---|
| UN Number | UN1075 |
| Proper Shipping Name | LIQUEFIED PETROLEUM GAS, NOT ODORIZED |
| Hazard Class | Class 2.1 Flammable Gases |
| Shipping Description | LIQUEFIED PETROLEUM GAS, NOT ODORIZED Class 2.1 UN1075 |

## 15. REGULATORY INFORMATION

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

**WHMIS Class:** Class A Compressed Gas
Class B1 Flammable Gas
Class B2 Flammable Liquid
**DSL/NDSL Status:** This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act. This product and/or all components are listed on the U.S. EPA TSCA Inventory.
**Other Regulatory Status:** No Canadian federal standards.

## 16. ADDITIONAL INFORMATION





**LABEL STATEMENTS**
**Hazard Statement :** Compressed Gas.
Flammable Gas.
Flammable Liquid.
The gas is an asphyxiant and may also have a mild narcotic effect.
Direct contact with liquefied gas can result in burns to skin and eyes.

**Handling Statement:** Eliminate all ignition sources.
Wear insulated gloves to avoid freezing burns from liquid.
Wear an approved respirator to prevent overexposure.
Bond and ground transfer containers and equipment to avoid static accumulation.
Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

| | |
|---|---|
| | liquid residue or vapours. Keep away from sparks and open flames. |
| **First Aid Statement :** | If overcome by vapours remove to fresh air.<br>Treat freezing burns by immersing in lukewarm water.<br>Obtain medical attention. |
| **Revisions:** | This MSDS has been reviewed and updated.<br>Changes have been made to:<br>Section 11<br>Section 14 |