Propane (Odorized)

IMPFERIAL OIL: COMMERCIAL PROPANE (ODORIZED)

SIGNS & SYMPTOMS OF EXPOSURE

- INHALATION: May cause central nervous system disorder (e.g. loss of coordination, weakness, fatigue, mental confusion and blurred vision) and/or damage.

  Breathing high vapour concentrations (saturated vapours) for a few minutes may be fatal. Saturated vapours can be encountered in confined spaces and/or under conditions of poor ventilation. May cause irritation, breathing failure, coma and death without any warning odour being sensed. Inhalation exposure to this product at extremely high concentrations, as in accidental releases in which concentrations reach or exceed the flammable range, may result in cardiac arrhythmias

  EYE CONTACT: Exposure to rapidly expanding gas or vapourizing liquid may cause frostbite (cold burns) and permanent eye damage.

  SKIN CONTACT: Exposure to rapidly expanding gas or vapourizing liquid may cause frostbite (cold burn)

FIRST AID

Emergency 24 hr. (519) 339-2145 IMPERIAL OIL

Technical Info. (800) 268-3183 Products Division

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: In case of cold burns caused by rapidly expanding gas or vapourizing liquid, get prompt medical attention.
- SKIN CONTACT: In case of cold burns caused by rapidly expanding gas or vapourizing Liquid, get prompt medical attention.
- INGESTION: First aid is not applicable

IMPERIAL OIL: COMMERCIAL PROPANE (ODORIZED)

MSDS Safety Information

MSDS Number: 08515

CAUTION: " The information contained herein relates only to this product or material and may not be valid when used in combination with any other product or material or in any process. If the product is not to be used for a purpose or under conditions which are normal or reasonably foreseeable, this information cannot be relied upon as complete or applicable. For greater certainty, uses other than those described in Section 1 must be reviewed with the supplier. The information contained herein is based on the information available at the indicated date of preparation. This MSDS is for the use of Imperial Oil customers and their employees and agents only. Any further distribution of this MSDS by Imperial Oil customers is prohibited without the written consent of Imperial Oil "

WHMIS:

Class A - Compressed Gas

Class B, Division 1: Flammable Gases.

Ingredients

Colourless gases composed mainly of C3 hydrocarbons stored and handled as liquids under pressure

NAME	%	CAS #
Propane	90-99 V/V	74-98-6
Propylene	1-10 V/V	115-07-1
Ethane	0-5 V/V	74-84-0
Isobutane	0-2.5 V/V	75-28-5
Butanes	0-2.5 V/V	68513-65-5

Contractor Summary

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 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: Liquefied petroleum gas (propane)

Class: 2.1

Packing Group: -

PIN Number: UN1075

Physical/Chemical Properties

Physical State: Gas Specific gravity: not available

Viscosity: 0.50 cSt at 15 deg C Vapour Density: 1.52

Boiling Point: -42 deg C

Evaporation rate: >1 (1= n-butylacetate) Solubility in water: negligible

Freezing/Pour Point: not available Odour Threshold: not available

Vapour Pressure: 850 kPa at 15 deg C Density: 0.51 g/cc at 15 deg C

Appearance/odour: Colourless gas, stenched to allow detection of leaks.

Health Hazards Data

INHALATION: May cause central nervous system disorder (e.g. loss of coordination, weakness, fatigue, mental confusion and blurred vision) and/or damage.

Breathing high vapour concentrations (saturated vapours) for a few minutes may be fatal. Saturated vapours can be encountered in confined spaces and/or under conditions of poor ventilation. May cause irritation, breathing failure, coma and death without any warning odour being sensed. Inhalation exposure to this product at extremely high concentrations, as in accidental releases in which concentrations reach or exceed the flammable range, may result in cardiac arrhythmias.

EYE CONTACT: Exposure to rapidly expanding gas or vapourizing liquid may cause frostbite (cold burns) and permanent eye damage.

SKIN CONTACT: Exposure to rapidly expanding gas or vapourizing liquid may cause frostbite (cold burn).

INGESTION: Not considered to be a hazard.

ACUTE TOXICITY DATA: The above evaluation of hazard is based on knowledge of the toxicity of the material's components.

OCCUPATIONAL EXPOSURE LIMIT: Manufacturer recommends: For Isobutane, 800 ppm. For Propane, 1000 ppm TWA for 8 hours/day, and 1500 ppm for a 15 minute short term exposure (STEL). For propylene, 1000 ppm 8-hour TWA and 3000 ppm 15-minute STEL.ACGIH recommends: For Butane, 800 ppm (1900 mg/m3). Local regulated limits may vary.

Handling and Disposal

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care. Store in a cool, well ventilated place away from incompatible materials.Store as pressurized liquid in a pressure vessel. Store and load the container 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. Allow to evaporate. 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. Allow to evaporate from surface.

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.

Fire and Explosion Hazard Information

Flashpoint and method: -103 deg C COC ASTM D92 Autoignition: 432 deg C Flammable Limits: LEL: 2.4% UEL: 9.5% GENERAL HAZARDS: Extremely flammable; material will readily ignite at normal temperatures. Flammable Gas; may readily form flammable mixtures at or above the flash point. Toxic gases will form upon combustion. Static Discharge; material may accumulate static charges which may cause a fire. Auto-refrigeration; drains may become plugged and valves may become inoperable because of the formation of ice due to expanding vapours or vapourizing liquids. FIRE FIGHTING: Use water spray to cool fire exposed surfaces and to protect personnel. Shut off fuel to fire if possible to do so without hazard. If a leak or spill has not ignited use water spray to disperse the vapours. Do not extinguish flames at leak because possibility of uncontrolled explosive re-ignition exists. Cut off fuel and/or allow fire to burn out. Extinguish small residual fires with dry chemical powder or water spray. Try to cover liquid spills with foam. Respiratory and eye protection required for fire fighting personnel. A self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA may not be required. HAZARDOUS COMBUSTION PRODUCTS: Smoke, carbon monoxide, carbon dioxide under thermal decomposition. REACTIVITY DATA STABILITY: This product is stable. Hazardous polymerization will not occur. INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID: Strong oxidizing agents

Control Measures PERSONAL PROTECTION: The selection of personal protective equipment varies, depending upon conditions of use. In open systems where contact is likely, wear gas-proof goggles, face shield chemical-resistant overalls, and appropriate thermal/chemical gloves. Where skin and eye contact is unlikely, but may occur as a result of short and/or periodic exposures, wear long sleeves, chemical resistant gloves, gas-proof goggles, and a face shield. 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.

NOTES All components of this product are listed on the U.S. TSCA inventory. Imperial Oil has no knowledge how its customers will handle, store, transfer, distribute or use odourized propane or non-odourized propane and therefore makes no warranty regarding the propane or the odourant after the custody of these materials passes to the customers. It is recommended that Imperial Oil's customers provide their employees and subsequent customers with information regarding the characteristics of propane, how those characteristics relate to the employees or customers use including the limitation in detecting non-odourized or odourized propaneand the limitations of any odourant such as ethyl mercaptan that may be addeduring subsequent distribution. With proper handling, transportation and storage, adding a chemical odourant such as ethyl mercaptan has proven to be a very effective warning device but all odourants have certain limitations. The effectiveness of the odourant may be diminished by a person's sense of smell, by competing odours and by oxidation which may cause a potentially dangerous situation. Further safety related information is contained on the Material Safety Data Sheet. Industry experience has shown that natural gas streams may contain trace amounts of radon, a naturally occurring radioactive gas, and radioactive particulate decay products which can accumulate in process equipment and storage vessels. These materials emit gamma, alpha, and beta forms of radiation. Since gamma radiation can penetrate the walls of intact equipmenta potential for exposure could exist at or adjacent to the external surface of process equipment that contain radon-enriched process streams or accumulated deposits of radon decay products. Equipment emitting gamma radiation at dose rates above background should be assumed to be contaminatewith internal deposits of alpha-and beta-emitting radon decay products. Measures should be taken to preclude the inhalation or ingestion of alpha- Of beta-emitting materials. Before performing maintenance on contaminated equipment, all process shut-down safety and "gas freeing" procedures should be followed and at least a 4 hour lapse should be allowed between process stream shut-down and the opening of equipment for repair operations. This time will allow the gamma radiation dose rates to be reduced to background levels. Maintenance personnel should wear appropriate personal protective equipment and follow recommended industrial hygiene/safety and environmental procedures in accordance with prevailing regulations and industry guidelines