

# MATERIAL SAFETY DATA SHEET

## SECTION I – PRODUCT INFORMATION

**Product Name:** Propane

**Trade Name:** LPG (Liquefied Petroleum Gas)

**Chemical Formula:** C<sub>3</sub>H<sub>8</sub>

**WHMIS Classification:** Class A – Compressed Gas  
Class B, Division I – Flammable Gas

**Supplier:**

**Business:**

**Non Medical Emergency:**

**Uses and Occurrence:** Propane is commonly used as fuel for heating, cooking, automobiles, forklift trucks, crop drying and welding and cutting operations. Propane is used in industry as a refrigerant, solvent and as a chemical feedstock.

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT

All components of this product are either on the Domestic Substances List (DSL) or are exempt.

## SECTION II – HAZARDOUS INGREDIENTS

Components	CAS Registry No.	Proportion of Product	LC50	LD50
Propane	74986	95% - 98%	N/A	N/A
Ethane	74840	3% - 5%	N/A	N/A
Butane	791068	1% - 3%	N/A	N/A
Iso-Butane	75285	0.1% - 0.3%	N/A	N/A
Methane	74828	0.1% - 0.2%	N/A	N/A

**Note:** Composition given is typical for Grade 1 Propane; exact composition will vary from shipment to shipment.

- Explanation for change – HD5 refers to American specification, Grade 1 is Canadian equivalent in CGSB 3.14 Standard

### SECTION III – CHEMICAL AND PHYSICAL DATA

**Form:** While stored under pressure – liquid and/or vapour

**Boiling Point:** -42 °C atm

**Freezing Point:** -188 °C

**Evaporation Rate:** Rapid (Gas at Normal Ambient Conditions)

**Vapour Pressure:** 1,013 (kPa) @ 26.0 °C

**Vapour Density:** 1.52 (Air = 1)

**Coefficient of Water/Oil Distribution:** Not available

**PH:** Not available

**Soluble in Water:** 6.1% by Volume @ 17.8 °C and 753 mmHg

**Specific Gravity:** 0.51 (Water = 1)

**Appearance:** Colourless liquid and vapour while stored under pressure.

Colourless and odourless gas in natural state at any concentration.

Commercial propane has an odourant added which is commonly ethyl mercaptan which has an odour similar to boiling cabbage or rotten eggs.

**Odour Threshold:** 4800 PPM

*See Note 1 - Odourants*

### SECTION IV – FIRE OR EXPLOSION HAZARD DATA

**Flash Point:** -103.4 °C      **Method:** Closed Cup

**Flammable Limits:** Lower 2.4%, Upper 9.5%

**Auto Ignition Temperature:** 432 °C

**Products Evolved Due to Heat or Combustion:**

Carbon monoxide can be produced when primary and secondary airs are deficient while combustion is taking place.

**Fire and Explosive Hazards:** Explosive air-vapour mixtures may form if allowed to leak to atmosphere.

**Sensitivity to Impact:** No

**Sensitivity to Static Discharge:** Yes

**Fire Extinguishing Precautions:** Use water spray to cool exposed cylinders or tanks. Do not extinguish fire unless the source of the escaping gas that is fuelling the fire can be turned off. Fire can be extinguished with carbon dioxide and/or dry chemical (BC). Container metal shells require cooling with water to prevent flame impingement and the weakening of metal. If weakening, the area must be evacuated. If gas has not ignited, liquid and vapour may be dispersed by water spray or flooding.

**Special Fire Fighting Equipment:** Protective clothing, hose monitors, fog nozzles, self contained breathing apparatus.

### SECTION V – REACTIVITY DATA

**Stability:** Stable

**Conditions to Avoid:** Keep separate from oxidizing agents. Gas explodes spontaneously when mixed with chlorine dioxide.

**Incompatibility:** Remove sources of ignition and observe distance requirements for storage tanks

from combustible material, drains, and openings to buildings.

**Hazardous Decomposition Products:** Deficient primary and secondary air can produce carbon monoxide.

**Hazardous Polymerization:** Will not occur.

### SECTION VI – TOXICOLOGICAL PROPERTIES OF MATERIAL

## ACUTE EXPOSURE:

**Eyes:** As a gas, none, Liquid causes “cold burns”.

**Respiratory System:** Little physiological effect at concentrations below 10,000 PPM. Higher concentrations may cause dizziness and unconsciousness due to asphyxiation. *SEE NOTE 2 – ASPHYXIANT.*

**Chronic Exposure:** There are no reported effects from long-term low-level exposure.

**Other:** Liquid can cause burns and frostbite if in direct contact with skin.

**Sensitization Properties:** Skin – unknown,  
Respiratory – unknown.

**Carcinogenicity:** Not determined. *SEE NOTE 3 (NORM).*

## MEDIAN LETHAL DOSE:

**Oral:** Not applicable for gas.

**Inhalation:** Not determined.

**Dermal:** Not applicable for gas.

**Other:** Not determined.

## IRRITATION INDEX:

**Skin:** No appreciable effect (gas).

**Eyes:** No appreciable effect (gas).

**Symptoms of Exposure:** Above 10,000 PPM – dizziness, stupor, unconsciousness. *SEE NOTE 2 attached.* American Conference of Governmental Industrial Hygienists (ACGIH) classifies propane as an asphyxiate; there is no recommended “Threshold Limit Value” (TLV).

**Teratogenicity:** Not determined.

**Mutagenicity:** Not determined.

## SECTION VII – OCCUPATION CONTROL PROCEDURES

**Eyes:** Safety glasses, goggles, or face shield required when transferring product.

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

**Inhalation:** In atmosphere, where the concentration of propane would reduce oxygen

level below 18% in inhaled air, self contained breathing apparatus required. *SEE NOTE 3 – (NORM).*

**Ventilation:** Explosion proof ventilation equipment required in confined spaces.

## SECTION VIII – EMERGENCY AND FIRST AID PROCEDURES

### FIRST AID:

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

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

### SPILL OR LEAK:

Eliminate leak if possible.

Eliminate source of ignition.

Ensure cylinder is upright.

Disperse vapours with hose streams using fog nozzles, watch for low area, as propane is heavier than air and can settle in low areas. Remain upwind of leak, keep people away.

Prevent vapour and/or liquid from entering into sewers, basements or confined areas.

## SECTION IX – TRANSPORTATION, HANDLING AND STORAGE

- Transport and store cylinders and tanks secured in an upright position in a ventilated space, away from ignition sources (so relief valve is in contact with vapour space of cylinder or tank).
  - Cylinders that are not in use must have the valves in the closed position and be equipped with a protective cap or guard.
  - Do not store with oxidizing agents, oxygen or chlorine cylinders.
- Transport, handle and store according to applicable federal and provincial regulations (CGA B149.2). **SEE NOTE 4 – MAGNETIC RESIDUES.**

**TDG Classification:** 2.1 (gas)

**TDG Shipping Name:** Liquid Petroleum Gas (Propane)

**TDG Special Provisions:** 56, 90, and 102

**PIN UN:** 1075

## **SECTION X – PREPARTATION INFORMATION**

**Prepared by:** Propane Gas Association of Canada  
(403) 543-6500

**Date prepared:** April 2010

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

This information is in addition to the information supplied on the MSDS and forms a part of the MSDS by reference to note numbers indicated:

**NOTE 1 ODOURANTS:**

Odourants are not completely effective warning agents in all cases.

Certain odourants are polar and/or chemically reactive and may be depleted by reaction or absorption.

Sensitivity to odourants differs from person to person and may decrease with age or impaired physical conditions such as colds or respiratory allergies.

Prolonged exposure to odourants can create desensitization to the odour.

**NOTE 2 ASPHYXIAN AND NARCOTIC EFFECTS OF PROPANE:**

LPG's can displace air and can act as an asphyxiant. Lack of oxygen may cause dizziness, headaches, diminished awareness, faulty judgment, increase in fatigue and impaired muscular coordination. If these symptoms are identified while working in close proximity to propane that is released, go immediately into a fresh air environment.

LPG's are anaesthetic gases within the upper explosive limits and higher concentrations. A person working around propane in an enclosed space or in close proximity to a propane source such as filling cylinders, purging lines, investigating leaks, etc. who feels light-headed, dizzy, drunken, sleepy, or intoxicated should go immediately into fresh air. This narcotic effect may impair a person's judgment temporarily but will rapidly disappear in fresh air.

**NOTE 3 NATURALLY OCCURRING RADIOACTIVE MATERIAL (NORM):**

Sludges and tank scale from propane storage tanks, bulk delivery truck tanks, railway tank cars, and fuel filters and strainers screens may contain Naturally Occurring Radioactive Material (NORM) in the form of lead 210.

Equipment used for the transfer of propane such as propane piping and hoses, pumps and compressors may have detectable levels of radioactive lead 210 on inner surfaces.

Workers involved in cleaning, repair or maintenance on inner surfaces of such equipment should avoid breathing dust generated from such activities. Suitable codes of practice should be developed for the activities, detailing appropriate occupational hygiene and disposal practices.

**NOTE 4 MAGNETIC RESIDUES IN PROPANE:**

Magnetic residues generated in automotive fuel tanks from "mill scale" or corrosion processes may impair the operation of magnetic gauges and electronic solenoid valves.

Collection of gross amounts of solid residues can affect the proper operation of lock offs, mixers, pressure release valves, etc.

Solid residues could contain NORM (see note 3).