



## Material Safety Data Sheet

**1. Product and Company Identification**

Product Name: Propane  
Synonym: HD-5 Propane, C3, LPG, Liquefied Petroleum Gases.  
Product use: Chemical feedstock, fuel for space heating, autos, crop drying.  
Supplier/Manufacturer: Gibson Energy ULC  
Address: 1700, 440 2<sup>nd</sup> Ave SW  
Calgary, AB T2P 5E9  
Emergency Contact: 403-206-4000  
Canutec: (613) 996-6666 or Cellular \*666

**2. Hazards Identification****EMERGENCY OVERVIEW**

Danger! This product is extremely flammable! Will be easily ignited by heat, sparks or flames. Will form explosive mixtures with air. Vapours may travel to source of ignition and flash back. Vapours may cause dizziness or asphyxiation without warning. Some may be irritating if inhaled at high concentrations. Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite. Fire may produce irritating and/or toxic gases.

**POTENTIAL HEALTH EFFECTS / ROUTES OF EXPOSURE**

**Eye Contact:** Vapourizing liquid may cause frostbite or cryogenic burns.

**Skin Contact:** This product is a mild skin irritant. Direct contact with liquid will cause cryogenic (freezer) burns or frostbite. The appearance of injury may be delayed for a few hours, but may cause tissue to become swollen, discolored and extremely painful; permanent damage may result without adequate medical treatment.

**Ingestion:** Propane is extremely unlikely to be swallowed and much more likely to be inhaled. Ingestion is highly unlikely.

**Inhalation:** This product is a known simple asphyxiant and displace air. Vapours may cause nose and throat irritation, anesthetic effects and central nervous system (CNS) depression. Inhalation may result in dizziness, drowsiness, headaches, mood disturbances, numbness of the extremities, sleepiness, mental confusion, poor judgment and coordination, and memory loss may occur. An increased pulse rate may occur. Hyperventilation may develop.

**3. Composition/Information on Ingredients**

Ingredient Name	%	CAS No.
Propane	90-99	74-98-6
Ethane	0-5	74-84-0
Butane(s)	0-5	75-28-5
Propylene	0-5	115-07-1



#### 4. First Aid Measures

- Eyes:** In case of contact with eyes, immediately flush with clean, low-pressure water for at least 20 min. Hold eyelids open to ensure adequate flushing. Seek medical attention immediately. Eye damage may occur as contact with liquid may cause cryogenic burns.
- Skin:** This material will cause cryogenic (freezer) burns. Bathe the affected area in warm water as soon as possible. Remove clothing unless stuck to a burn area in which case cut around the burn leaving cloth fixed to the burn. Do not rub burns! Seek medical attention immediately.
- Ingestion:** This product is naturally a gas and is unlikely to be ingested and more likely to be inhaled.
- Inhalation:** Ensure your own safety and use the appropriate respiratory protection to immediately remove the victim to an uncontaminated area. Give CPR or artificial respiration as needed and give oxygen if breathing is difficult. Keep victim at rest and get immediate medical attention.

#### 5. Fire Fighting Measures

##### FLAMMABLE PROPERTIES

Flammable Gas

##### HAZARDOUS COMBUSTION PRODUCTS:

During combustions, carbon dioxide and/or carbon monoxide will be produced.

##### FIRE AND EXPLOSION HAZARDS

This product is **extremely flammable!** Do not extinguish a fire unless leak can be stopped. Containers may explode and will be easily ignited by heat, sparks or flames. Vapours may ignite explosively. Vapours from liquefied gas are initially heavier than air and spread along ground. Vapours may travel to source of ignition and flash back. Vapours may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. Container may explode in heat or fire. Runoff to sewer may cause fire or explosion hazard.

##### EXTINGUISHING MEDIA

**Small Fires:** Use dry chemical or CO<sub>2</sub> fire extinguishers.

**Large Fires:** Dry chemical, foam or CO<sub>2</sub> using the manufacturer's recommended technique. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers. Consider initial downwind evacuation for at least 800 meters (1/2 mile). Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Do not direct water at source of leak or safety devices as icing may occur. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fires, use unmanned hose holders or monitor nozzles. If this is impossible, withdraw from area and let fire burn

##### FIRE FIGHTING INSTRUCTIONS

Small fires in the early stages may typically be extinguished using handheld portable fire



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extinguishers and other fire fighting equipment. Fire fighting may result in potential exposure to high heat, smoke or toxic byproducts of combustion, an approved self-contained breathing apparatus (SCBA) with full-face piece and full protective firefighting clothing should be worn. Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water.

### UNUSUAL FIRE AND EXPLOSION HAZARDS

This product may accumulate static charges which may cause a spark. Containers of pressurized liquefied gasses may explode from heat generated in a fire.

## 6. Accidental Release Measures

### ACTIVATE SITE SPECIFIC EMERGENCY RESPONSE PLAN, IF AVAILABLE.

**Small Leaks:** Remove all ignition sources. Ventilate area of leak. Stop flow of gas. Do not attempt to extinguish a fire unless the leak can be stopped.

**Large Leaks:** CALL Emergency Response Activation Telephone Number. Isolate spill or leak area immediately for at least 800 meters (1/2 mile) in all directions. Evacuate and keep unauthorized personnel away and stay upwind. Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks). Keep out of low areas. The proper use of water spray may effectively disperse product vapours, preventing contact with ignition sources or areas /equipment that require protection. Do not discharge solid water stream pattern into the liquid resulting in splashing. Do not flush down sewer or drainage systems. Protect bodies of water by dyking, if possible.

**Evacuation:** Fire: If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

**Attention:** The application of water and/or fire fighting foam may cause the spilled liquid to liberate increased amounts of vapours, particularly when the water/foam temperature is warmer than the liquid. However, this effect may be desirable under certain conditions to evaporate a spill quickly. Consideration should be given to environmental clean-up and waste material generation when determining if the use of large volumes of water is appropriate for non-fire emergency situations. Clean-up crews must be properly trained and must utilize proper protective equipment.

## 7. Handling and Storage

### HANDLING PRECAUTIONS

Handle as a flammable gas. Keep away from heat, sparks, and open flame. No smoking or open flame in storage, use of handling areas. Keep containers closed and clearly labeled. Bond all containers and transfer vessels when handling. Empty product containers or vessels may contain explosive vapours. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition. Use only with adequate ventilation and avoid breathing vapours. Wash thoroughly after handling. Electrical equipment must be approved for classified areas. An emergency eye wash station should be available in the vicinity of any potential exposure.

### STORAGE PRECAUTIONS

Store in a very well ventilated area. This storage area should comply with applicable



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codes. Avoid storage in low confined locations or near incompatible materials.

### WORK/HYGIENIC PRACTICES

Use good personal hygiene practices. Avoid skin exposure. Do not eat, drink or smoke in areas of use or storage. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapours which could ignite via washer or dryer.

## 8. Exposure Controls / Personal Protection

### Engineering Controls



Use adequate ventilation to keep vapour and gas concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces. Use explosion-proof equipment and lighting where required.

### PERSONAL PROTECTIVE EQUIPMENT



**Eye/Face Protection:** Wear safety glasses with side shields, chemical goggles or a full face shield to avoid burns or tissue damage from frostbite.

**Skin Protection:** Avoid repeated or prolonged skin contact. Wear fire retardant clothing as required. Where the potential for frostbite or cryogenic burns exists use appropriate chemical resistant outwear.

**Note:** The resistance of specific materials may vary from product to product as well as degree of exposure. If the product is sensed inside the glove, the glove could be damaged or the glove material is incorrect for this product.

**Respiratory Protection:** This product is a known asphyxiant and air supplied respirators are required if there is a potential for decreased oxygen concentrations. Use a positive pressure SCBA or SABA, if exposure levels are unknown, or any other circumstance exist where an air-purifying respirator may not provide adequate protection. When assessing the proper type of respiratory protection, also consider the occupational exposure limits applicable to individual ingredients. Refer to CSA Standard "Selection, Use and Care of Respirators" (Z94.4-02) and NIOSH Respirator Decision Logic for additional guidance on respiratory protection.

### Exposure Limits

Ingredient Name	CAS No.	Exposure Limits
Propane	74-98-6	ACGIH TLV-TWA 1,000 ppm (Alkane C1-C4)
Ethane	74-84-0	ACGIH TLV-TWA 1,000 ppm (Alkane C1-C4)
Butane(s)	75-28-5	ACGIH TLV-TWA 1,000 ppm (Alkane C1-C4)
Propylene	115-07-1	Not Applicable



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### 9. Physical and Chemical Properties

Appearance and state:	Colourless gas
Odour:	Odourized gas has sulphur type odour. Non-Odourized gas has slight hydrocarbon odour.
Odour Threshold:	5000 to 20000 ppm (Non-odourized propane)
Flash Point:	-104°C (-156°F) (Propane)
Auto Ignition:	466°C (871°F) (Propane)
Lower Explosive Limit (%):	2.1% (Propane)
Upper Explosive Limit (%):	9.5% (Propane)
Boiling Point:	-42.1°C (-126.4°F) (Propane)
Melting Point:	-187.6°C(-305.68°F) (Propane)
Vapour Pressure:	953 kPa @ 0 °C (7150 mm Hg) (Propane)
Vapour Density (Air = 1):	1.56 @ 0 °C (Propane)
Specific Gravity:	0.493 @ 25°C (Propane)
Solubility (H <sub>2</sub> O):	Slightly soluble (62.4 ppm @25°C) (Propane)
Percent Volatiles:	100%
Evaporation Rate:	Not Applicable
Octanol/Water Coefficient:	log Kow = 2.36 (Propane)

### 10. Stability and Reactivity

#### STABILITY

Stable

#### CONDITIONS TO AVOID (STABILITY)

Material is stable under normal conditions but will rapidly volatilize. Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources.

#### INCOMPATIBLE MATERIALS

Keep away from strong oxidizers and sources of heat or ignition.

#### HAZARDOUS DECOMPOSITION PRODUCTS

Irritating or toxic substances may be emitted upon thermal decomposition.  
Decomposition products include carbon dioxide and carbon monoxide.

#### HAZARDOUS POLYMERIZATION

Will Not Occur.

### 11. Toxicological Information

Ingredient Name	CAS No.	LD50	LC50
Propane	74-98-6	Not applicable	>800000 ppm/15 minutes Rat
Ethane	74-84-0	Not applicable	Not applicable
Butane(s)	75-28-5	Not applicable	LC50 Mouse inhalation 52 mg/L/1 hr
Propylene	115-07-1	Not applicable	LC50 Rat inhalation 658 mg/L/4 hr



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### POTENTIAL HEALTH EFFECTS

**Acute effects:** The product is an asphyxiant and displaces air which can result in suffocation, CNS depression, cardiac sensitization, dizziness, drowsiness, confusion, narcosis and tunnel vision. Contact with the liquid may cause frostbite, dermatitis, numb extremities and muscle weakness. Ingestion of the liquid may cause chemical pneumonia, aspiration, headache, muscle weakness, unconsciousness and peripheral neuropathy.

**Chronic effects:** Simple asphyxiants displace oxygen from the breathing atmosphere primarily in enclosed spaces and result in hypoxia effects including decreased night vision, increased respiration, decreased alertness, fatigue, tunnel vision and headache. Eyes, skin, respiratory system, central nervous system and peripheral nervous system may also be affected.

**Sensitization:** Propane and ethane are considered cardiac sensitizers.

**Mutagenicity:** Not mutagenic.

**Reproductive effects:** Not considered a reproductive hazard.

**Carcinogenicity:** Ingredients are not identified as carcinogens by IARC, NTP or ACGIH.

### 12. Ecological Information

Keep out of sewers and watercourses by dyking or impounding. Advise appropriate authorities of any spills especially if product has entered or may enter sewers, water courses, or extensive land areas. Federal and provincial regulations must be followed in the clean up and disposal of this product and associated wastes.

### 13. Disposal Information

Dispose of waste in accordance with all applicable federal, provincial, and/or local regulations. Containers must be appropriately labeled.

### 14. Transport Information

<b>PROPER SHIPPING NAME:</b>	LIQUEFIED PETROLEUM GASES
<b>TDG CLASS:</b>	2.1
<b>TDG UNNA:</b>	UN1075
<b>TDG SHIPPING LABEL:</b>	FLAMMABLE GAS
<b>SHIPPING DESCRIPTION</b>	LIQUEFIED PETROLEUM GASES, 2.1, UN1075
<b>NAERG Guide</b>	115

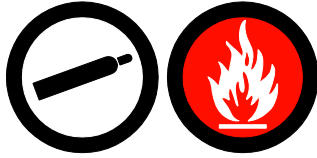
### 15. Regulatory Information

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

Workplace Hazardous Materials Information Systems (WHMIS): This product has been classified in accordance with the hazard criteria of the CPR (Controlled Product Regulations), and the MSDS contains all of the information required by the CPR.



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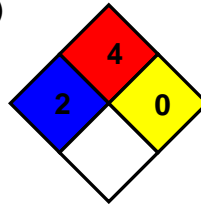


**Class A – Compressed Gas**  
**Class B, D1 – Flammable Gas**

**CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)**

All components of this product are listed on the Canadian DSL Inventory.

**NFPA (National Fire Protection Association)**



**16. Other Information**

Prepared for: Gibson Energy: Health and Safety  
Information contact: 403.206.4000  
Prepared by: Deerfoot Consulting Inc.

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