

Safety Data Sheet E-4646 according to the Hazardous Products Regulation (February 11, 2015) Date of issue: 10-15-1979 Revision date: 01-01-2021 Supersedes: 10-06-2016

SECTION 1: Identification	
1.1. Product identifier	
Product form	: Substance
Trade name	: Liquefied Petroleum Gas
CAS No	: 74-98-6
Formula	: C3H8
Other means of identification	: Propane, Liquefied Petroleum Gas, n-propane, dimethylmethane, propyl hydride, refrigerant gas R290
Product group	: Core Products
1.2. Recommended use and restrictions	on use
Recommended uses and restrictions	: Industrial use Use as directed.
1.3. Supplier	
Linde Canada inc. 1200 – 1 City Centre Drive Mississauga - Canada L5B 1M2 T 1-905-803-1600 - F 1-905-803-1682 www.lindecanada.ca	
1.4. Emergency telephone number	
Emergency number	<ul> <li>1-800-363-0042</li> <li>Call emergency number 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product.</li> <li>For routine information, contact your supplier or Linde sales representative.</li> </ul>
SECTION 2: Hazard identification	
2.1. Classification of the substance or m	ixture
GHS-CA classification         Simple asphyxiant       H380         Flam. Gas 1       H220         Liquefied gas       H280	
2.2. GHS Label elements, including preca	autionary statements
GHS-CA labelling	
Hazard pictograms	
Signal word	GHS02 GHS04 : DANGER
Hazard statements	: EXTREMELY FLAMMABLE GAS CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED MAY CAUSE FROSTBITE. MAY FORM EXPLOSIVE MIXTURES WITH AIR. MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION.
Precautionary statements	<ul> <li>Do not handle until all safety precautions have been read and understood Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.</li> <li>Use and store only outdoors or in a well-ventilated area.</li> <li>LEAKING GAS FIRE: Do not extinguish, unless leak can be stopped safely.</li> </ul>



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	Protect from su	age, eliminate all ignit nlight when ambient t v preventive device in	emperature exceeds 52°C (125°F).
		er each use and wher	
			areas of passenger vehicles. equipment prepared for use.
2.3. Other hazards			
Other hazards not contributing to the classification	: Contact with liq	uid may cause cold b	urns/frostbite.
2.4. Unknown acute toxicity (GHS	CA)		
No data available			
<b>SECTION 3: Composition/inform</b>	nation on ingredien	ts	
3.1. Substances			
Name	CAS No.	% (Vol.)	Common Name (synonyms)
Propane (Main constituent)	(CAS No) 74-98-6	100	Normal propane / PROPANE / n-Propane
3.2. Mixtures			
Not applicable			
SECTION 4: First-aid measures			
4.1. Description of first aid measu			
First-aid measures after inhalation			ea wearing self contained breathing apparatus. Keep r. Apply artificial respiration if breathing stopped.
First-aid measures after skin contact	warm water not skin. Maintain s returned to the	to exceed 105°F (41 skin warming for at le affected area. In case	xposure to liquid, immediately warm frostbite area with °C). Water temperature should be tolerable to normal ast 15 minutes or until normal coloring and sensation have of massive exposure, remove clothing while showering uation and treatment as soon as possible.
First-aid measures after eye contact	away from the e	eyeballs to ensure that	ith water for at least 15 minutes. Hold the eyelids open and at all surfaces are flushed thoroughly. Contact an mediate medical attention.
First-aid measures after ingestion	: Ingestion is not	considered a potentia	al route of exposure.
4.2. Most important symptoms an	d effects (acute and dela	yed)	
No additional information available			

4.3.	Immediate medical attention and special treatment, if necessary

None.

Other medical advice or treatment	:

SECTION 5: Fire-fighting measures		
5.1. Suitable extinguishing me	dia	
Suitable extinguishing media	: Carbon dioxide. Dry chemical. Water spray. Foam.	
5.2. Unsuitable extinguishing	media	
No additional information available		
5.3. Specific hazards arising fi	om the hazardous product	
Fire hazard	: <b>EXTREMELY FLAMMABLE GAS</b> . If venting or leaking gas catches fire, do not extinguish flames. Flammable vapors may spread from leak, creating an explosive reignition hazard. Vapors can be ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharge, or other ignition sources at locations distant from product handling point. Explosive atmospheres may linger. Before entering an area, especially a confined area, check the atmosphere with an appropriate device.	
Explosion hazard	: EXTREMELY FLAMMABLE GAS. Forms explosive mixtures with air and oxidizing agents.	
Reactivity	: No reactivity hazard other than the effects described in sub-sections below.	
Reactivity in case of fire	: No reactivity hazard other than the effects described in sub-sections below.	



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5.4. Special protective equipment and	precautions for fire-fighters
Firefighting instructions	: Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with their provincial and local fire code regulations.
Protection during firefighting	: Compressed gas: asphyxiant. Suffocation hazard by lack of oxygen.
Special protective equipment for fire fighters	<ul> <li>Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.</li> </ul>
Specific methods	: Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas containers to rupture. Cool endangered containers with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.
	Stop flow of product if safe to do so.
	Use water spray or fog to knock down fire fumes if possible.
Other information	: Containers are equipped with a pressure relief device. (Exceptions may exist where authorized.).
SECTION 6: Accidental release me	asures
6.1. Personal precautions, protective e	equipment and emergency procedures
General measures	: Wear self-contained breathing apparatus when entering area unless atmosphere is proven to be safe. Evacuate area. Ensure adequate air ventilation. Stop leak if safe to do so.
6.2. Methods and materials for contain	ment and cleaning up
6.3. Reference to other sections	
For further information refer to section 8: E	xposure controls/personal protection
SECTION 7: Handling and storage	
7.1. Precautions for safe handling	
Precautions for safe handling	: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use only non-sparking tools. Use only explosion-proof equipment.
	Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g, wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.



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### 7.2. Conditions for safe storage, including any incompatibilities

Storage conditions

: Store only where temperature will not exceed 125°F (52°C). Post "No Smoking/No Open Flames" signs in storage and use areas. There must be no sources of ignition. Separate packages and protect against potential fire and/or explosion damage following appropriate codes and requirements (e.g, NFPA 30, NFPA 55, NFPA 70, and/or NFPA 221 in the U.S.) or according to requirements determined by the Authority Having Jurisdiction (AHJ). Always secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand when the container is not in use. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods. For other precautions in using this product, see section 16.

**OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE:** When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

### **SECTION 8: Exposure controls/personal protection**

8.1. Control parameters		
Propane (74-98-6)		
USA - OSHA	OSHA PEL (TWA) (mg/m³)	1800 mg/m³
USA - OSHA	OSHA PEL (TWA) (ppm)	1000 ppm
Canada (Quebec)	VEMP (mg/m <sup>3</sup> )	1800 mg/m <sup>3</sup>
Canada (Quebec)	VEMP (ppm)	1000 ppm
Alberta	OEL TWA (ppm)	1000 ppm
Nunavut	OEL STEL (ppm)	1250 ppm
Nunavut	OEL TWA (ppm)	1000 ppm
Northwest Territories	OEL STEL (ppm)	1250 ppm
Northwest Territories	OEL TWA (ppm)	1000 ppm
Québec	VEMP (mg/m <sup>3</sup> )	1800 mg/m <sup>3</sup>
Québec	VEMP (ppm)	1000 ppm
Saskatchewan	OEL STEL (ppm)	1250 ppm
Saskatchewan	OEL TWA (ppm)	1000 ppm

# 8.2. Appropriate engineering controls Appropriate engineering controls

: An explosion-proof local exhaust system or a mechanical system is acceptable if it can prevent oxygen deficiency and keep hazardous fumes and gases below all applicable exposure limits in the worker's breathing area. During welding, ensure that there is adequate ventilation to keep worker exposure below applicable limits for fumes, gases, and other by-products of welding. Do not breathe fumes or gases. Short-term overexposure to fumes may cause dizziness, nausea, and dryness or irritation of the nose, throat, and eyes, or may cause other similar discomfort.

### 8.3. Individual protection measures/Personal protective equipment

Personal protective equipment





Hand protection

Eye protection

- : Wear work gloves when handling containers. Wear heavy rubber gloves where contact with product may occur.
- : Wear safety glasses with side shields. Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.



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Skin and body protection	: As needed for welding, wear hand, head, and body protection to help prevent injury from radiation and sparks. (See ANSI Z49.1.) At a minimum, this includes welder's gloves and protective goggles, and may include arm protectors, aprons, hats, and shoulder protection as well as substantial clothing.
Respiratory protection	: <b>Respiratory protection:</b> Use air supplied respirator when working in confined space or where local exhaust or ventilation does not keep exposure below TLV. Select in accordance with provincial regulations, local bylaws or guidelines. Respirators should also be approved by NIOSH and MSHA. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).
Thermal hazard protection	: Wear cold insulating gloves when transfilling or breaking transfer connections.
Environmental exposure controls	<ul> <li>Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.</li> </ul>
Other information	: <b>Other protection :</b> Safety shoes for general handling at customer sites. Metatarsal shoes and cuffless trousers for cylinder handling at packaging and filling plants. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines. For working with flammable and oxidizing materials, consider the use of flame resistant anti-static safety clothing.

SECTION 9: Physical and chemical properties		
9.1. Information on basic physical and chemical properties		
Physical state	: Gas	
Appearance	: Colourless gas.	
Molecular mass	: 44 g/mol	
Colour	: Colourless.	
Odour	: Poor warning properties at low concentrations. Stenchant often added. Sweetish.	
Odour threshold	: No data available	
рН	: Not applicable.	
pH solution	: No data available	
Relative evaporation rate (butylacetate=1)	: No data available	
Relative evaporation rate (ether=1)	: Not applicable.	
Melting point	: No data available	
Freezing point	: -187.69 °C (-305.8°F)	
Boiling point	: -42.1 °C (-44.32°F)	
Flash point	: -104.4 °C (-155.2°F) TCC	
Critical temperature	: 96.8 °C (206°F)	
Auto-ignition temperature	: 450 °C (842°F)	
Decomposition temperature	: No data available	
Vapour pressure	: 8.58 bar (109.73 psig)	
Vapour pressure at 50 °C	: No data available	
Relative vapour density at 20 °C	: No data available	
Relative density	: 0.58	
Relative density of saturated gas/air mixture	: No data available	
Density	: 0.506 - 0.583 g/cm³ (at 15 °C)	
Relative gas density	: 1.5	
Solubility	: Water: 75 mg/l	
Log Pow	: 2.36	
Log Kow	: Not applicable.	
Viscosity, kinematic	: Not applicable.	
Viscosity, dynamic	: Not applicable.	
Viscosity, kinematic (calculated value) (40 °C)	: No data available	
Explosive properties	: Not applicable.	
Oxidizing properties	: None.	
Flammability (solid, gas)	: 2.1 - 9.5 vol %	



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9.2. Other information	
Gas group	: Liquefied gas
Additional information	: Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.
SECTION 10: Stability and reactivity	
10.1. Reactivity	
Reactivity	: No reactivity hazard other than the effects described in sub-sections below.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: Can form explosive mixture with air. May react violently with oxidants.
Conditions to avoid	: Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Incompatible materials	: Air, Oxidizer. Chlorine dioxide.
Hazardous decomposition products	: Thermal decomposition or burning may produce carbon monoxide, carbon dioxide, and hydrogen. The welding and cutting process may form reaction products such as carbon monoxide and carbon dioxide. Other decomposition products of normal operation originate from the volatilization, reaction, or oxidation of the material being worked.
SECTION 11: Toxicological informat	ion
11.1. Information on toxicological effects	
Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Not classified
Propane ( \f )74-98-6	
LC50 inhalation rat (ppm)	> 800000 ppm (Exposure time: 15 min)
Skin corrosion/irritation	: Not classified
Skin conosion/initiation	pH: Not applicable.
Serious eye damage/irritation	: Not classified
Senous eye damage/imation	pH: Not applicable.
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
Propane (74-98-6)	
Hydrocarbon	Yes

SECTIO	SECTION 12: Ecological information		
12.1.	Toxicity		
Ecology -	- general	: No ecological damage caused by this product.	
12.2.	Persistence and degradability		
Propane (74-98-6)			
Persiste	ence and degradability	The substance is biodegradable. Unlikely to persist.	



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12.3. Bioaccumulative potential		
Propane (74-98-6)		
Log Pow	2.36	
Log Kow	Not applicable.	
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.	
12.4. Mobility in soil		
Propane (74-98-6)		
Mobility in soil	No data available.	
Log Pow	2.36	
Log Kow	Not applicable.	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.	
12.5. Other adverse effects		
Effect on the ozone layer	: None.	
Effect on global warming	: No known effects from this product.	
SECTION 13: Disposal considerations	2	
13.1. Disposal methods		
Product/Packaging disposal recommendations	: Dispose of contents/container in accordance with local/regional/national/international	
	regulations. Contact supplier for any special requirements.	
SECTION 14: Transport information		
14.1. Basic shipping description		
In accordance with TDG		
TDG		
UN-No. (TDG)	: UN1978	
TDG Primary Hazard Classes	: 2.1 - Class 2.1 - Flammable Gas.	
Proper shipping name	: PROPANE	
	: 3 000	
	: 0.125 L	
5 <i>,</i> 6 ,	: 110 kg	
Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index	: Forbidden	
14.3. Air and sea transport		
IMDG		
UN-No. (IMDG)	: 1978	
	: PROPANE	
	: 2 - Gases	
	: 115	
ΙΑΤΑ		
	: 1978	
	: PROPANE	
	: 2	
SECTION 15: Regulatory information		
15.1. National regulations		
Propane (74-98-6)		
Listed on the Canadian DSL (Domestic Substances List)		



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### 15.2. International regulations

15.2. International regulations		
Propane (74-98-6)		
Listed on the AICS (Australian Inventory of Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory Listed on the Japanese ISHL (Industrial Safety and Health Law) Listed on the Korean ECL (Existing Chemicals List) Listed on NZIOC (New Zealand Inventory of Chemicals) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on INSQ (Mexican National Inventory of Chemical Substances)		
<b>SECTION 16: Other information</b>		
Date of issue	: 15/10/1979	
Revision date	: 01/01/2021	
Supersedes	: 06/10/2016	
Indication of changes:		
Training advice	: The hazard of asphyxiation is often overlooked and must be stressed during operator training. Ensure operators understand the flammability hazard.	
Other information	<ul> <li>When using this product in welding and cutting, read and understand the manufacturer's instructions and the precautionary label on the product. Ask your welding products supplier for a copy of Praxair's free safety booklet, P-2035, Precautions and Safe Practices for Gas Welding, Cutting, and Heating, and for other manufacturers' safety publications. For a detailed treatment, get ANSI Z49.1, Safety in Welding, Cutting, and Allied Processes, published by the American Welding Society (AWS), www.aws.org. Order AWS documents from Global Engineering Documents, global.ihs.com. Arcs and sparks can ignite combustible materials. Prevent fires. Refer to NFPA 51B, Standard for Fire Prevention During Welding, Cutting, and Other Hotwork. Do not strike an arc on the container. The defect produced by an arc burn may lead to container rupture.</li> <li>Fumes and gases produced during welding and cutting processes can be dangerous to your health and may cause serious lung disease. KEEP YOUR HEAD OUT OF FUMES. DO NOT</li> </ul>	
	BREATHE FUMES AND GASES. Use enough ventilation, local exhaust, or both to keep fumes and gases from your breathing zone and the general area. Short-term overexposure to fumes may cause dizziness, nausea, and dryness or irritation of the nose, throat, and eyes; or may cause other similar discomfort. Contaminants in the air may add to the hazard of fumes and gases.	
	When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product.	
	Linde asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.	
	The opinions expressed herein are those of qualified experts within Linde Canada Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Linde Canada Inc, it is the user's obligation to determine the conditions of safe use of the product. Linde Canada Inc, SDSs are furnished on sale or delivery by Linde Canada Inc, or the independent distributors and suppliers who package and sell our products. To obtain current SDSs for these products, contact your Linde sales representative, local distributor, or supplier, or download from www.lindecanada.ca. If you have questions regarding Linde SDSs, would like the document number and date of the latest SDS, or would like the names of the Linde suppliers in your area, phone or write Linde Canada Inc, (Phone: 1-888-257-5149; Address: Linde Canada Inc, 1 City Centre Drive, Suite 1200, Mississauga, Ontario, L5B 1M2).	



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NFPA health hazard	: 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.
NFPA fire hazard	: 4 - Will rapidly or completely vaporize at normal pressure and temperature, or is readily dispersed in air and will burn readily.
NFPA instability	: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.
HMIS III Rating	
Health	: 1 Slight Hazard - Irritation or minor reversible injury possible
Flammability	<ul> <li>4 Severe Hazard - Flammable gases, or very volatile flammable liquids with flash points below</li> <li>73 F, and boiling points below 100 F. Materials may ignite spontaneously with air. (Class IA)</li> </ul>
Physical	2 Moderate Hazard - Materials that are unstable and may undergo violent chemical changes at normal temperature and pressure with low risk for explosion. Materials may react violently with water or form peroxides upon exposure to air.

SDS Canada (GHS) - Linde

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.