



1125 W. Amity Rd.
Boise, ID 83705
208-336-1643

Emergency Telephone Number: Chemtrec (800) 424-9300
Or Norco (208) 336-1643

PRODUCT NAME: PROPANE

MATERIAL SAFETY DATA SHEET

Identification

Product Name: Propane
CAS Number: 74-98-6
Chemical Family: Alkane
Chemical Formula: C₃H₈
Common Names/Synonyms: (LPG), Liquefied Petroleum Gas, Dimethyl Methane, N-propane, Propylhydride, Refrigerant gas R-290
MSDS Identification Number: 1978
Prepared By: Quality Dept.

Revision Date: 10/11/09
Last Review Date: 10/11/09

Composition/Information on Ingredients

Exposure Limits¹:

INGREDIENT	% VOLUME	PEL-OSHA ²	TLV-ACGIH ³	LD ₅₀ or LC ₅₀ Route/Species
Propane Formula: C ₃ H ₈ CAS #: 74-98-6 RTECS #: TX2275000	99.0% to 99.98%	1000 ppm	1000 ppm	Not Available

¹ Refer to individual state or provincial regulations, as applicable, for limits which may be more stringent than those listed here.

² As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993).

³ As stated in the ACGIH 2007 Threshold Limit Values for Chemical Substances and Physical Agents

OSHA Regulatory Status: This material is classified as hazardous under OSHA regulations.

Hazards Identification

Emergency Overview:

Flammable liquid and gas under pressure. Dangerous fire and explosion hazard. Avoid heat, sparks and flames. Simple Asphyxiant – This product does not contain oxygen and may cause asphyxia if released in a confined area. Maintain oxygen levels above 19.5%. Simple hydrocarbons can cause irritation and central nervous system depression at high concentrations. Contents under pressure. Use and store below 125°F, (52°C).

Route of Entry:

Skin Contact No	Skin Absorption No	Eye contact No	Inhalation Yes	Ingestion No
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Health Effects:

Exposure Limits No	Irritant No	Sensitization No
Teratogen No	Reproductive Hazard No	Mutagen No

Synergistic Effects:
None Reported

Carcinogenicity: NTP: No IARC: No OSHA: No

Hazards Identification Continued

Eye Effects:

No harm from vapor. Liquid may cause frostbite.

Skin Effects:

No harm from vapor. Liquid may cause frostbite.

Ingestion Effects:

Ingestion is unlikely.

Inhalation Effects:

Product is relatively nontoxic. Simple hydrocarbons can irritate the eyes, mucous membranes and respiratory system at high concentrations.

Inhalation of high concentrations may cause dizziness, disorientation, un-coordination, narcosis, nausea or narcotic effects.

This product may displace oxygen if released in a confined space. Maintain oxygen levels above 19.5% at sea level to prevent asphyxiation. Effects of oxygen deficiency resulting from simple asphyxiants may include: rapid breathing, diminished mental alertness, impaired muscular coordination, faulty judgment, depression of all sensations, emotional instability and fatigue. As asphyxiation progresses, nausea, vomiting, prostration and loss of consciousness may result, eventually leading to convulsions, coma and death.

Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.

Medical Conditions Aggravated by Exposure:

None known.

NFPA Hazard Codes

Health: 2
Flammability: 4
Instability: 0

HMIS Hazard Codes

Health: 1
Flammability: 4
Physical Hazard: 2

Ratings System

0 = No Hazard
1 = Slight Hazard
2 = Moderate Hazard
3 = Serious Hazard
4 = Severe Hazard

Ratings were assigned in accordance with Compressed Gas Association (CGA) guidelines as published in CGA Pamphlet P-19-2004, CGA Recommended Hazard Ratings for Compressed Gases, 2nd Edition.

First Aid Measures

Eyes:

None required for gas. If frostbite is suspected, flush eyes with cool water for 15 minutes and obtain immediate medical attention.

Skin:

None required for gas. For frostbite, immerse skin in lukewarm water. DO NOT USE HOT WATER. Obtain immediate medical attention.

Ingestion:

Not normally required. Seek immediate medical attention.

Inhalation:

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO PRODUCT. RESCUE PERSONNEL SHOULD BE EQUIPED WITH SELF-CONTAINED BREATHING APPARATUS. Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given assisted (artificial) respiration and supplemental oxygen. Further treatment should be symptomatic and supportive.

Fire Fighting Measures

Conditions of Flammability: Flammable liquid and vapor		
Flash point: -156°F (-104°C)	Method: Closed Cup	Autoignition Temperature: 896°F (480°C)
LEL (%): 2.2	UEL (%): 9.5	
Hazardous combustion products: Carbon monoxide, Carbon dioxide		
Sensitivity to mechanical shock: None		
Sensitivity to static discharge: Not Available		

Fire and Explosion Hazards:

Flammable gas. Propane is heavier than air and may travel a considerable distance to an ignition source. Keep away from open flame and other sources of ignition. Rapid flame propagation and flashback possible. Do not allow smoking in storage areas or when handling. Cylinders may rupture violently from pressure when involved in a fire situation.

Extinguishing Media:

Water, carbon dioxide or dry chemical.

Fire Fighting Instructions:

If possible, stop the flow of gas. Inerting the atmosphere to reduce oxygen levels may extinguish flame, allowing capping of leaking container. Do not attempt this unless specifically trained. Reduce the rate of flow and inject an inert gas, if possible, before completely stopping the flow to prevent flashback. Do not extinguish fire until the supply is shut off as otherwise an explosive re-ignition may occur. If the fire is extinguished and the flow of gas continues, use increased ventilation to prevent build-up of explosive atmosphere. Use non-sparking tools to close container valves.

Use water spray to cool surrounding containers. Be cautious of a Boiling Liquid Evaporating Vapor Explosion, BLEVE, if flame is impinging on surrounding containers. Direct 500 GPM water stream onto containers above liquid level with remote monitors. Limit the number of personnel in proximity of fire and evacuate surrounding areas in all directions. Firefighters should wear respiratory protection (SCBA) and full turnout or Bunker gear. Continue to cool fire-exposed cylinders until well after flames are extinguished.

Accidental Release Measures

Immediately extinguish all ignition sources. No smoking, flares, flames or sparks in hazard area. Evacuate all personnel from affected area. Use appropriate protective equipment. Increase ventilation to prevent build up of a flammable/explosive atmosphere. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or container valve contact the appropriate emergency telephone number listed in Section 1 or call your closest Norco/NorLab location.

Handling and Storage

Earth bond and ground all lines and equipment associated with the system. All equipment should be non-sparking and explosion proof.

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure regulator when connecting cylinder to lower pressure piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavy traffic areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125°F (52°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders from being stored for excessive periods of time. Post "NO SMOKING" signs in use and storage areas. There should be no sources of ignition in areas where this product is being used or stored. Outside or detached storage is preferred.

For additional recommendations consult Compressed Gas Association Pamphlet P-1 and Safety Bulletin SB-2.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

Exposure Controls, Personal Protection

Engineering Controls:

Use local exhaust to prevent accumulation. Use general ventilation to prevent build up of flammable concentrations. May use hood with forced ventilation when handling small quantities. If product is handled routinely where the potential for leaks exists, all electrical equipment must be rated for use in potentially flammable atmospheres. Consult the National Electrical Code of details.

Eye/Face Protection:

Safety goggles or glasses.

Skin Protection:

Protective gloves made of plastic or rubber.

Respiratory Protection:

Positive pressure air line with full-face mask and escape bottle or self-contained breathing apparatus should be available for emergency use.

Other/General Protection:

Safety shoes.

Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure at 70°F	: 124	psia
Vapor density at STP (Air=1)	: 1.56	
Evaporation point	: Not Available	
Boiling Point	: -43.7	°F
	: -42.1	°C
Freezing point	: -305.8	°F
	: -187.7	°C
pH	: Not Available	
Specific gravity (H ₂ O = 1 at 77°F and 1 atm.)	: 0.5077	
Oil/water partition coefficient	: Not Available	
Solubility (H ₂ O)	: Negligible	
Odor threshold	: Not Available	
Odor and appearance	: Colorless gas at normal temperature and pressure, faintly disagreeable odor	

Stability and Reactivity

Stability:

Stable.

Incompatible Materials:

Oxidizing agents, chlorine dioxide.

Hazardous Decomposition Products:

Thermal decomposition and burning may produce carbon monoxide and carbon dioxide.

Hazardous Polymerization:

Will not occur.

Toxicological Information

Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.

At very high concentrations, propane may produce cardiac arrhythmias or arrest due to sensitization of the heart to adrenaline and noradrenalin. No chronic effects given in the Registry of Toxic Effects of Chemical Substances (RTECS) or Sax, Dangerous Properties of Industrial Materials, 7th ed.

Ecological Information

No adverse ecological effects expected. Propane does not contain any Class I or Class II ozone-depleting chemicals. Propane is not listed as a marine pollutant by DOT.

Disposal Considerations

Do not attempt to dispose of residual waste or unused quantities in returnable containers. Return in shipping container, *properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place* to Norco for proper disposal. Non-refillable containers should be vented in a well-ventilated area then disposed of in compliance with local regulations, or returned to Norco/NorLab.

Transport Information

Parameter	United States DOT	Canada TDG
Proper Shipping Name:	Propane	Propane
Hazard Class:	2.1	2.1
Identification Number:	UN 1978	UN 1978
Shipping Label:	Flammable Gas	Flammable Gas

Regulatory Information

Propane is listed under the accident prevention provisions of section 112(r) of the Clean Air Act (CAA) with a threshold quantity (TQ) of 10,000 pounds.

SARA Title III Notifications and Information:

SARA Title III – Hazard Classes:

Acute Health Hazard
 Fire Hazard
 Sudden Release of Pressure Hazard

Other Information

Compressed gas cylinders shall not be refilled without the express written permission of the owner. Shipment of a compressed gas cylinder which has not been filled by the owner or with his/her (written) consent is a violation of transportation regulations.

Disclaimer of Expressed and Implied Warranties:

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).