


MATERIAL SAFETY DATA SHEET

PRODUCT NAME: PROPANE

1. Chemical Product and Company Identification

BOC Gases,
Division of,
The BOC Group, Inc.
575 Mountain Avenue
Murray Hill, NJ 07974

TELEPHONE NUMBER: (908) 464-8100
24-HOUR EMERGENCY TELEPHONE
NUMBER: CHEMTREC (800) 424-9300

BOC Gases
Division of
BOC Canada Limited
5975 Falbourne Street, Unit 2
Mississauga, Ontario L5R 3W6

TELEPHONE NUMBER: (905) 501-1700
24-HOUR EMERGENCY TELEPHONE
NUMBER: (905) 501-0802
EMERGENCY RESPONSE PLAN NO: 2-0101

PRODUCT NAME: PROPANE

CHEMICAL NAME: Propane

COMMON NAMES/SYNONYMS: (LPG) Dimethyl Methane, Liquefied Petroleum Gas

TDG (Canada) CLASSIFICATION: 2.1

WHMIS CLASSIFICATION: A, B1

PREPARED BY: Loss Control (908)464-8100/(905)501-1700

PREPARATION DATE: 6/1/95

REVIEW DATES: 4/5/01

2. 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	Simple Asphyxiant	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 2001 Threshold Limit Values for Chemical Substances and Physical Agents.

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

3. Hazards Identification

EMERGENCY OVERVIEW

Odorless, colorless flammable gas. 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.

MSDS: G-74

Revised: 4/5/01

PRODUCT NAME: PROPANE

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

EYE EFFECTS:

None anticipated.

SKIN EFFECTS:

None anticipated.

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, incoordination, 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 judgement, 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

HMIS HAZARD CODES

RATINGS SYSTEM

Health: 2
Flammability: 4
Instability: 0

Health: 1
Flammability: 4
Reactivity: 0

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

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4. First Aid Measures

EYES:

None required.

SKIN:

None required.

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 EQUIPPED 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.

5. 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, 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 the 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.

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6. 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 BOC location.

7. Handling and Storage

Electrical Classification: Not Available

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 heavily trafficked 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 Pamphlets 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.

8. 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 for details.

EYE/FACE PROTECTION:

Safety goggles or glasses.

SKIN PROTECTION:

Protective gloves made of plastic or rubber.

RESPIRATORY PROTECTION:

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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.

9. 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	: Not Available	
	: Not Available	
pH	: Not Available	
Specific gravity	: Not Available	
Oil/water partition coefficient	: Not Available	
Solubility (H ₂ O)	: Negligible	
Odor threshold	: Not Available	
Odor and appearance	: A colorless, odorless gas.	

10. Stability and Reactivity

STABILITY:

Stable

INCOMPATIBLE MATERIALS:

Oxidizers.

HAZARDOUS POLYMERIZATION:

Will not occur.

11. Toxicological Information

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

No chronic effects data given in the Registry of Toxic Effects of Chemical Substances (RTECS) or Sax, Dangerous Properties of Industrial Materials, 7th ed.

12. Ecological Information

No data given.

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13. Disposal Considerations

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to BOC Gases or authorized distributor for proper disposal.

14. 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

15. 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

16. Other Information

ACGIH	American Conference of Governmental Industrial Hygienists
DOT	Department of Transportation
IARC	International Agency for Research on Cancer
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
SARA	Superfund Amendments and Reauthorization Act
STEL	Short Term Exposure Limit
TDG	Transportation of Dangerous Goods
TLV	Threshold Limit Value
WHMIS	Workplace Hazardous Materials Information System

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).

Flamex Industries, Inc.
Issued November 1996 Last Reviewed January 2002

Identification
Product name:

FXD

Company: Flamex Industries, Inc.
Address: 1630 22nd Street North
City, State ZIP: St. Petersburg, FL 33713-5653
Telephone: 727 327-0597
Facsimile: 727 321-8540

Emergency Phone Number: (800) 424-9300 Contact: Chemtree

Chemical name	Methanol
Chemical family	Alcohol
CAS number	67-56-1
CAS name	Methanol

Synonyms:

Methyl alcohol;
carbinol; monohydroxymethane;
methyl hydroxide.

Department of Transportation Information	
Hazard Classification	3.2
Packing Group	2
Shipping Name	Methanol
United Nations Number	UN 1230
DOT Shipping Label	Flammable Liquid
DOT Emergency Response Guide No.	28

Physical Data	
Boiling point (760 mm HG)	64.6C (148F)
Freezing point	-97.8C (-144F)
Specific gravity (H ₂ O=1 @ 20/20C)	0.7921
Vapor pressure (25C)	138 mm HG
Vapor density (Air = 1 @ 20C)	1.11

Solubility in water (% by WT @ 20C)	Complete
Percent volatiles by volume	100
Evaporation rate (BuAc = 1)	>1
Appearance and odor	Clear, colorless mobile liquid with mild alcohol odor

Hazardous Ingredients	
Methanol	92%
Zylene Blend	8%

Fire and Explosion Hazard Data	
Flammable Limits In Air	% by volume
Upper	36.5
Lower	6

Flash point (test method): 52 F / 11 C TCC

Autoignition: 725 F / 385 Cd

Extinguishing media:

Use Co2 or dry chemical for small fires, alcohol-type aqueous film-forming foam or water spray for large fires. Water may be ineffective but should be used to cool fire-exposed structures and vessels.

Special fire-fighting procedures:

Wear self-contained breathing apparatus (SCBA) and complete personal protective equipment when potential for exposure to vapors or products of combustion exists. Water spray can be used to reduce intensity of flames and to dilute spills to nonflammable mixture.

Unusual fire and explosion hazards:

Vapor is heavier than air and can travel considerable distance to a source of ignition and flashback. Material can burn with little or no visible flame. Methanol-water mixtures will burn unless very dilute. Mixtures with 25% or more Methanol are OSHA Class I Flammable Liquids.

Special Hazard Designations

Category	HMIS	NFPA	Key
Health	3	1	0 - Minimal
Flammability	3	3	1 - Slight
Reactivity	0	0	2 - Moderate
Personal protective	--	--	3 - Serious
Equipment	G	--	4 - Severe

OSHA 29CFR1910.1200 Evaluation: Hazardous

Reactivity Data

Stability	Stable
Hazardous polymerization	Will not occur
Conditions to avoid	Heat, sparks, flame
Materials to avoid	Sulfuric acid; oxidizing agents such as hydrogen peroxide, nitric acid, perchloric acid and chromium trioxide
Hazardous combustion or decomposition products	Carbon monoxide

Health data

Permissible exposure limits

OSHA standard: 200ppm, 8-hr TWA;

ACGIH TLV: 200ppm, 8-hr TWA;

250 ppm, STEL;

potential contribution to overall exposure possible via skin absorption.

Immediately Dangerous to Life and Health Level

25,000 ppm

Effects of exposure/toxicity data

Acute:

Ingestion (swallowing): Poisonous if swallowed. Can affect the optic nerve resulting in blindness. Can cause mental sluggishness, nausea and vomiting leading to severe illness, possible death (in humans). Practically non-toxic to animals (oral LD50, rats: 7.5 g/kg).

Inhalation (breathing): Extremely high levels cause stupor, headache, nausea, dizziness and unconsciousness. Prolonged periods of high levels has resulted in death. Liver damage has resulted from prolonged or repeated inhalation of vapors. Practically non-toxic to animals (inhalation LC50, rats, 4hrs:64,000 ppm).

Skin contact: Essentially non-irritating. Repeated or prolonged contact causes drying, brittleness, cracking and irritation. Slightly toxic to animals by absorption (dermal LD50, rabbits: 20 g/kg).

Eye contact: May cause eye injury which may persist for several days. Liquid, and vapor in high concentrations causes irritation, tearing and burning sensation.

Chronic:

Mutagenicity: *In vitro*, limited evidence of mutagenicity (mouse lymphoma forward mutation assay). *In vivo*, no information.

Carcinogenicity: No evidence of carcinogenic potential in limited animal studies in which methanol was given orally or applied to the skin.

Reproduction: Methanol - reported to cause birth defects in rats exposed to very high levels of vapors (20,000 ppm).

Emergency and first aid procedures

Ingestion (swallowing): Induce vomiting of conscious patient immediately giving two glasses of water and pressing finger down throat. Drink a large amount of water, milk or sodium bicarbonate to dilute material in stomach. Contact a physician immediately.

Inhalation (breathing): Remove patient from contaminated area. if breathing has stopped, give artificial respiration, then oxygen if needed. Contact a physician immediately.

Skin Contact: Remove contaminated clothing and wash contaminated skin with large amounts of water. If irritation persists, contact a physician.

Eye contact: Flush eyes with water for at least 15 minutes. Contact a physician immediately.

Note to physician: When plasma methanol concentrations are higher than 20 milligrams per deciliter, when ingested doses are greater than 30 milliliters, and when there is evidence of acidosis or visual abnormalities, a

10% solution of ethanol in 5% aqueous dextrose, administered intravenously, is a safe, effective antidote (Western Journal of Medicine, March 1985, p. 337).

Spill or leak procedures

Steps to be taken if material is released or spilled.

Eliminate ignition sources. Dike large spills. Avoid eye or skin contact. Place leaking containers in well-ventilated area. If fire potential exists, blanket spill with foam or use water spray to disperse vapors. Contain spill to minimize contaminated area and facilitate salvage or disposal. Comply with federal, state and local regulations on reporting releases.

Waste disposal method:

This product when spilled or disposed is a hazardous solid waste. Preferred method is incineration or biological treatment in federal/state approved facility.

SARA Title III Notifications and Information

SARA Title III - Hazard Classes:

Acute Health Hazard Chronic Health Hazard Fire Hazard

SARA Title III - Section 313 Supplier Notification

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and 40 CFR 372:

CAS #	Chemical Name	Percent of Mix
67-56-1	METHANOL	92%

1330-20-7	XYLENE BLEND	8%
100-41-4		

This information must be included on all MSDSs that are copied and distributed for this material.

Other Environmental Information

Aquatic Toxicity Rating - TLM 96: Over 1000 ppm
Spills of 5000 lbs. or more must be reported to the National Response Center (1-800-424-8802)

Special protection information

Respiratory protection:

Provide adequate ventilation or exhaust to meet TLV/PEL requirements. Supplied air or self-contained breathing equipment recommended for exposures above PEL. Organic vapor cartridge respirators not recommended for methanol vapor exposures.

Ventilation:

Provide adequate ventilation or exhaust to meet TLV/PEL requirements. Supplied air or self-contained breathing equipment recommended for exposures above PEL. Organic vapor cartridge respirators not recommended for methanol vapor exposures.

Skin Protection:

Rubber gloves and protective aprons or clothing should be used to prevent skin contact. For operations where spills or splashing can occur, use impervious body covering and boots. A safety shower and eye bath should be available.

Eye protection:

Have available and wear as appropriate coverall chemical splash goggles or safety spectacles (side shields preferred).

Other protective equipment:

For operations where spills or splashing can occur, use impervious body covering and boots. A safety shower and eye bath should be available. Wash with soap and water after skin contact.

Work/Hygienic Practices:

Monitoring of air in the workplace is recommended to maintain methanol vapors below recommended TLV.

Special precautions

Precautions to be taken in handling and storing:

Store in a cool, well-ventilated area. Do not expose to temperatures above 49C (120F). Keep away from heat, sparks and flame. Keep containers closed. Use only DOT-approved containers. Use spark-resistant tools. Do not load into compartments adjacent to heated cargo. When transferring follow proper grounding procedures. Use with adequate ventilation. Provide emergency exhaust. Avoid breathing vapor. Avoid contact with eyes, skin and clothing. Wash thoroughly with soap and water after handling. Wash contaminated clothing thoroughly before re-use. Discard contaminated leather clothing.

Emergency Phone Number: (800) 424-9300 Contact: Chemtrec

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