



MATERIAL SAFETY DATA SHEET

Propane

MSDS No. 1786

EMERGENCY OVERVIEW

DANGER!
EXTREMELY FLAMMABLE GAS - MAY CAUSE FLASH FIRE OR
EXPLOSION! -
COMPRESSED GAS



NFPA 704 (Section 16)

High concentrations may exclude oxygen and cause dizziness and suffocation. Contact with liquid or cold vapor may cause frostbite or freeze burn.

1. CHEMICAL PRODUCT and COMPANY INFORMATION

HOVENSA LLC
1 Estate Hope
Christiansted, VI 00820-5652

EMERGENCY TELEPHONE NUMBER (24 hrs):
COMPANY CONTACT (business hours):

CHEMTREC (800)424-9300
(340) 692-3000

SYNONYMS: Dimethylmethane; Liquefied Petroleum Gas (LPG); Sales Propane
See Section 16 for abbreviations and acronyms.

2. COMPOSITION and INFORMATION ON INGREDIENTS *

INGREDIENT NAME (CAS No.)	CONCENTRATION PERCENT BY WEIGHT
Propane (74-98-6)	70 min.
Propylene (115-07-1)	30 max.
Ethane (74-84-0)	< 2
Mixed hydrocarbons [butane (C4) and higher]	< 2.5

Light gases from distilled and catalytically-cracked petroleum oil consisting of hydrocarbons having carbon numbers in the range of C3 through C4, predominantly propane and propylene. This MSDS describes Propane, C₃H₈; other constituents exhibit similar hazards - significant differences are noted as appropriate. Odorized with trace amounts of odorant (typically well below 0.1% ethyl mercaptan).

3. HAZARDS IDENTIFICATION

EYES

Vapors are not irritating. However, contact with liquid or cold vapor may cause frostbite, freeze burns, and permanent eye damage

SKIN

Vapors are not irritating. Direct contact to skin or mucous membranes with liquefied product or cold vapor may cause freeze burns and frostbite. Ingestion is unlikely. Contact to mucous membranes with liquefied product may cause frostbite and freeze burns. Signs of frostbite include a change in the color of the skin to gray or white, possibly followed by blistering. Skin may become inflamed and painful.

INGESTION

Ingestion is unlikely. Contact with mucous membranes with liquefied product may cause frostbite and freeze burns.



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INHALATION

This product is considered to be non-toxic by inhalation. Inhalation of high concentrations may cause central nervous system depression such as dizziness, drowsiness, headache, and similar narcotic symptoms, but no long-term effects. Numbness, a "chilly" feeling, and vomiting have been reported from accidental exposures to high concentrations.

This product is a simple asphyxiant. In high concentrations it will displace oxygen from the breathing atmosphere, particularly in confined spaces. Signs of asphyxiation will be noticed when oxygen is reduced to below 16%, and may occur in several stages. Symptoms may include rapid breathing and pulse rate, headache, dizziness, visual disturbances, mental confusion, incoordination, mood changes, muscular weakness, tremors, cyanosis, narcosis and numbness of the extremities. Unconsciousness leading to central nervous system injury and possibly death will occur when the atmospheric oxygen concentration is reduced to about 6% to 8% or less.

WARNING: The burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

CHRONIC and CARCINOGENICITY

None expected - see Section 11.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Individuals with pre-existing conditions of the heart, lungs, and blood may have increased susceptibility to symptoms of asphxia (lack of oxygen).

4. FIRST AID MEASURES

EYES

In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention.

SKIN

Remove contaminated clothing. Wash contaminated areas thoroughly with soap and water or waterless hand cleanser. Obtain medical attention if irritation or redness develops.

INGESTION

Risk of ingestion is extremely low. However, in cases of ingestion or oral exposure, seek immediate medical attention.

INHALATION

Remove person to fresh air. If person is not breathing, provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

FLASH POINT:	-156 °F (-104 °C)
AUTOIGNITION POINT:	842 °F (450 °C)
OSHA/NFPA FLAMMABILITY CLASS:	FLAMMABLE GAS
LOWER EXPLOSIVE LIMIT (%):	2.1
UPPER EXPLOSIVE LIMIT (%):	9.5



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FIRE AND EXPLOSION HAZARDS

Liquid releases flammable vapors at well below ambient temperatures and readily forms a flammable mixture with air. Dangerous fire and explosion hazard when exposed to heat, sparks or flame. Vapors are heavier than air and may travel long distances to a point of ignition and flash back. Container may explode in heat or fire. Runoff to sewer may cause fire or explosion hazard.

EXTINGUISHING MEDIA

Dry chemical, carbon dioxide, Halon or water. However, fire should not be extinguished unless flow of gas can be immediately stopped.

FIRE FIGHTING INSTRUCTIONS

Gas fires should not be extinguished unless flow of gas can be immediately stopped. Shut off gas source and allow gas to burn out. If spill or leak has not ignited, determine if water spray may assist in dispersing gas or vapor to protect personnel attempting to stop leak.

Use water to cool equipment, surfaces and containers exposed to fire and excessive heat. For large fire the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure.

Isolate area, particularly around ends of storage vessels. Let vessel, tank car or container burn unless leak can be stopped. Withdraw immediately in the event of a rising sound from a venting safety device. Large fires typically require specially trained personnel and equipment to isolate and extinguish the fire.

Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing.

See Section 16 for the NFPA Hazard Rating.

6. ACCIDENTAL RELEASE MEASURES

ACTIVATE FACILITY SPILL CONTINGENCY or EMERGENCY PLAN.

Evacuate nonessential personnel and secure all ignition sources. No road flares, smoking or flames in hazard area. Consider wind direction, stay upwind and uphill, if possible. Evaluate the direction of product travel. Vapor cloud may be white, but color will dissipate as cloud disperses - fire and explosion hazard is still present!

Stop the source of the release, if safe to do so. Do not flush down sewer or drainage systems. Do not touch spilled liquid (frostbite/freeze burn hazard!). Consider the use of water spray to disperse vapors. Isolate the area until gas has dispersed. Ventilate and gas test area before entering.

7. HANDLING and STORAGE

HANDLING PRECAUTIONS

Keep away from flame, sparks and excessive temperatures. Use only in well ventilated areas. See also applicable OSHA regulations for the handling and storage of this product, including, but not limited to, 29 CFR 1910.110 Storage and Handling of Liquefied Petroleum Gases.

STORAGE PRECAUTIONS

Store only in approved containers. Bond and ground containers. Keep away from flame, sparks, excessive temperatures and open flame. Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Store in a well-ventilated area and in accordance with NFPA 58 "Liquefied Petroleum Gas Code."



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8. EXPOSURE CONTROLS and PERSONAL PROTECTION

EXPOSURE LIMITS

Component (CAS No.)	Source	TWA (ppm)	Note
Propane (74-98-6)	OSHA ACGIH	1000 1000	
Propylene (115-07-1)	OSHA ACGIH	None established by OSHA or ACGIH Simple asphyxiant	
Ethane (74-84-0)	ACGIH	None established by OSHA or ACGIH Simple asphyxiant	
Mixed hydrocarbons [butane (C4) and higher]	OSHA ACGIH	N/A - Limits above will predominate	

ENGINEERING CONTROLS

Use adequate ventilation to keep gas and vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces. Use explosion-proof equipment and lighting in classified/controlled areas.

EYE/FACE PROTECTION

Where there is a possibility of liquid contact, wear splash-proof safety goggles and faceshield.

SKIN PROTECTION

Where contact with liquid may occur, wear apron, faceshield, and cold-impervious, insulating gloves.

RESPIRATORY PROTECTION

Use a NIOSH/MSHA approved positive-pressure, supplied air respirator with escape bottle or self-contained breathing apparatus (SCBA) for gas concentrations above occupational exposure limits, for potential for uncontrolled release, if exposure levels are not known, or in an oxygen-deficient atmosphere.

CAUTION: Flammability limits (i.e., explosion hazard) should be considered when assessing the need to expose personnel to concentrations requiring respiratory protection.

Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection.

9. PHYSICAL and CHEMICAL PROPERTIES

APPEARANCE

Colorless gas. Cold vapor cloud may be white but the lack of visible gas cloud does not indicate absence of gas. A colorless liquid under pressure.

ODOR

Odorless when pure, but may have a "natural gas" type odor when treated with odorizing agent (usually ethyl mercaptan).

BASIC PHYSICAL PROPERTIES

BOILING POINT:	-43.8 °F (-42.1 °C)
VAPOR PRESSURE:	109.73 psig @ 70 °F (21.1 °C)
VAPOR DENSITY (air = 1):	1.56 @ 32 °F (0 °C)
SPECIFIC GRAVITY (H ₂ O = 1):	0.531 @ 32 °F (0 °C)
SOLUBILITY (H ₂ O):	slight (62.4 ppm) @ 77 °F (25 °C)



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10. STABILITY and REACTIVITY

STABILITY: Stable. Hazardous polymerization will not occur.

CONDITIONS TO AVOID and INCOMPATIBLE MATERIALS

Keep away from strong oxidizers, ignition sources and heat. Explosion hazard when exposed to chlorine dioxide. Heating barium peroxide with propane causes violent exothermic reaction. Heated chlorine-propane mixtures are explosive under some conditions.

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

11. TOXICOLOGICAL PROPERTIES

ACUTE TOXICITY

Propane exhibits some degree of anesthetic action and is mildly irritating to the mucous membranes. At high concentrations propane acts as a simple asphyxiant without other significant physiological effects. High concentrations may cause death due to oxygen depletion.

CARCINOGENICITY

Carcinogenicity: **OSHA:** NO **IARC:** NO **NTP:** NO **ACGIH:**NO

12. ECOLOGICAL INFORMATION

Liquid release is only expected to cause localized, non-persistent environmental damage, such as freezing. Biodegradation of this product may occur in soil and water. Volatilization is expected to be the most important removal process in soil and water. This product is expected to exist entirely in the vapor phase in ambient air.

13. DISPOSAL CONSIDERATIONS

Consult federal, state and local waste regulations to determine appropriate waste characterization of material and allowable disposal methods.

14. TRANSPORTATION INFORMATION

PROPER SHIPPING NAME: Propane
HAZARD CLASS: 2.1
DOT IDENTIFICATION NUMBER: UN 1978
DOT SHIPPING LABEL: FLAMMABLE GAS Placard:



PROPER SHIPPING NAME: Petroleum Gas, Liquefied
HAZARD CLASS: 2.1
DOT IDENTIFICATION NUMBER: UN 1075
DOT SHIPPING LABEL: FLAMMABLE GAS

15. REGULATORY INFORMATION

U.S. FEDERAL, STATE, and LOCAL REGULATORY INFORMATION

This product and its constituents listed herein are on the EPA TSCA Inventory. Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/or local reporting requirements. This product and/or its constituents may also be subject to other federal, state, or local regulations; consult those regulations applicable to your facility/operation.



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CLEAN WATER ACT (OIL SPILLS)

Any spill or release of this product to "navigable waters" (essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802) as required by U.S. Federal Law. Also contact appropriate state and local regulatory agencies as required.

CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIRONMENT)

The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts natural gas and synthetic gas usable for fuel and any indigenous components of such from the CERCLA Section 103 reporting requirements. However, other federal reporting requirements, including SARA Section 304, may still apply.

SARA SECTION 311/312 - HAZARD CLASSES

<u>ACUTE HEALTH</u>	<u>CHRONIC HEALTH</u>	<u>FIRE</u>	<u>SUDDEN RELEASE OF PRESSURE</u>	<u>REACTIVE</u>
X	X	X	X	--

SARA 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 of 40 CFR 372:

<u>INGREDIENT NAME</u>	<u>CONCENTRATION PERCENT BY VOLUME</u>
Propylene CAS NUMBER: 115-07-1	30 max.

CALIFORNIA PROPOSITION 65 LIST OF CHEMICALS

This product does not contain chemicals that are included on the Proposition 65 "List of Chemicals" required by the California Safe Drinking Water and Toxic Enforcement Act of 1986:

CANADIAN REGULATORY INFORMATION (WHMIS)

Class A (Compressed Gas) Class B, Division 1 (Flammable Gas)

16. OTHER INFORMATION

NFPA® HAZARD RATING	HEALTH:	1
	FIRE:	4
	REACTIVITY:	0

Refer to NJPA 704 "Identification of the Fire Hazards of Materials" for further information

HMIS® HAZARD RATING	HEALTH:	1	Slight
	FIRE:	4	Extreme
	PHYSICAL:	0	Minimal

SUPERSEDES MSDS DATED: 1/15/2001



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ABBREVIATIONS:

AP = Approximately < = Less than > = Greater than
N/A = Not Applicable N/D = Not Determined ppm = parts per million

ACRONYMS:

ACGIH	American Conference of Governmental Industrial Hygienists	NTP	National Toxicology Program
AIHA	American Industrial Hygiene Association	OPA	Oil Pollution Act of 1990
ANSI	American National Standards Institute (212)642-4900	OSHA	U.S. Occupational Safety & Health Administration
API	American Petroleum Institute (202)682-8000	PEL	Permissible Exposure Limit (OSHA)
CERCLA	Comprehensive Emergency Response, Compensation, and Liability Act	RCRA	Resource Conservation and Recovery Act
DOT	U.S. Department of Transportation [General Info: (800)467-4922]	REL	Recommended Exposure Limit (NIOSH)
EPA	U.S. Environmental Protection Agency	SARA	Superfund Amendments and Reauthorization Act of 1986 Title III
HMIS	Hazardous Materials Information System	SCBA	Self-Contained Breathing Apparatus
IARC	International Agency For Research On Cancer	SPCC	Spill Prevention, Control, and Countermeasures
MSHA	Mine Safety and Health Administration	STEL	Short-Term Exposure Limit (generally 15 minutes)
NFPA	National Fire Protection Association (617)770-3000	TLV	Threshold Limit Value (ACGIH)
NIOSH	National Institute of Occupational Safety and Health	TSCA	Toxic Substances Control Act
NOIC	Notice of Intended Change (proposed change to ACGIH TLV)	TWA	Time Weighted Average (8 hr.)
		WEEL	Workplace Environmental Exposure Level (AIHA)
		WHMIS	Workplace Hazardous Materials Information System (Canada)

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