



# MATERIAL SAFETY DATA SHEET

## 1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

El Paso Corporation  
and its subsidiaries  
1001 Louisiana Street  
Houston, Texas 77002

Information: (713) 420-2600  
CHEMTREC: (800) 424-9300

**Product Name:** Propane (odorized) Last Revision: 03/25/2008  
**MSDS Number:** A0011.msds Date Prepared: 10/18/85

**Synonyms:** Dimethyl Methane, Propane/Propylene Feedstock  
**Product Description:** Propane, Aliphatic Hydrocarbon.

## 2. COMPOSITION & INFORMATION ON INGREDIENTS

Product/ Components	CAS No.	Wt% <sup>(4)</sup>	Occupational Exposure Limits			Units
			OSHA <sup>(1)</sup>	ACGIH <sup>(1)</sup>	NIOSH <sup>(2)</sup>	
Propane (odorized) mixture	Mixture	100	N/A	N/A	N/A	N/A
Propane	74-98-6	65-100	1000	1000	1000	ppm
Propylene	115-07-1	0-35	N/A	500	N/A	ppm
n-Butane	106-97-8	0-2.5	800 <sup>(3)</sup>	1000	800	ppm
Ethyl Mercaptan	75-08-1	<1%	10 <sup>(5)</sup>	0.5	0.5 <sup>(6)</sup>	ppm

<sup>(1)</sup>8-hour TWA unless otherwise specified.

<sup>(2)</sup>10-hour TWA unless otherwise specified.

<sup>(3)</sup>Vacated 1989 PEL. The manufacturer has included this data for informational purposes since these values were vacated in 1992.

<sup>(4)</sup>Normal composition ranges are shown. Exceptions may occur depending upon the source of the gas. Propane is the principal component.

<sup>(5)</sup>Ceiling-The concentration that shall not be exceeded during any part of the working exposure

<sup>(6)</sup>NIOSH Ceiling-The exposure that shall not be exceeded during any part of the work day. If instantaneous monitoring is not feasible, the ceiling shall be assed as a15 minute

N/A = Not Applicable.

**WARNING:** Ethyl mercaptan is added as an odorant to aid in leak detection for your safety. Under certain circumstances, the intensity of ethyl mercaptan odor may fade due to chemical oxidation (in the presence of rust, air or moisture), adsorption or absorption. Some people, especially the elderly, have olfactory perception problems and may hinder their ability to detect the ethyl mercaptan odor. Some physical conditions that may diminish the sense of smell are colds, allergies, sinus congestion, and/or the use of alcohol, drugs, or tobacco. Prolonged exposure to mercaptans may also limit the ability to detect the presence of ethyl mercaptan. Strong odors such as cooking odors, damp or musty smells may mask or hide the ethyl mercaptan stench. While ethyl mercaptan may not impart the warning of the presence of propane in every instance, it is generally effective in a majority of situations. Familiarize yourself, and your customers, with this warning, and other facts associated with the so-called odor-fade phenomenon. Propane is heavier than air and will tend to accumulate in low areas. Any source of ignition in the area where propane gas is present may ignite the gas. These ignition sources could include sparks from light switches, telephones, appliance motors, and static electricity from walking across the room.

### 3. HAZARDS IDENTIFICATION

Note: This product has not been tested by El Paso Corporation to determine its specific health hazards. Therefore, the information provided in this section includes health hazard information on the product components.

<b>Carcinogenicity:</b>	<b>NTP</b>	<b>IARC Monographs</b>	<b>OSHA Regulated</b>
Propane (odorized)	No	No	No
Propylene	No	Yes	No

#### EMERGENCY OVERVIEW

**SIMPLE ASPHYXIANT:** Displaces oxygen in air. If odorant is detected, there is the potential for a hazardous environment. All sources of ignition should be removed and all non-emergency personnel should be evacuated. Check for leaks and assure that gas is not present in combustible amounts. Appropriate gas detection and measuring equipment may be necessary to assure safe conditions.

#### Potential Health Effects from Overexposure

##### **Acute Effects:**

Eyes: Irritation. Direct contact with liquefied product may result in burns or frostbite.

Skin: Irritation. Direct contact with liquefied product may result in burns or frostbite.

Inhalation: Overexposure may cause weakness, headache, confusion, blurred vision, drowsiness, suffocation, nausea and/or other nervous system effects. Continued exposure may result in dizziness, slurred speech, flushed face, unconsciousness, or convulsions. High concentrations, usually in excess of 10% may affect the heart and cause respiratory depression.

Ingestion: Not applicable.

##### **Chronic Effects:**

None determined.

**Additional Medical and Toxicological Information:** (Note to Physicians) Due to increased risk of eliciting cardiac dysrhythmias, catecholamine drugs, such as epinephrine, should be used with special caution in situations of emergency life support. Arrhythmias have been reported in animals exposed to high concentrations and given epinephrine. Medical providers are urged to contact a Regional Poison Center at 1-800-222-1222.

Odor detection should not constitute the only means of hazard identification because some people are unable to smell the odorant due to competing odors, common colds, allergies, smoking, or an inherent inability to detect the smell. Also, prolonged exposure to ethyl mercaptan may diminish the ability to smell the odorant; this is called "olfactory fatigue."

### 4. FIRST AID MEASURES

Eye Contact: Flush with tepid water for at least 15 minutes. Get medical attention.

Skin Contact: Flush area with tepid water. Do not use hot water. Do not rub affected area. If frostbite has occurred, get medical attention.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen, and seek medical attention by calling 911.

Ingestion: Not expected to occur.

## 5. FIRE FIGHTING MEASURES

Flash Point: -156°F (TCC)

Flammable Limits in Air, % by Volume:

Lower: 2.1

Upper: 9.5

Autoignition Temperature: 842 °F (NFPA 1994)

Extinguishing Media: Dry chemical, foam, or carbon dioxide.

NFPA Ratings: Health: 1 Flammability: 4 Reactivity: 0

### General Hazard:

Vapors released from a spill may create an explosive atmosphere. The gas is heavier than air and may travel along the ground; distant ignition and flash back possible. May accumulate in low ceiling spaces causing deficiency of oxygen. As a result of flow, agitation, etc., electrostatic charges can be generated. Do not enter a vapor cloud due to potential for flash fire. Containers of Propane may rupture violently if exposed to high heat or flame.

### Fire Fighting Instructions:

For fighting fires in buildings and confined spaces, firefighters must use self-contained breathing apparatus. If gas has ignited, do not attempt to extinguish. Stop gas flow and allow to burn out. Extinguishing normal Propane fire will permit accumulations of an explosive concentration of vapor and potential for explosion or re-flash. Use water spray to cool exposed area.

## 6. ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL SPILL: Remove all sources of ignition and evacuate all non-emergency personnel. Ventilate area and use self-contained breathing apparatus. Keep upwind of leak. Maintain evacuation until material has evaporated. Equipment used for spill cleanup must be explosion proof and suitable for flammable liquid and vapor. Vapors released from the spill may create an explosive atmosphere.

## 7. HANDLING & STORAGE

HANDLING: Close container after each use. Use of non-sparking and explosion-proof equipment may be necessary based on type of operation. Keep away from heat, oxidizers, and sources of ignition. Be aware of any signs of dizziness or fatigue; exposures to fatal concentrations of propane could occur without any significant warning symptoms.

STORAGE: Store in accordance with National Fire Protection Association recommendations. Keep in a cool, dry, well-ventilated area. Keep container tightly closed.

This product may contain ethyl mercaptan to aid in the detection of a leak or spill. The National Fire Protection Association suggests ethyl mercaptan be added at a ratio of one pound per 10,000 gallons of propane, and some state or local laws may require it. As an added measure of protection against odor fade, PG&E NGL Marketing, L.P. adds 1.5 pounds of odorant to each 10,000 gallons of fuel. However, ethyl mercaptan, or any other odorant, may not be effective in all instances; therefore, odor detection should not be used as the sole means of hazard identification or to confirm restoration of safe conditions in the event of a leak.

It has been determined that the odorant characteristic may fade or diminish due to:

- Rust or scale present in the storage container and/or pipes (the odorant reacts with the oxidation in the container).
- Rough interior surfaces of the storage container (allows odorant molecules to penetrate pores of surface and adsorb into container).
- Surrounding atmosphere containing furniture, carpet, drapery and walls, especially those made of wood, rock, or other masonry product (the odorant is absorbed by these items).
- Soil (in underground leaks, the soil can filter the molecules from the product).
- Individual human variables such as common colds, allergies, smoking habits or an inherent inability to distinguish the smell.
- A prolonged exposure reducing the ability to smell the odorant, this is also known as olfactory fatigue.
- Odorant levels may decline during shipment or storage, and its effectiveness may be reduced.

#### SAFE HANDLING

1. Consult a safety professional to assist in safe site-specific handling of gas cylinders.
2. Store in accordance with National Fire Protection Association recommendations.
3. Cylinders are transported with a suitable hand-truck. Do not drag, slide, or roll cylinders.
4. Keep the valve protection cap (where provided) tightly secured until the cylinder is ready for use.
5. Use designated CGQ fittings and other support equipment (threaded: for gas withdrawal CGA 510, liquid withdrawal CGA 555).
6. Leak check system with leak detection solution, never with flame.
7. Immediately contact the supplier if there are any difficulties associated with operating the cylinder valve.
8. Use an adjustable strap wrench to remove overly tight or rusted caps.

#### IMPROPER HANDLING:

1. Never tamper with pressure relief devices in valves and cylinders.
2. Do not heat cylinder to increase the discharge rate of the product from the cylinder.
3. Do not use oils or grease on gas-handling fittings or equipment.
4. Do not "crack" valve open before connecting it, since self-ignition may occur.
5. Never strike an arc on a compressed gas cylinder or cylinder part of an electric circuit.

#### SAFE STORAGE:

1. Store in accordance with National Fire Protection Association recommendations listed in NFPA 58.
2. Cylinders should be stored in dry, well-ventilated areas away from sources of heat, ignition and direct sunlight. The storage area should be clear of materials that can burn.
3. The temperature where cylinders are stored should not exceed 52 deg. C (125 deg. F).
4. Cylinders should be stored upright with valve-protection cap in place and firmly secured to prevent falling or being knocked over.
5. Cylinders stored in the open should be protected against extremes of weather and from the dampness of the ground to prevent rusting.
6. Containers should be stored away from heavy traffic areas and emergency exits. Containers should be stored away from process and production areas, from elevators, building and room exits, or main aisles leading to exits.
7. Isobutane gas cylinders should be separated from oxygen cylinders, or other oxidizers, by minimum distance of 20 ft., or by a barrier of non-combustible material at least 5 ft. high, having a fire-resistance rating of at least 30 minutes.
8. Storage areas must meet national electrical codes for class 1 hazardous areas. "No smoking or open flames" signs need to be displayed in storage or use areas.
9. Installation of leak detection and alarm for storage and use areas should be considered.

10. Appropriate extinguishing equipment needs to be in the storage area (i.e., sprinkler system, portable fire extinguishers).
11. The smallest amount of natural gas on-site as is necessary. Full and empty cylinders should be segregated. To prevent containers from being stored for long periods of time, use a first-in, first-out inventory system.
12. Explosion-proof equipment, non-sparking ventilation systems, and appropriate electrical systems should be used. Electrical equipment used in gas-handling operations or located in storage areas should be non-sparking or explosion proof.
13. Use a check valve in the discharge line to prevent hazardous backflow.

## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

- Eye Protection:** Face shield and chemical goggles should be used when changing valves, hoses, etc. Full facepiece where respiratory protection is required.
- Skin Protection:** Where contact with liquid propane is possible, wear appropriate protective clothing and/or gloves.
- Inhalation:** Use approved respiratory protective equipment for cleaning large spills or entry into tanks, vessels or other confined spaces or in any situation where airborne concentrations may exceed occupational exposure limits.
- Ventilation:** Use only non-sparking, explosion proof, totally enclosed ventilation systems to ensure the propane concentrations do not exceed the lower explosive limit of 2.1%. If appropriate, install automatic monitoring instrumentation to alert personnel of dangerous levels of flammable gases.
- Emergency Wash Facilities:** Tepid water for washing affected skin and/or eyes should be available.
- Special Protective Clothing:** If there is the potential for skin contact with liquid product, thermally protective, impervious clothing should be used to protect against frostbite.
- Gloves:** Should be used to prevent frostbite from exposure to liquid product.
- Respirator:** Use NIOSH-approved air-supplied respirator or self-contained breathing apparatus

## 9. PHYSICAL & CHEMICAL PROPERTIES

Boiling Point @ 1 atm: -43.8°F	Melting Point: N/A
Vapor Pressure 10 mmHg @ 26.9°C	Vapor Density (Air=1): 1.5
% Solubility in H <sub>2</sub> O: Slightly soluble	pH: N/A
Specific Gravity 0.59 @ -50°C (liquid)	Evaporation Rate: N/A
% Volatile by Volume: 100	(Butyl Acetate=1)
Viscosity (method, temp.): N/A	Odor: Mercaptan
Appearance: Colorless Gas	Molecular Wt.: 44.09

## 10. STABILITY & REACTIVITY

**Stability:** Stable under normal conditions of use.

**Hazardous Polymerization:** Will not occur.

**Conditions to Avoid/Incompatibilities:** Strong oxidizing agents, heat, sparks, flame, build-up of static electricity.

**Hazardous Decomposition Products:** Carbon monoxide, carbon dioxide.

## 11. TOXICOLOGICAL INFORMATION

No data available.

## 12. ECOLOGICAL INFORMATION

No data available.

## 13. DISPOSAL CONSIDERATIONS

Observe all applicable Federal, State/Provincial and local regulations when treating, storing or disposing of this substance. Allow to evaporate or disperse leaks in air, making sure gas/vapor is dissipated below lower explosive limit.

If the material is to be disposed of as a compressed gas (*i.e.*, in cylinders), it must be managed as a RCRA ignitable hazardous waste.

## 14. TRANSPORT INFORMATION

Identification Number: UN 1075

Class: 2.1 (Flammable gas)

## 15. REGULATORY INFORMATION

### EPA SARA TITLE III

#### **Section 302 EPCRA Extremely Hazardous Substances (EHS)**

Product Component	CAS No.	Wt%	RQ, lb	TPQ, lb
None				

#### **Section 304 CERCLA Hazardous Substances**

Product Component	CAS No	Wt%	RQ, lb
None			

#### **Section 311/312 Hazard Categorization**

Acute:	Chronic:	Fire:	Pressure:	Reactive:
X		X	X	

**Section 313 EPCRA Toxic Substances**

Product Component	CAS No.	Wt. %
Propylene	115-07-1	0-35

Key: RQ = Reportable Quantity  
TPQ = Threshold Planning Quantity of EHS

**CALIFORNIA PROPOSITION 65 WARNING**

Chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm may be found in crude oil and petroleum products. Although it is possible to sufficiently refine a crude oil or its end products to remove the potential for cancer, we are advising that one or more of the listed chemicals may be present in some detectable quantities. Read and follow directions and use care when handling crude oil and petroleum products.

**16. OTHER INFORMATION**

THIS INFORMATION RELATES ONLY TO THE SPECIFIC MATERIAL DESIGNATED AND MAY NOT BE VALID FOR SUCH MATERIAL USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS. SUCH INFORMATION IS TO THE BEST OF THIS COMPANY'S KNOWLEDGE AND BELIEVED ACCURATE AND RELIABLE AS OF THE DATE INDICATED. HOWEVER, NO REPRESENTATION, WARRANTY OR GUARANTEE IS MADE AS TO THE ACCURACY, RELIABILITY OR COMPLETENESS. IT IS THE USER'S RESPONSIBILITY TO SATISFY THEMSELVES AS TO THE SUITABILITY AND COMPLETENESS OF SUCH INFORMATION FOR THEIR OWN PARTICULAR USE.

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