

MATERIAL SAFETY DATA SHEET

FOR ODORIZED PROPANE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Odorized Commercial Propane
Chemical Name: Propane
Chemical Family: Hydrocarbon
Formula: C₃H₈
Synonyms: Dimethylmethane, LP-Gas, Liquefied Petroleum Gas (LPG), Propane, Propyl Hydride

	Transportation Emergency No.	Emergency Number:
	800/424-9300 (CHEMTREC)	

2. COMPOSITION/INFORMATION ON INGREDIENTS

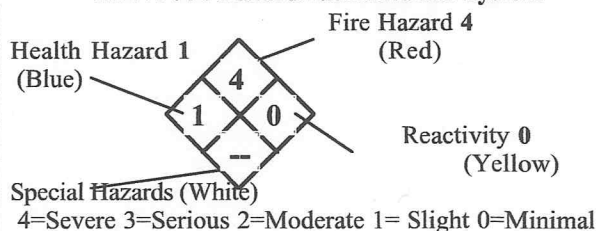
INGREDIENT NAME / CAS NUMBER	PERCENTAGE	OSHA PEL
Propane / 74-98-6.....	87.5-100	
Ethane / 74-84-0.....	0-7.5	
Propylene / 115-07-1.....	0-10.0	1000 ppm
Butanes/ various.....		
Ethyl Mercaptan / 75-08-1.....	16-25 ppm	

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER! Flammable liquefied gas under pressure. Keep away from heat, sparks, flame, and all other ignition sources. Vapor replaces oxygen available for breathing and may cause suffocation in confined spaces. Use only with adequate ventilation. Odor may not provide adequate warning of potentially hazardous concentrations. Vapor is heavier than air. Liquid can cause freeze burn similar to frostbite. Do not get liquid in eyes, on skin, or on clothing. Avoid breathing of vapor. Keep container valve closed when not in use.

NFPA 704 Hazard Identification System



POTENTIAL HEALTH EFFECTS INFORMATION

ROUTES OF EXPOSURE:

Inhalation: Asphyxiant. It should be noted that before suffocation could occur, the lower flammability limit of propane in air would be exceeded, possibly causing both an oxygen-deficient and explosive atmosphere. Exposure to concentrations >10% may cause dizziness. Exposure to atmospheres containing 8%-10% or less oxygen will bring about unconsciousness without warning, and so quickly that the individuals cannot help or protect themselves. Lack of sufficient oxygen may cause serious injury or death.

Eye Contact: Contact with liquid can cause freezing of tissue.

Skin Contact: Contact with liquid can cause frost bite.

[Skin Absorption]: None.

[Ingestion]: Liquid can cause freeze burn similar to frostbite. Ingestion not expected to occur in normal use.

CHRONIC EFFECTS: None.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: None.

OTHER EFFECTS OF OVEREXPOSURE: None.

CARCINOGENICITY: Propane is not listed by NTP, OSHA or IARC.

4. FIRST AID MEASURES

INHALATION: Persons suffering from lack of oxygen should be removed to fresh air. If victim is not breathing, administer artificial respiration. If breathing is difficult, administer oxygen. Obtain prompt medical attention.

EYE CONTACT: Contact with liquid can cause freezing of tissue. Gently flush eyes with lukewarm water. Obtain medical attention immediately.

SKIN CONTACT: Contact with liquid can cause frostbite. Remove saturated clothes, shoes and jewelry. Immerse affect area in lukewarm water not exceeding 105°F. Keep immersed. Get prompt medical attention.

INGESTION: If swallowed, get immediate medical attention.

NOTES TO PHYSICIAN: None.

5. FIRE-FIGHTING MEASURES

FLASH POINT: -156°F (-104°C)

AUTOIGNITION: 842°F (432°C)

IGNITION TEMPERATURE IN AIR: 920-1120°F

FLAMMABLE LIMITS IN AIR BY VOLUME: Lower: 2.15% Upper: 9.6%

EXTINGUISHING MEDIA: Dry chemical, CO₂, water spray or fog for surrounding area. Do not extinguish fire until propane source is shut off.

SPECIAL FIRE-FIGHTING INSTRUCTIONS: Evacuate personnel from danger area. Evacuated personnel should stay up wind, and away from tank ends, and move to a distance at least $\frac{1}{4}$ mile or more away from containers subject to direct flame. Immediately cool container(s) (especially upper half) with water spray from maximum distance and the sides of containers, taking care not to extinguish flames. If flames are extinguished, explosive re-ignition may occur. Stop flow of gas, if possible without risk, while continuing cooling water spray.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Propane is easily ignited. It is heavier than air; therefore, it can collect in low areas while dissipating. Vapors may be moved by wind or water spray. Vapors may move to areas where ignition sources are present, and ignite, flashing back to the source. Pressure in a container can build up due to heat and container may rupture if pressure relief devices should fail to function.

HAZARDOUS COMBUSTION PRODUCTS: In typical use in properly adjusted and maintained gas appliances--None.

If propane combustion is incomplete, poisonous carbon monoxide (CO) may be produced. Defective, improperly installed, adjusted maintained or improperly vented appliances may produce carbon monoxide or irritating aldehydes.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Evacuate the immediate area. Eliminate any possible sources of ignition and provide maximum ventilation. Shut off source of propane, if possible. If leaking from container or valve, contact your supplier and/or fire department.

7. HANDLING AND STORAGE

HANDLING PRECAUTIONS: Propane vapor is heavier than air and can collect in low areas that are without sufficient ventilation. Leak-check system with a leak detector or approved solution, never with flame. Make certain the container service valve is shut off prior to connecting or disconnecting. If container valve does not operate properly, discontinue use and contact supplier. Never insert an object (e.g. wrench, screwdriver, pry bar, etc.) into pressure relief valve or cylinder cap openings. Do not drop or abuse cylinder. Never strike an arc on a gas container or make a container part of an electrical circuit. See 16. OTHER INFORMATION for additional precautions.

STORAGE PRECAUTIONS: Store in a safe, authorized location (outside, detached storage is preferred) with adequate ventilation. Specific requirements are listed in NFPA 58, *Liquefied Petroleum Gas Code*. Isolate from heat and ignition sources. Containers should never be allowed to reach temperature exceeding 125°F (52°C). Isolate from combustible materials. Provide separate storage locations for other compressed and flammable gases. Propane containers should be separated from oxygen cylinders, or other oxidizers, by a minimum distance of 20 feet, or by a barrier of non-combustible material at least 5 feet high, having a fire rating of at least $\frac{1}{2}$ hour. Full and empty cylinders should be segregated. Store cylinders in upright position, or with pressure relief valve in vapor space. Cylinders should be arranged so that pressure relief valves are not directed toward other cylinders. Do not drop or abuse cylinders. Keep container valve closed and plugged or capped when not in use. Install protective caps when cylinders are not connected for use. Empty containers retain some residue and should be treated as if they were full.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS

Ventilation: Provide ventilation so propane does not reach a flammable mixture.

Ignition Source Control: Electrical wiring in liquid transfer areas must be Class I, Group D, Explosion-proof. Other possible ignition sources should be kept away from transfer areas. NO SMOKING Signs should be posted at all approaches and entries to transfer areas. Transfer and storage areas must be kept free of flammables, combustibles and vegetation.

RESPIRATORY PROTECTION (SPECIFY TYPE)

General Use: None.

Emergency Use: If concentrations are high enough to warrant supplied-air or self-contained breathing apparatus, then the atmosphere may be flammable (See Section 5). Appropriate precautions must be taken regarding flammability.

PROTECTIVE CLOTHING: Avoid skin contact with liquid propane because of possibility of freeze burn. Wear gloves and protective clothing which are impervious to the product for the duration of the anticipated exposure.

EYE PROTECTION: Safety glasses are recommended when filling and handling cylinders.

OTHER PROTECTIVE EQUIPMENT: Safety shoes are recommended when handling cylinders.

9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: @ 14.7 psia = -44_i F

SPECIFIC GRAVITY OF VAPOR (Air = 1) at 60_i F: 1.50

SPECIFIC GRAVITY OF LIQUID (Water = 1) at 60_i F: 0.504

VAPOR PRESSURE: @ 70_i F = 127 psig
@ 105_i F = 210 psig

EXPANSION RATIO (From liquid to gas @ 14.7 psia): 1 to 270

SOLUBILITY IN WATER: Slight, 0.1 to 1.0%

APPEARANCE AND ODOR: A colorless and tasteless gas at normal temperature and pressure.
An odorant has been added to provide a strong unpleasant odor.

ODORANT WARNING: Odorant is added to aid in the detection of leaks. One common odorant is ethyl mercaptan, CAS No. 75-08-01. Odorant has a foul smell. The ability of people to detect odors varies widely. Also, certain chemical reactions with material in the propane system, or fugitive propane gas from underground leaks passing through certain soils, can reduce the odor level. No odorant will be 100% effective in all circumstances. If odorant appears to be weak, notify propane supplier immediately.

10. STABILITY AND REACTIVITY

STABILITY: Stable.

Conditions to Avoid: Keep away from high heat, strong oxidizing agents and sources of ignition.

REACTIVITY:

Hazardous Decomposition Products: Products of combustion are fumes, smoke, carbon monoxide and aldehydes and other decomposition products. Incomplete combustion can cause carbon monoxide, a toxic gas while burning, or when used as an engine fuel.

Hazardous polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Propane is non-toxic and is a simple asphyxiant, however, it does have slight anesthetic properties and higher concentrations may cause dizziness.

[IRRITANCY OF MATERIAL]: None

[SENSITIZATION TO MATERIAL]: None

[REPRODUCTIVE EFFECTS]: None

[TERATOGENICITY]: None

[MUTAGENICITY]: None

[SYNERGISTIC MATERIALS]: None

12. ECOLOGICAL INFORMATION

No adverse ecological effects are expected. Propane does not contain any Class I or Class II ozone-depleting chemicals (40 CFR Part 82.) Propane is not listed as a marine pollutant by DOT (49 CFR Part 171).

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused product in the container. Return to supplier for safe disposal.

Residual product within process system may be burned at a controlled rate, if a suitable burning unit (flare stack) is available on site. This shall be done in accordance with federal, state and local regulations.

14. TRANSPORTATION INFORMATION

DOT SHIPPING NAME: Liquefied Petroleum Gas

HAZARD CLASS: 2.1 (Flammable Gas)

IDENTIFICATION NUMBER: UN 1075

PRODUCT RQ: None

SHIPPING LABEL(S): Flammable gas

IMO SHIPPING NAME: Propane

PLACARD (When Required): Flammable gas

IMO IDENTIFICATION NUMBER: UN 1978

SPECIAL SHIPPING INFORMATION: Container should be transported in a secure, upright position in a well-ventilated vehicle.

15. REGULATORY INFORMATION

The following information concerns selected regulatory requirements potentially applicable to this product. Not all such requirements are identified. Users of this product are responsible for their own regulatory compliance on a federal, state [provincial] and local level.

U.S. FEDERAL REGULATIONS

EPA Environmental Protection Agency

CERCLA

Comprehensive Environmental Response, Compensation and Liability Act of 1980
(40 CFR Parts 117 and 302):
Reportable Quantity (RQ): None

SARA

Superfund Amendment and Reauthorization Act

- **SECTIONS 302/304:** Require emergency planning on threshold planning quantities (TPQ) and release reporting on reportable quantities (RQ) of EPA's extremely hazardous substances (40 CFR Part 355).
Extremely Hazardous Substances: None
Threshold Planning Quantity (TPQ): None

SARA continued

- **SECTIONS 311/312:** Require submission of material safety data sheets (MSDSs) and chemical inventory reporting with identification of EPA-defined hazard classes (40 CFR Part 370). The hazard classes for this product are:

IMMEDIATE: Yes PRESSURE: Yes

DELAYED: No

REACTIVITY: No

FLAMMABLE: Yes

- SECTION 313: Requires submission of annual reports of release of toxic chemicals that appear in 40 CFR Part 372.

Propane does not require reporting under Section 313.

40 CFR PART 68 Risk Management for Chemical Accidental Release

TSCA **Toxic Substance Control Act**
Propane is not listed on the TSCA inventory.

OSHA **Occupational Safety and Health Administration**

29 CFR 1910.119: Process Safety Management of Highly Hazardous Chemicals.

FDA **Food and Drug Administration**

21 CFR 184.1655: Generally recognized as safe (GRAS) as a direct human food ingredient when used as a propellant, aerating agent and gas.

16. OTHER INFORMATION

SPECIAL PRECAUTIONS: Use piping and equipment adequately designed to withstand pressures to be encountered.

NFPA 58 *Liquefied Petroleum Gas Code* and OSHA 29 CFR 1910.110 require that all persons employed in handling LP-gases be trained in proper handling and operating procedures, which the employer shall document. Contact your propane supplier to arrange for the required training. Allow only trained and qualified persons to install and service propane containers and systems.

WARNING: Be aware that with odorized propane, the intensity of ethyl mercaptan stench (its Odor) may fade due to chemical oxidation (in the presence of rust, air or moisture), adsorption or absorption. Some people have nasal perception problems and may not be able to smell the ethyl mercaptan stench. Leaking propane from underground lines may lose its odor as it passes through certain soils. 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, your employees and customers with this warning and other facts associated with the so-called odor-fade phenomenon. If you do not already know all the facts, contact your propane supplier for more information about odor, electronic gas alarms and other safety considerations associated with the handling, storage and use of propane.

Issue Date: November, 2001

ISSUE INFORMATION

This material safety data sheet and the information it contains is offered to you in good faith as accurate. The Texas Railroad Commission does not manufacture or supply this product. Much of the information contained in this data sheet was received from outside sources. To the best of our knowledge this information is accurate, but the Texas Railroad Commission does not guarantee its accuracy or completeness. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely, comply with all applicable laws and regulations and to assume the risks involved in the use of this product.

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Source: *National Propane Gas Association*