



# MATERIAL SAFETY DATA SHEET FOR ODORIZED PROPANE

## 1. Chemical Product and Company Identification

<b>Product Name:</b> Odorized Commercial Propane	<b>Name and Address</b>
<b>Chemical Name:</b> Propane	Kiva Energy
<b>Chemical Family:</b> Paraffinic Hydrocarbon	1655 W. 1900 N.
<b>Formula:</b> C <sub>3</sub> H <sub>8</sub>	SLC, UT 84116
<b>Synonyms:</b> Dimethylmethane, LP-Gas, Liquefied Petroleum Gas (LPG), Propane, Propyl Hydride	
<b>Transportation Emergency Number:</b> PERS 1-800-633-8253	

## 2. Composition / Information on Ingredients

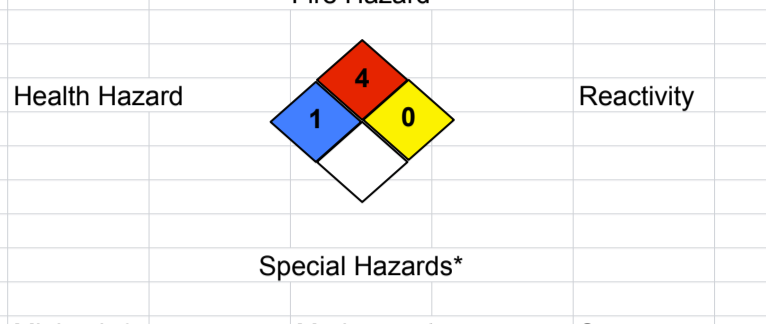
INGREDIENT NAME /CAS NUMBER	PERCENTAGE	OSHA PEL	ACGIH TLV
Propane / 74-98-6	87.5 - 100	1,000 ppm	Simple asphyxiant
Ethane / 74-84-0	0 - 7.0		Simple asphyxiant
Propylene / 115-07-1	0 - 5.0		Simple asphyxiant
Butanes / 106-97-8	0 - 2.5		Simple asphyxiant
Ethyl Mercaptan / 75-08-1	0 - 50 ppm	0.5 ppm	0.5 ppm

**WARNING:** The intensity of the chemical odorant (e.g., ethyl mercaptan) may "fade" or diminish due to chemical oxidation, adsorption or absorption. Individuals with nasal perception problems may not be able to smell the odorant. Leaking propane from underground gas lines may lose its odor as it passes through certain soils. No odorant is effective 100% of the time. Therefore, circumstances can exist when individuals are in the presence of leaking propane and not be alerted by the smell.

## 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. Reliance upon detection of odor may not provide adequate warning of potentially hazardous concentrations. Vapor is heavier than air; may collect at low levels. Liquid can cause freeze burn similar to frostbite. Do not get liquid in eyes, on skin, or on clothing. Avoid breathing vapor. Keep service valve closed when not in use.



### POTENTIAL HEALTH EFFECTS INFORMATION

#### ROUTES OF EXPOSURE:

**Inhalation:** Asphyxiation. 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 19% or less oxygen will bring about unconsciousness without warning. 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 frostbite.

**Skin Absorption:** None.

**Ingestion:** Ingestion is not expected to occur in normal use. However, liquid can cause freeze burn similar to frostbite.

**CHRONIC EFFECTS:** None.

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

## 3. First Aid Measures

**INHALATION:** Individuals 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 immediate medical assistance.

**EYE CONTACT:** Gently flush eyes with lukewarm water. Obtain immediate medical assistance.

**SKIN CONTACT:** Remove saturated clothes, shoes and jewelry. Immerse affected area in lukewarm water not exceeding 105° F. Keep immersed. Obtain immediate medical assistance.

**INGESTION:** If swallowed, obtain immediate medical assistance.

**FLASH POINT:** -156°F (-104°C)

**AUTOIGNITION:** 842°F (432°C)

**IGNITION TEMPERATURE IN AIR:** 920°F to 1120°F (493°C to 549°C)

**FLAMMABLE LIMITS IN AIR (% by volume):** Lower: 2.15% Upper: 9.6%

**EXTINGUISHING MEDIA:** Dry chemical, CO<sub>2</sub>, water spray or fog for surrounding area. Do not attempt to extinguish fire until propane source is isolated.

**SPECIAL FIRE-FIGHTING INSTRUCTIONS:** Evacuate all unnecessary personnel from the area. Allow only properly trained and protected emergency response personnel in area. A NIOSH approved self-contained breathing apparatus may be required. If gas flow cannot be shut off, do not attempt to extinguish fire. Allow fire to burn itself out. Use high volume water supply to cool exposed pressure containers and nearby equipment. Approach a flame-enveloped container from the sides, never from the ends. Use extreme caution when applying water to a container that has been exposed to heat or flame for more than a short time. For uncontrollable fires and/or when flame is impinging on container, withdraw all personnel and evacuate vicinity immediately.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Propane is heavier than air and can collect in low areas. Flash back along a vapor trail is possible. Pressure in a container can build up due to heat; and, container may rupture suddenly and violently without warning if pressure relief devices fail to function properly. If flames are against the container, withdraw immediately on hearing a rising sound, if venting increases in volume or intensity or if there is discoloration of the container due to fire. Propane released from a properly functioning relief valve on an overheated container can also become ignited.

**HAZARDOUS COMBUSTION PRODUCTS:** None.

## 6. Accidental Release Measures

**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.

## 7. Handling and Storage

**HANDLING PRECAUTIONS:** Propane vapor is heavier than air and can collect in low areas that are without sufficient ventilation. Conduct system checks for leaks with a leak detector or 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. Never insert an object (e.g., wrench, screwdriver, pry bar, etc.) into pressure relief valve or cylinder valve cap openings. Do not drop or abuse cylinders. Never strike an arc on a gas container or make a container part of an electrical circuit. See Section 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, LP-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 1/2 hour. Full and empty cylinders should be segregated. Keep cylinders in an upright position at all times so that each pressure relief valve communicates with the vapor space. 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 Control / Personal Protection

### ENGINEERING CONTROLS

**Ventilation:** Provide ventilation adequate to ensure propane does not reach a flammable mixture.

### RESPIRATORY PROTECTION

**General Use:** None.

**Emergency Use:** If concentrations are high enough to warrant supplied-air or NIOSH 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 that are impervious to the product for the duration of the anticipated exposure.

**EYE PROTECTION:** Safety glasses, goggles or face shields are recommended when handling cylinders.

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

## 9. Physical and Chemical Properties

**BOILING POINT:** @ 14.7 psia = -44° F (@ 1.00 atm.pressure = -42°C)

**SPECIFIC GRAVITY OF VAPOR (Air = 1) at 60° F (15.56°C):** 1.50

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

**VAPOR PRESSURE:** @ 70° F (20°C) = 127 psig; @ 105° F (45°C) = 210 psig; @ 130°F (55°C) = 287 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 (ethyl mercaptan) is added to provide a strong unpleasant odor. Should a propane-air mixture reach the lower limits of flammability, the ethyl mercaptan concentration will be approximately 0.5 ppm in air.

**ODORANT WARNING:** Odorant is added to aid in the detection of leaks. One common odorant is ethyl mercaptan, CAS No. 75-08-1. Odorant has a foul smell. The ability of people to detect odors varies widely. Also, the odor level can be reduced by certain chemical reactions with material in the propane system or when fugitive propane gas from underground leaks passes through certain soils. No odorant will be 100% effective in all circumstances. If the presence of the odorant is not obvious, notify your 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:** Under fire conditions, fumes, smoke, carbon monoxide, aldehydes and other decomposition products. In most applications where there is inadequate venting to the outside air, incomplete combustion will produce carbon monoxide (a toxic gas) and potentially develop concentrations that can create a serious health hazard.

**Hazardous Polymerization:** Will not occur.

## 11. Toxicological Information

Propane is non-toxic and is a simple asphyxiant. It has slight anesthetic properties. Higher concentrations may cause dizziness.

**IRRITANCY OF MATERIAL:** None.

**SENSITIZATION TO MATERIAL:** None

**REPRODUCTIVE EFFECTS:** None

**MUTAGENICITY:** None

**TERATOGENICITY:** 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 it to your supplier or for safe disposal. Residual product within a process system may be burned at a controlled rate if a suitable burning unit is available on site, and is done in accordance with federal, state and local regulations.

## 14. Transport Information

**DOT SHIPPING NAME:** Liquefied Petroleum Gas

**SHIPPING LABEL (S):** Flammable Gas

**IDENTIFICATION NUMBER:** UN 1075

**PLACARD (WHEN REQUIRED):** Flammable Gas

**IMO SHIPPING NAME:** Propane

**SPECIAL SHIPPING INFORMATION:** Container must be

**IMO IDENTIFICATION NUMBER:** UN 1978

transported in a well-ventilated vehicle, secured, and in a

**HAZARD CLASS:** 2.1 (Flammable Gas)

position such that the pressure relief device is in communication

**PRODUCT RQ:** None

with the vapor space.

## 15. Regulatory Information

The following information concerns U.S. Federal 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

#### Environmental Protection Agency (EPA)

**Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) - 40 CFR Parts 117 and 302**

**Reportable Quantity (RQ):** None

#### Superfund Amendment and Reauthorization Act (SARA)

\* Sections 302/304: Relates to emergency planning on threshold planning quantities (TPQ) and release reporting based on reportable quantities (RQ) of EPA's extremely hazardous substances (40 CFR Part 355).

**Extremely Hazardous Substances:** None

**Threshold Planning Quantity (TPQ):** None

\* Sections 311/312: Relates to 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:** No

**PRESSURE:** Yes

**DELAYED:** No

**REACTIVITY:** No

**FLAMMABLE:** Yes

\* Section 313: Relates to submission of annual reports of release of toxic chemicals that appear in 40 CFR Part 372. Propane does not require reporting under Section 313.

#### Toxic Substance Control Act (TSCA)

Propane is listed on the TSCA inventory.

#### Occupational Safety and Health Administration (OSHA)

The following 29 CFR Parts may apply to propane:

**29 CFR 1910.110:** Storage and Handling of Liquefied Petroleum Gases

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

**29 CFR 1910.1200:** Hazardous Communications

**Food and Drug Administration (FDA)**

**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 pressure to be encountered. NFPA 58, LP-GAS CODE and OSHA 29 CFR 1910.10 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.

### ISSUE INFORMATION

**Issue Date:** \_\_\_\_\_ **Issue By:** Director of Safety

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