

MATERIAL SAFETY DATA SHEET

EFFECTIVE MARCH 1, 1995

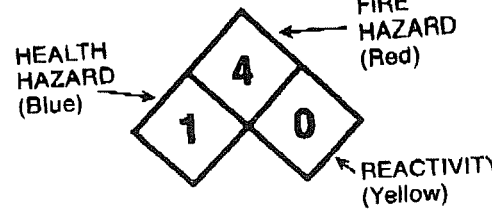
AmeriGas Propane, L.P.
P.O. Box 965, Valley Forge, PA 19482

TRANSPORTATION EMERGENCY NO.:
CHEMTREC NO. 800-424-9300

GENERAL INFORMATION:

SAFETY DEPT.
610-337-1000

DANGER! Extremely flammable liquefied gas under pressure. Keep away from heat, sparks, flame, and all other ignition sources. Vapor reduces oxygen available for breathing and may cause suffocation in confined spaces. Use only with adequate ventilation. Odor may not provide adequate warning of leaks. Use of propane gas detectors in accordance with manufacturer's instructions is recommended. Vapor is heavier than air and may collect at low levels. Liquid may cause freeze burn similar to frostbite. Do not get liquid in eyes, on skin, or on clothing. Avoid prolonged breathing of vapor. Keep container valve closed when not in use. Do not allow container to run empty. (See "Warning-Limitation of Propane Odorant: You May Not Always Smell Leaking Propane" supplied with this MSDS.)



- 4 - Severe
- 3 - Serious
- 2 - Moderate
- 1 - Slight
- 0 - Minimal

SECTION I — IDENTIFICATION

PRODUCT: Propane
CHEMICAL FAMILY: Paraffinic Hydrocarbon
SYNONYMS: Liquefied Petroleum Gas; LP-Gas; LPG
CHEMICAL FORMULA: C₃H₈

SECTION II — INGREDIENTS

MATERIAL	CAS NUMBER	PERCENT (approximate)
ETHANE	74-84-0	0-5.0
PROPANE	74-98-6	87.5-100
PROPYLENE	115-07-1	0-5.0
BUTANES	Various	0-2.5
ETHYL MERCAPTAN	75-08-01	0-50 ppm

SECTION III — HEALTH INFORMATION

INHALATION: Asphyxiant in high concentrations due to dilution of available oxygen. At excessive vapor concentrations, this product has anesthetic, asphyxiating properties and may cause sleepiness. At levels above 100,000 ppm (i.e. 10%), propane is mildly irritating to the respiratory tract and may result in dizziness, headache, drowsiness, nausea, shortness of breath, muscular incoordination, excessive salivation, disorientation, vomiting, and excitation. In extreme cases, convulsions, unconsciousness and death may occur as a result of asphyxiation. Persons with chronic respiratory disease should avoid exposure.

INGESTION: Liquid may cause freeze burn similar to frostbite. Ingestion not expected to occur in normal use.

EYE CONTACT: Liquid may cause freeze burn similar to frostbite.

SKIN CONTACT: Liquid may cause freeze burn similar to frostbite.

OTHER: Product is not listed by IARC, NTP or OSHA as a potential carcinogen. Propane and some of the minor components have been reported to be cardiac sensitizers in experiments.

SECTION IV — OCCUPATIONAL EXPOSURE LIMITS

MATERIAL	PEL/TWA	TLV/TWA
ETHANE	Not Established	Simple Asphyxiant
PROPANE	1000 ppm	Simple Asphyxiant
PROPYLENE	Not Established	Simple Asphyxiant
BUTANES	800 ppm	800 ppm

SECTION V — EMERGENCY AND FIRST AID PROCEDURE

FOR OVEREXPOSURE BY:

INHALATION: Remove victim from further exposure and into fresh air. Provide oxygen if breathing is difficult. If victim is unconscious, get prompt medical attention.

SKIN CONTACT: If freeze burn occurs, remove contaminated clothes, shoes and jewelry. Immerse burned area in warm (not hot) water. Keep immersed. Get prompt attention.

EYE CONTACT: For contact with liquid, flush immediately with water. Obtain immediate medical attention.

INGESTION: If swallowed, get immediate medical attention.

SECTION VI — PHYSICAL DATA

BOILING POINT:-44
MELTING POINT:N/A
VAPOR PRESSURE:196 psig @ 100
SPECIFIC GRAVITY (H ₂ O = 1):0.51
VAPOR DENSITY (AIR = 1):1.5
SOLUBILITY IN WATER:Slight, 0.1 to 1.0
APPEARANCE AND ODOR:Colorless, odorless in natural form

ODORANT WARNING: Odorant is added to aid in detection of leaks. One common odorant is ethyl mercaptan, CAS No. 75-08-1. Odorant effective for detection of leaks in most instances, but not everyone can smell the odor. The ability of people to detect odors varies widely. Also certain chemical reactions with material in the propane system can reduce or eliminate the propane odor resulting in the possibility that a person can be in the presence of leaking propane and not be alerted by smell. No odorant will be 100% effective in all circumstances. Accordingly, the use of propane gas detectors in accordance with manufacturer's instructions by you and your customers is recommended. If odor level appears to be weak, notify your propane supplier immediately. Read and understand "Warning-Limitations of Propane Odorant: You May Not Always Smell Leaking Propane" supplied with this MSDS. If you do not have a copy of this warning, obtain one from AmeriGas/Petrolane immediately.

SECTION VII-FIRE AND EXPLOSION HAZARD

FLASH POINT & METHOD USED:-156 F (estimated)
IGNITION TEMPERATURE IN AIR:920 - 1,120
FLAMMABLE LIMITS IN AIR, % BY VOLUME:	LOWER: 2.2 UPPER: 9.6

NFPA RATING (Under Fire Conditions. Does not apply to exposure hazards other than during fire):
HEALTH:.....1 Slight
FIRE:.....4 Extremely flammable
REACTIVITY:.....0 Stable

FIREFIGHTING PROCEDURES: Eliminate sources of ignition. Evacuate area. Notify fire department. Allow only trained, properly protected personnel in area. Shut-off source of gas, if possible. Allow fire burn itself out after gas flow is shut off. If gas flow cannot be shut off, do not extinguish fire. Allow fire to burn itself out using high volume water supply to cool heat-exposed pressure containers and nearby equipment. Approach a flame enveloped container from the side, never the head end. Use extreme caution when applying water to a container which has been exposed to heat or flame for more than a short time. For uncontrollable fires and when flame is impinging on container, withdraw all personnel and evacuate vicinity immediately.

SUPPLEMENT TO MSDS FOR NON-RESIDENTIAL CUSTOMERS

WARNING - LIMITATIONS OF PROPANE ODORANT: YOU MAY NOT ALWAYS SMELL LEAKING PROPANE

Propane in its natural state is odorless; therefore, a distinctive odorant with a foul smell is added to provide a method of detection in the event of a leak. (This odorant is usually ethyl mercaptan.) No odorant is effective 100% of the time. For a variety of reasons, circumstances can exist when you or your customers can be in the presence of leaking propane and not be alerted by smell.

Physical or Environmental Conditions Reduce Ability to Smell. For example, some people, for physical reasons, cannot smell certain odors, including propane odorant. Colds, allergies, smoking, alcohol or age, can affect or lessen a person's ability to smell propane odorant. In addition, strong competing odors, continued exposure to propane odorant, or simple inattention can result in a person failing to detect the odor of escaping propane.

Odorant Reactivity Can Diminish or Eliminate Odor. Odorant such as ethyl mercaptan can fade, diminish, and in some instances, disappear as a result of oxidation, adsorption and absorption. This is often referred to as "odor fade." For example, exposure of propane odorant to rust or scale in tanks, cylinders, or piping can result in the odorant losing its distinctive smell. Tanks, cylinders and piping surfaces that are not passivated can react with propane odorant causing it to lose its distinctive smell. Certain types of soil can also filter the odorant from propane causing the odorant to lose its distinctive smell. Other reactions exist that can result in odorant losing its distinctive smell as well. For example, some suggest that propane odorant molecules can adhere to masonry floors and walls resulting in the odorant losing its distinctive smell.

What to Do? Use of propane odorant is the best way to alert you and your customers of the existence of leaking propane, but there are other steps you should take for your safety and the safety of your customers.

- Prevent leaks in the first place. Maintain and inspect your and your customer's propane piping, tanks, cylinders and equipment to prevent leaks from occurring. This includes the pressure testing of piping and equipment when the circumstances dictate, compliance with NFPA Pamphlets 54 and 58, following the procedures recommended by the National Propane Gas Association, following of manufacturer's instructions and compliance with other applicable codes, regulations and practices.
- Do not allow propane tanks and cylinders to run completely empty. When a tank or cylinder becomes completely empty, the likelihood of odor fading increases. Warn your customers and employees of this.
- If a tank or cylinder does run completely empty, close the shutoff valve **immediately**. Air can enter a tank or cylinder through an open shutoff valve or through pilot orifices or other openings in propane piping and equipment. The entry of air into a propane tank or cylinder can cause odor fade to occur. Never use a tank or cylinder that has been allowed to sit empty with its shutoff valve opened unless it is properly passivated.
- Educate your employees and customers. A variety of warning and educational information exists concerning odor fade and propane. You should provide warning and educational information for your employees and customers. AmeriGas can provide you examples of such materials. Please contact us for further information. Another source of information is the National Propane Gas Association, 1301 West 22nd Street, Oak Brook, Illinois 60621.
- Some suggest that purging can help prevent odor fade in new tanks and cylinders. Purge new tanks and cylinders in accordance with the recommendations of the National Propane Gas Association Bulletin 133.
- Purchase and install gas detectors as a backup warning device. Gas detectors can detect the presence of propane even if the odor has diminished or is not present. Use and install gas detectors in accordance with the manufacturer's instructions. Warn and inform your customers of the existence of gas detectors.

USUAL FIRE & EXPLOSION HAZARDS: Firefighters should wear self-contained breathing apparatus in the positive pressure mode with a full facepiece when there is a possibility of exposure to smoke, fumes or hazardous decomposition products. Uncontrolled vapors spread rapidly, are heavier than air and are extremely flammable.

SECTION VIII — REACTIVITY

- STABILITY:** Stable
- HAZARDOUS POLYMERIZATION:** Will not occur
- CONDITIONS & MATERIALS TO AVOID:** Keep away from high heat, sparks, open flame, strong oxidizing agents. (See Section VI "Odorant Warning.")
- HAZARDOUS DECOMPOSITION PRODUCTS:** Incomplete combustion may yield carbon monoxide, a toxic gas.

SECTION IX — EMPLOYEE PROTECTION

- CONTROL MEASURES:** Use local and dilution ventilation to maintain exposures below acceptable criteria.
- RESPIRATORY PROTECTION:** If concentrations are high enough to warrant supplied-air or self-contained breathing apparatus, atmosphere may be flammable (see Section VII). Appropriate precautions must be taken regarding flammability. For situations where flammability has been safely addressed and where control measures are not feasible or sufficient to achieve full conformance with acceptable criteria (Section IV), use NIOSH/MSHA approved respiratory protection (supplied-air or self-contained breathing apparatus as appropriate). Respirators should be selected based on form and concentration of contaminant in air and in accordance with OSHA (29 CFR 1910.134).
- PROTECTIVE CLOTHING:** Avoid skin contact with liquid because of possibility of freeze burn. Wear gloves and protective clothing which are impervious to the product for the duration of the anticipated exposure, goggles for protection against accidental release of pressurized products.
- PROPANE GAS DETECTORS:** The use of propane gas detectors in accordance with manufacturer's instructions is recommended.

SECTION X — ENVIRONMENTAL PROTECTION

- ENVIRONMENTAL EFFECTS:** Avoid uncontrolled releases of this material. Liquid release will have possible effect on plant and animal life. Large liquid release will quickly vaporize to produce a large, vapor cloud. Vapor cloud is both a fire and asphyxiation hazard.
- SPILL OR LEAK PROCEDURES:** Product is extremely flammable. Vapor is heavier than air and may collect at lower levels. Flammable concentrations may be present below nose level. If there is a leak but no fire, do not ignite the escaped gas. Eliminate all ignition

sources. Do not smoke, do not use a nearby phone or turn electrical switches on and off. Evacuate area. If possible, remove leaking container to safe area. Stop flow of gas or allow vapor to disperse in a safe area. Water spray can be used to help dilute vapor concentration in air. The possibility exists that leaks will not be detectable by smell. Use of propane gas detectors in accordance with manufacturer's instructions is recommended. (See Section VI "Odorant Warning.")

WASTE DISPOSAL: Dispose of gas in accordance with applicable laws and regulations. Vent vapor in a safe location and insure that gas dissipates below the lower flammable limit. Controlled burning is preferred.

SECTION XI — REGULATORY INFORMATION

- DOT PROPER SHIPPING NAME:** Propane, Liquefied Petroleum Gas
- DOT HAZARD CLASS:** Flammable Gas
- DOT I.D. NUMBER:** UN 1075
- DOT EMERGENCY RESPONSE GUIDE:** See Guide No. 22
- SARA TITLE III INFORMATION:** This product may contain over 1.0% propylene. This is subject to the reporting requirements of Section 313.
- HAZARD CATEGORY FOR SECTION 311/312 REPORTING:** Immediate (acute) health hazard. Fire hazard. Sudden release of pressure hazard.
- RCRA INFORMATION:** This product, when disposed of by incineration or flaring, is defined as an ignitable hazardous waste in Federal regulations. Hazardous waste number is D001. Refer to latest Federal or State regulations regarding proper means of disposal.
- TSCA STATUS:** All components of this product are listed on the TSCA inventory.

SECTION XII — HANDLING AND STORAGE PRECAUTIONS

Store in an authorized location (outside, detached storage is preferred with adequate ventilation). Isolate from heat and ignition sources. Isolate from combustible materials. Provide separate storage locations for other compressed or flammable gases. Inspect cylinders frequently for leaks, dents, gouges and corrosion with emphasis on bottom of cylinder. Keep cylinders in an upright position at all times so that pressure relief valves communicate with vapor space. Some cylinders have directional arrows indicating upright position. If you have questions about the proper position of your cylinder, seek assistance from a qualified source. Propane equipment should be used in accordance with manufacturer's instructions. Do not drop or abuse cylinders. Do not allow cylinders to run empty. Keep container valve closed and plugged when not in use; if cylinder runs empty, close shutoff valve immediately. Install protective caps when cylinders are not connected for use. Empty containers retain some residue, so they should be treated as if they were full. Read and understand "Warning-Limitation of Propane Odorant: You May Not Always Smell Leaking Propane" supplied with this MSDS. If you do not have a copy of this warning, contact AmeriGas/Petrolane immediately.

The information presented herein is believed to be factual as it has been derived from the works and opinions of persons believed to be qualified experts; however, nothing contained in this information is to be taken as a warranty or representation for which the company bears legal responsibility. The user should review any recommendations in the specific context of the intended use to determine whether they are appropriate.

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