

Chemtane Energy LLC

10902 Interstate - 10 East, Suite 3
Baytown, Texas 77523

PROPANE with Blended CHEMTANE 2
MSDS (MATERIAL SAFETY DATA SHEET)

1. Chemical Product & Company Information

Phone numbers: Voice (281) 573-1100 Spill Chemtrec (800) 424-9300 Chemtrec Account # 11781
Fax (281) 573-1102 Emergency (703) 527-3887 24 hr.

Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product.

Product name: Chemtane 2 (Propane + other alkanes C₄ – C₆) Chemical Family: Alkanes

Person responsible for placing product on market: Raymond Davis 800-776-1485; Cell 281-382-1062

Website: <http://www.chemtane2.com>

P.O. Box 2210

Baytown, Texas 77522

USA

MSDS preparation: James Boucher

2. Composition/Information on Ingredients

Ingredients	CAS Number	EINECS Number	OSHA PEL	ACGIH TLV
Propane	74-98-6	200-827-9	1000 ppm	1000 ppm
n-Butane	106-97-8	203-448-7	800 ppm	800 ppm
Soltrol 10	68551-16-6	70024-92-9	NE	NE
Cyclopentane	287-92-3	206-016-6	600 ppm	600 ppm
n-Pentane	109-66-0	203-692-4	600 ppm	600 ppm
2-Methylpentane	107-83-5	203-523-4	500 ppm	500 ppm
Isopentane	78-78-4	201-142-8	NE	NE
2,3-Dimethylbutane	79-29-8	201-193-6	500 ppm	500 ppm
Isohexanes	8030-30-6	232-443-2	NE	NE
2-Propanol	67-63-0	200-661-7	500 ppm	500 ppm

3. Health Hazards Identification

NFPA hazard ratings:

Fire Hazard – 4

Health Hazard – 1

Reactivity – 0

EMERGENCY OVERVIEW

DANGER! Flammable liquid.

Can form explosive mixtures with air.

Vapors may cause dizziness and drowsiness.

Self-contained breathing apparatus may be required by rescue workers.

**Under ambient conditions, this produces a colorless gas
with a faintly disagreeable odor.**

- **EXTREMELY FLAMMABLE**
- **LIQUID CAN CAUSE SKIN AND EYE INJURY**
- **MAY EXCLUDE OXYGEN AVAILABLE FOR BREATHING**
- **MAY NOT GIVE LEAK DETECTION BY SENSE OF SMELL**
- **CONTENTS UNDER PRESSURE**
- **EXPOSURE LIMITS ARE IN SECTION 2 ABOVE**

ACUTE EFFECTS OF OVEREXPOSURE:

Eye: Liquid or vapors may be mildly irritating.

Skin: Prolonged or repeated contact with the liquid may cause defatting of the skin resulting in drying redness, and possibly blistering.

Inhalation: Vapors may be mildly irritating to lungs and mucous membranes of the nose and throat. Overexposure may cause dizziness, headache, excitation, drowsiness, incoordination, anesthesia, unconsciousness, and respiratory arrest. As an example, exposure to butane in concentration of 5000 ppm for ten minutes were found to be irritating to the mucous membranes or to produce local or systemic effects in humans. A four hour inhalation LD50, rat, for butane (Commercial Grade)>6100 ppm.

Ingestion: May cause effects similar to those inhalation and gastrointestinal irritation. If swallowed, may be aspirated resulting in inflammation and possible fluid accumulation in the lungs.

SUBCHRONIC AND CHRONIC EFFECTS OF OVEREXPOSURE:

No known applicable effects.

OTHER HEALTH EFFECTS: None of the components were mutagenic in the Salmonella typhimurium assay. A Toxicity Study Summary for the components is available upon request.

HEALTH HAZARD CATEGORIES:

Target Organ Toxin NO

4. First Aid Measures

FIRST AID AND EMERGENCY PROCEDURES:

Eye: Flush eyes with running water for at least fifteen minutes.

If irritation or adverse symptoms develop, seek medical attention.

Skin: Wash skin with soap and water. If irritation or adverse symptoms develop, seek medical attention.

Inhalation: Remove from exposure. If breathing is difficult, give oxygen. If breathing ceases, administer artificial respiration followed by oxygen. Seek immediate medical attention.

Ingestion: Do not induce vomiting. Seek immediate medical attention.

Note to Physician: Gastric lavage using a cuffed endotracheal tube may be performed at your discretion.

5. Fire Fighting; Fire and Explosion Data

Flash Point -150°F (-101°C) **LEL** 2.3% **UEL** 9.4%

NFPA RATINGS: Health 1; Flammability 4; Reactivity 0; Special NDA (Least - 0, Moderate - 2, High - 3, Extremely - 4)

These values are obtained using the guidelines of published evaluations.

Extinguishing Media CO2 foam, Dry Chemical

Special fire fighting procedures, foam, dry chemical; water is not suitable except to keep containers cool.

Unusual Fire and Explosion Hazards pressurized containers can present explosion hazard in fire.
High volatility, heavier than air.

This product presents an extreme fire hazard. Liquid very quickly evaporates, even at low temperatures and forms vapors (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be ignited by sources such as pilot lights, welding equipment, and electrical motors and switches. Products of Combustion are Carbon Dioxide and Water; if limited Oxygen (air) is available Carbon Monoxide, also. Fire brigades must comply with OSHA 29 CFR 1910.156.

6. Accidental Release Measures

Precautions Required if Material is Released or Spilled:

Evacuate area of unnecessary personnel. Wear Protective equipment and/or garments described in Section 8 if exposure conditions warrant. Shut off source if possible and contain spill. Protect from ignition. Keep out of water sources and sewers. Absorb in dry, inert material (sand, clay, etc.). Transfer to disposal drums using non-sparking equipment.

Waste Disposal (Insure Conformity with all Applicable Disposal Regulations): Incinerate or otherwise manage at a RCRA permitted waste management facility.

7. Handling and Storage

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this gas mixture IN YOU. Do not eat or drink while handling chemicals. Be aware of any signs of overexposure [See Section 3 (Hazard Identification)], because overexposure to fatal concentrations of this product could occur without any significant warning symptoms.

STORAGE AND HANDLING PRACTICES: Cylinders should be stored in dry, well-ventilated areas away from sources of heat. Compressed gases can present significant safety hazards. Store containers away from heavily trafficked areas and emergency exits. Post "No Smoking or Open Flames" signs in storage or use areas.

SPECIAL PRECAUTIONS FOR HANDLING GAS CYLINDERS: Protect cylinders against physical damage. Store in cool, dry, well-ventilated, fireproof area, away from flammable materials and corrosive atmospheres. Store away from heat and ignition sources and out of direct sunlight. Do not store near elevators, corridors or loading docks. Avoid storing products by incompatible chemicals. Do not store containers where they can come into contact with moisture. Cylinders should be stored upright and be firmly secured to prevent falling or being knocked over. Cylinders can be stored in the open, but in such cases, should be protected against extremes of weather and from the dampness of the ground to prevent rusting. Never tamper with pressure relief devices in valves. Cylinders should be separated from oxygen cylinders, or other oxidizers, by a 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 0.5 hours. Isolate from other incompatible chemicals (refer to Section 10, Stability and Reactivity). Storage areas must meet national electrical codes for Class 1 Hazardous Areas. Post "No Smoking or Open Flames" signs in storage or use areas. Consider installation of leak detection and alarm for storage and use areas. Have appropriate extinguishing equipment in the storage area (i.e. sprinkler system, portable fire extinguishers).

The following rules are applicable to situations in which cylinders are being used:

Before Use: Move cylinders with a suitable hand-truck. Do not drag, slide or roll cylinders. Do not drop cylinders or permit them to strike each other. Secure cylinders firmly. Leave the valve protection cap in-place until cylinder is ready for use.

During Use: Use designated CGA fittings and other support equipment. Do not use adapters. Do not heat cylinder by any means to increase the discharge rate of the product from the cylinder. Use check valve or trap in discharge line to prevent hazardous backflow into the cylinder. Do not use oils or grease on gas-handling fittings or equipment.

After Use: Close main cylinder valve. Replace valve protection cap. Mark empty cylinders "EMPTY".

NOTE: Use only DOT or ASME Code containers. Earth-ground and bond all lines and equipment associated with this product. Close valve after each use and when empty. Cylinders must not be recharged except by or with the consent of owner. For additional information refer to the Compressed Gas Association Pamphlet P-1, *Safe Handling of Compressed Gases in Containers*. Additionally, refer to CGA Bulletin SB-2 "Oxygen Deficient Atmospheres".

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain application equipment is locked and tagged-out safely. Always use product in areas where adequate ventilation is provided.

8. Exposure Controls/Personal Protection

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure compliance with exposure limits described in Section 2 (Composition and Information on Ingredients). Local exhaust ventilation is preferred, because it prevents dispersion of this gas mixture into the work place by eliminating it at its source. If appropriate, install automatic monitoring equipment to detect the levels of flammable gas, and oxygen.

RESPIRATORY PROTECTION: Maintain Oxygen levels above 19.5% in the workplace. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations, or the Canadian CSA Standard Z94.4-93 and applicable standards of Canadian Provinces. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998). The following are NIOSH recommendations for Propane concentrations in air and are provided for further information:

CONCENTRATION of PROPANE

RESPIRATORY EQUIPMENT

Up to 2100 ppm:

Facepiece Self-Contained Breathing Apparatus (SCBA) or full-facepiece Supplied-Air Respirator (SAR).

Emergency or Planned Entry into Unknown Concentration or IDLH Conditions: Positive pressure, full-facepiece SCBA or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA.

Escape: Escape-type SCBA.

NOTE: The IDLH concentration for Propane is 2100 ppm, which is based on the lower explosive limit (LFL/LEL). Respiratory protection equipment may not be adequate for fire situations. Respiratory protection by itself is not adequate for conditions where the concentration is 10% of LFL/LEL or higher.

EYE PROTECTION: Splash goggles, face-shields or safety glasses. If necessary, refer to U.S. OSHA 29 CFR 1910.133, or Canadian Standards.

HAND PROTECTION: Wear chemically-resistant gloves when handling cylinders of this product. If use of this gas mixture involves the use of other chemicals, wear gloves appropriate for those materials. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

BODY PROTECTION: Use body protection appropriate for task. Cotton clothing is recommended to prevent static electric build up. If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, use foot protection, as described in U.S. OSHA 29 CFR.

9. Physical and Chemical Properties

Boiling Point - 43.6°F -42°C

Specific Gravity (H₂O = 1) at 77°F (25°C) and 1 atm: 0.5077

Specific Gravity (Air = 1) at 70°F (21.1°C) and 1 atm: 1.523

Vapor Density at 70°F (21.1°C) and 1 atm: 0.2612 lb/ft³ (4.183 kg/m³)

Vapor Pressure 218 PSI @ 37.78°C ; 110 PSI @ 21.1 °C

Evaporation Rate (Butyl Acetate = 1) 1.00

Solubility in Water: Not Soluble

Appearance is Colorless Gas

Odor – Faint unpleasant Odor

Gas at Standard Temperature and Pressure (STP)
 Freezing Point at 1 atm: -305.84°F (-187.69°C)
 Flash Point (test method): -156°F (-104°C) TCC
 Flammable
 Flammable Limits in Air, % by volume: LOWER: 2.1% UPPER: 9.5%
 Solubility in Water @ 68°F (20°C): 0.065
 Autoignition Temperature: 842°F (450°C)

10. Stability and Reactivity

Molecular Weight: 44.096
 Molecular Formula: C₃H₈
 Stability: Stable
 Incompatibility (Materials to Avoid): oxygen and strong oxidizing agents
 Hazardous Polymerization: Will Not Occur
 Conditions to Avoid: Avoid exposing cylinders to extremely high temperatures, which could cause the cylinders to rupture. Avoid exposing this gas mixture to incompatible chemicals.
 Hazardous Decomposition Products: Carbon oxides formed when burned.

11. Toxicological Information

TOXICITY DATA: The following data are for Propane component of this mixture. All other components are in less than 1% concentration.

PROPANE.

Skin Contact (Rabbit): Several formulations containing an isobutane-propane mixture were tested for skin irritation effects. All formulations contained less than 13% propane. All of the formulations containing propane caused only mild irritation.

Effects on Short-Term Inhalation: Guinea-pigs breathing 5.5% propane by volume developed tremors after 5 minutes. Nausea, retching, and stupefaction were observed when animals were exposed for 30-120 minutes. All the animals survived a two-hour exposure and had no significant tissue damage. A gas concentration of 89% did not cause anesthesia, but depressed the blood pressure of cats. Inhalation of 10 percent propane by mice and 15% by dogs cause weak cardiac sensitization, Presumably, all of these effects are reversible when exposure ceases. In primates, 10% propane caused some change in heart function. At 20% there was aggravation of these symptoms and respiratory depression.

Effects of Long-Term Inhalation: No toxicity or abnormalities were observed when monkeys were exposed to approximately 750 ppm for 90 days. Similar results were obtained when monkeys were exposed to an aerosol spray containing 65% propane and isobutane.

SUSPECTED CANCER AGENT: The components of this gas mixture are not found on the following lists: U.S. FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC, and therefore are not considered to be, nor suspected to be cancer-causing agents by these agencies.

IRRITANCY OF PRODUCT: Prolonged contact may result in mild irritation of the skin. Contact with rapidly expanding gases can cause frostbite and damage to exposed skin and eyes.

SENSITIZATION OF PRODUCT: The components of this gas mixture are not human skin or respiratory sensitizers. The Propane component of this gas is considered to be a weak cardiac sensitizer, based on animal testing.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of this product and its components on the human reproductive system.

Mutagenicity: This product is not reported to cause mutagenic effects in humans.

Embryotoxicity: This product is not reported to cause embryotoxic effects in humans.

Teratogenicity: This product is not reported to cause teratogenic effects in humans.

Reproductive Toxicity: This product is not reported to cause adverse reproductive effects in humans.

A *mutagen* is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generation lines. An *embryotoxin* is a chemical which causes damage to a developing embryo

(i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

ACGIH BIOLOGICAL EXPOSURE INDICES: Currently, there are no Biological Exposure Indices determined for the components of this gas mixture.

12. Ecological Information

ENVIRONMENTAL STABILITY: This gas mixture will be dissipated rapidly in well-ventilated areas.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: Due to the gaseous nature of this mixture, no adverse effect is expected in animal and plant, except frost produced in the presence of rapidly expanding gases may adversely affect plant life.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No evidence is currently available on the effects of this gas mixture on aquatic life.

13. Disposal Considerations

PREPARING WASTES FOR DISPOSAL: Product removed from cylinder must be disposed of in accordance with appropriate U.S. Federal, State and local regulations. Do not dispose of locally.

14. Transport Information

DOT IDENTIFICATION NUMBER UN 1075 or UN 1978

DOT Shipping Name: Liquefied Petroleum Gas

DOT Shipping Label:

DOT Hazard Class 2.1 (Flammable Gas) ; Placard : Flammable Gas

Hazardous Substance/RQ: Not Applicable

DOT/IMO Shipping Name: Propane or Petroleum gases, liquefied, n.o.s. (propane)

Packing Group II

Shipping Information: Cylinders should be transported in a secure position, and with ventilation in vehicle.

Shipment of compressed gas cylinders that have been filled without the owner's consent is a violation of federal law [49 CFR 173.301(b)].

Propane is not listed as a marine pollutant by DOT.

15. Regulatory Information

Regulatory Lists Searched:

01 = SARA 313	02 = MASS RTK	03 = NTP Carcinogen
04 = CA Prop. 65	05 = MI 406	06 = IARC Group 1
07 = IARC Group 2A	08 = IARC Group 2B	09 = SARA 302/304
10 = PA RTK	11 = NJ RTK	12 = CERCLA 302.4
13 = MN RTK	14 = ACGIH TLV	15 = ACGIH STEL
16 = ACGIH Calculated TLV	17 = OSHA TWA	18 = OSHA STEL
19 = Chevron TLV	20 = EPA Carcinogen	21 = TSCA Sect 4(e)
22 = TSCA Sect 5(a)(e)(f)	23 = TSCA Sect 6	24 = TSCA Sect 12(b)
25 = TSCA Sect 8(a)	26 = TSCA Sect 8(d)	28 = Canadian WHMIS
29 = OSHA CEILING		

The following components of this material are found on the regulatory lists indicated.

Ethane	02, 10, 11, 13, 14
Propane	02, 10, 11, 13, 14, 17
n- Butane	02, 10, 11, 13, 14, 17, 25, 28
I-Butane	02, 10, 11, 13, 14, 17, 25, 28
n-Pentane	02, 10, 11, 13, 14, 17, 25, 28
Cyclopentane	02, 10, 11, 13, 14, 17, 25, 28
2-Methylpentane	02, 10, 11, 13, 14, 17, 25, 28

Additional Information

SARA 311 CATEGORIES:	1. Immediate (Acute) Health Effects :	Yes
	2. Delayed (Chronic) Health Effects :	No
	3. Fire Hazard :	Yes
	4. Sudden Release of Pressure Hazard :	Yes
	5. Reactivity Hazard :	No

As of the preparation date, this product was not subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

16. Other Information

Threaded Valve Connections: : CGA-510 (gas withdrawal)
 CGA-790(gas grills), CGA-791 (limited standard)
 CGA-555 (liquid withdrawal)

<p>The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Chemtane Energy, LLC assumes no responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, Chemtane Energy, LLC assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.</p>
