



MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name	Propane - Dos Laredos
Revision date	06-10-2011
Version #	01
CAS #	74-98-6
MSDS Number	312
Product use	Organic synthesis. Household and industrial fuel. Manufacture of ethylene. Extractant. Solvent. Refrigerant. Gas enricher. Aerosol propellant. Mixture for bubble chambers.
Synonym(s)	Dimethylmethane; propane (dot); propyl hydride; dimethyl methane See section 16 for complete information.
Manufacturer/Supplier	Valero Marketing & Supply Company and Affiliates P.O. Box 696000 San Antonio, TX 78269-6000 General Assistance 210-345-4593
Emergency	24 Hour Emergency 866-565-5220 1-800-424-9300 (CHEMTREC USA)

2. Hazards Identification

Physical state	Gas.
Appearance	Colorless liquefied gas.
Emergency overview	DANGER Extremely flammable gas. High pressure gas. Gas reduces oxygen available for breathing. Contact with liquefied gas might cause frostbites, in some cases with tissue damage. In a fire or if heated, a pressure increase will occur and the container may burst or explode.
OSHA regulatory status	This product is hazardous according to OSHA 29 CFR 1910.1200.
Potential health effects	
Routes of exposure	Inhalation. Eyes. Skin.
Eyes	Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite ("cold burn").
Skin	Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite ("cold burn").
Inhalation	Suffocation (asphyxiant) hazard - if allowed to accumulate to concentrations that reduce oxygen below safe breathing levels. Nasal and respiratory tract irritation, central nervous system effects including excitation, euphoria, contracted eye pupils, dizziness, drowsiness, blurred vision, fatigue, nausea, headache, loss of reflexes, tremors, convulsions, seizures, loss of consciousness, coma, respiratory arrest and sudden death could occur as a result of long term and/or high concentration exposure to vapors. May also cause anemia and irregular heart rhythm.
Ingestion	This material is a gas under normal atmospheric conditions and ingestion is unlikely.
Target organs	Respiratory tract. Eyes. Central nervous system.
Chronic effects	May cause central nervous system effects. Components have been shown to be weak cardiac sensitizers which can result in cardiac arrhythmia and ventricular fibrillation.
Potential environmental effects	Not expected to be harmful to aquatic organisms.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Propane	74-98-6	90 - 99
Butane	106-97-8	0 - 10
Isobutane	75-28-5	0 - 10
1-Butene	25167-67-3	0 - 2
Ethane	74-84-0	0 - 2
Pentane and heavier	Mixture	0 - 2

4. First Aid Measures

First aid procedures

Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Skin contact

Wash frost-bitten areas with plenty of water. Do not remove clothing. Get medical attention immediately.

Inhalation

Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a physician or poison control center immediately.

Ingestion

Ingestion is not a typical route of exposures for gases or liquefied gases.

Notes to physician

Treat symptomatically.

5. Fire Fighting Measures

Flammable properties

Extremely flammable gas. Gas forms mixtures with air which can catch fire and burn with explosive violence. Vapors are heavier than air and invisible mixture spreads easily and may accumulate in low or confined areas, travel considerable distance to source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

Extinguishing media**Suitable extinguishing media**

Dry chemical, CO₂, water spray, fog, or foam.

Fire fighting equipment/instructions

Self-contained breathing apparatus, operated in positive pressure mode and full protective clothing must be worn in case of fire.

Move container from fire area if it can be done without risk.

Do not extinguish fires unless gas flow can be stopped safely; explosive re-ignition may occur. Promptly isolate the scene by removing all persons from the vicinity of the incident. No action shall be taken involving any personal risk or without suitable training. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus. Stop flow of material. Use water to keep fire exposed containers cool and to protect personnel effecting shutoff. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop leak. Prevent runoff from fire control or dilution from entering streams, sewers or drinking water supply.

Hazardous combustion products

Carbon oxides.

6. Accidental Release Measures

Personal precautions

Evacuate the area promptly. No action shall be taken involving any personal risk or without suitable training. Keep unnecessary personnel away.

Ensure adequate ventilation. In case of inadequate ventilation, use respiratory protection. Wear appropriate personal protective equipment (See Section 8).

Environmental precautions

Should not be released into the environment. Prevent further leakage or spillage if safe to do so. Prevent from entering into soil, ditches, sanitary sewers, waterways and/or groundwater.

Methods for cleaning up

Ventilate well, stop flow of gas or liquid if possible. Immediately contact emergency personnel.

7. Handling and Storage

Handling

Wear appropriate personal protective equipment (See Section 8). Eating, drinking, and smoking should be prohibited in areas where this material is handled, stored, and processed. Do not breathe gas. Do not get in eyes, on skin, on clothing. Use only with adequate ventilation.

Storage

Store in accordance with local, regional, national, and international regulations. Secure cylinders in an upright position at all times, close all valves when not in use. Store in a cool, dry, well-ventilated place. Keep container tightly closed and sealed until ready for use. Protect cylinders from damage.

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value
1-Butene (25167-67-3)	TWA	250 ppm
Butane (106-97-8)	TWA	1000 ppm
Ethane (74-84-0)	TWA	1000 ppm
Isobutane (75-28-5)	TWA	1000 ppm
Pentane and heavier (Mixture)	TWA	600 ppm
Propane (74-98-6)	TWA	1000 ppm
Propylene (115-07-1)	TWA	500 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Pentane and heavier (Mixture)	PEL	1000 ppm
		2950 mg/m3
Propane (74-98-6)	PEL	1000 ppm
		1800 mg/m3

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value
Butane (106-97-8)	TWA	1000 ppm
Ethane (74-84-0)	TWA	1000 ppm
Pentane and heavier (Mixture)	TWA	1770 mg/m3
		600 ppm
Propane (74-98-6)	TWA	1000 ppm
Propylene (115-07-1)	TWA	500 ppm
		860 mg/m3

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value
1-Butene (25167-67-3)	TWA	250 ppm
Butane (106-97-8)	STEL	750 ppm
	TWA	600 ppm
Ethane (74-84-0)	TWA	1000 ppm
Isobutane (75-28-5)	TWA	1000 ppm
Pentane and heavier (Mixture)	TWA	600 ppm
Propane (74-98-6)	TWA	1000 ppm
Propylene (115-07-1)	TWA	500 ppm

Canada. Ontario OELs. (Ministry of Labor - Control of Exposure to Biological or Chemical Agents)

Components	Type	Value
Ethane (74-84-0)	TWA	1000 ppm
Pentane and heavier (Mixture)	STEL	2210 mg/m3
		750 ppm
	TWA	600 ppm
		1770 mg/m3
Propane (74-98-6)	TWA	1000 ppm
Propylene (115-07-1)	TWA	500 ppm

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value
Butane (106-97-8)	TWA	1900 mg/m3
		800 ppm
Pentane and heavier (Mixture)	TWA	120 ppm

Canada. Quebec OELS. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value
Propane (74-98-6)	TWA	350 mg/m3
		1000 ppm
		1800 mg/m3

Mexico. Occupational Exposure Limit Values

Components	Type	Value	
Butane (106-97-8)	TWA	800 ppm	
		1900 mg/m3	
Pentane and heavier (Mixture)	STEL	2250 mg/m3	
		TWA	760 ppm
			600 ppm
		1800 mg/m3	

Engineering controls	Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. The engineering controls also need to keep gas, vapor, or dust concentrations below any lower explosive limits.
Personal protective equipment	
Eye / face protection	Wear approved safety glasses or goggles.
Skin protection	Wear protective clothing appropriate for the risk of exposure.
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.
General hygiene considerations	Do not eat, drink or smoke when using the product. Wash thoroughly after handling. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practices.

9. Physical & Chemical Properties

Appearance	Colorless liquefied gas.
Color	Colorless
Odor	Odorless (but may have skunk odor added).
Odor threshold	Not available.
Physical state	Gas.
Form	Compressed liquefied gas.
pH	Not available.
Melting point	Not available.
Freezing point	-302.6 °F (-185.89 °C)
Boiling point	-43.2 °F (-41.79 °C)
Flash point	-156 °F (-104.45 °C) Closed Cup
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	9.5 %
Flammability limits in air, lower, % by volume	2.3 %
Vapor pressure	Not available.
Vapor density	1.6
Specific gravity	0.59
Solubility (water)	Insoluble.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	841.7 °F (449.85 °C)
Decomposition temperature	Not available.
VOC	100 %
Molecular weight	44.1 g/mol (Propane)

Molecular formula C3-H8 (Propane)

10. Chemical Stability & Reactivity Information

Chemical stability Stable under normal temperature conditions and recommended use.
Conditions to avoid In a fire or if heated, a pressure increase will occur and the container may burst or explode.
Incompatible materials Oxidizing agents. Reducing agents. Acids. Alkalies.
Hazardous decomposition products None known.
Possibility of hazardous reactions Polymerization will not occur.

11. Toxicological Information

Toxicological data

Components

Test Results

Butane (106-97-8)	Acute Inhalation LC50 Rat: 658 mg/l 4 Hours
Propylene (115-07-1)	Acute Inhalation LC50 Mouse: 680 mg/l 2 Hours
Propane (74-98-6)	Acute Inhalation LC50 Rat: 658 mg/l 4 Hours Acute Inhalation LC50 Rat: > 1442.847 mg/l 15 Minutes

Acute effects Suffocation (asphyxiant) hazard - if allowed to accumulate to concentrations that reduce oxygen below safe breathing levels. Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite ("cold burn").

Chronic effects May cause central nervous system effects.

Carcinogenicity

ACGIH Carcinogens

Propylene (CAS 115-07-1) A4 Not classifiable as a human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

Propylene (CAS 115-07-1) 3 Not classifiable as to carcinogenicity to humans.

12. Ecological Information

Ecotoxicity Not expected to be harmful to aquatic organisms.

Persistence and degradability Not available.

Bioaccumulation / Accumulation No data available.

Partition coefficient (n-octanol/water) Not available.

Mobility in environmental media No data available.

13. Disposal Considerations

Waste codes D001: Waste Flammable material with a flash point <140 °F

Disposal instructions Dispose in accordance with all applicable regulations. Empty containers may contain product residues. Do not puncture or incinerate even when empty. This material and/or its container must be disposed of as hazardous waste. Return the empty cylinder to the supplier.

14. Transport Information

DOT

Basic shipping requirements:

UN number UN1075
Proper shipping name Petroleum gases, liquefied
Hazard class 2.1
Labels required 2.1

Additional information:

Special provisions T50
Packaging exceptions 306
Packaging non bulk 304

Packaging bulk 314, 315
ERG number 115

DOT BULK

Basic shipping requirements:

UN number UN1075
Proper shipping name Petroleum gases, liquefied
Hazard class 2.1
Labels required 2.1

Additional information:

Special provisions T50
Packaging exceptions 306
Packaging non bulk 304
Packaging bulk 314, 315
ERG number 115

IATA

Basic shipping requirements:

UN number 1075
Proper shipping name Petroleum gases, liquefied
Hazard class 2.1

Additional information:

ERG code 10L

IMDG

Basic shipping requirements:

UN number 1075
Proper shipping name PETROLEUM GASES, LIQUEFIED
Hazard class 2.1
EmS No. F-D*, S-U

TDG

Basic shipping requirements:

Proper shipping name PETROLEUM GASES, LIQUEFIED
Hazard class 2.1
UN number UN1075

15. Regulatory Information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification(40 CFR 707, Subpt. D)

PENTANE (CAS Mixture) 1.0 % One-Time Export Notification only.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

Propylene (CAS 115-07-1) 1.0 %

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

Propylene (CAS 115-07-1) Listed.

CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)

Propane: 100
Butane: 100
Isobutane: 100
Ethane: 100
Pentane and heavier: 100
Propylene: 100

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - Yes
Pressure Hazard - Yes
Reactivity Hazard - No

Section 302 extremely hazardous substance (40 CFR 355, Appendix A)	Yes
Section 311/312 (40 CFR 370)	Yes
Clean Water Act (CWA) Section 112(r) (40 CFR 68.130)	Hazardous substance
Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)	Not controlled
Canadian regulations	This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.
WHMIS status	Controlled
WHMIS classification	A - Compressed Gas B1 - Flammable/Combustible D2B - Other Toxic Effects-TOXIC

WHMIS labeling



Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations

US - California Hazardous Substances (Director's): Listed substance

Butane (CAS 106-97-8)	Listed.
Pentane and heavier (CAS Mixture)	Listed.
Propylene (CAS 115-07-1)	Listed.

US - Massachusetts RTK - Substance: Listed substance

Butane (CAS 106-97-8)	Listed.
Ethane (CAS 74-84-0)	Listed.
Isobutane (CAS 75-28-5)	Listed.
Pentane and heavier (CAS Mixture)	Listed.
Propane (CAS 74-98-6)	Listed.
Propylene (CAS 115-07-1)	Listed.

US - New Jersey Community RTK (EHS Survey): Reportable threshold

Butane (CAS 106-97-8)	500 LBS
Ethane (CAS 74-84-0)	500 LBS
Isobutane (CAS 75-28-5)	500 LBS
Pentane and heavier (CAS Mixture)	500 LBS
Propane (CAS 74-98-6)	500 LBS
Propylene (CAS 115-07-1)	500 LBS

US - New Jersey RTK - Substances: Listed substance

Butane (CAS 106-97-8)	Listed.
-----------------------	---------

Ethane (CAS 74-84-0)	Listed.
Isobutane (CAS 75-28-5)	Listed.
Pentane and heavier (CAS Mixture)	Listed.
Propane (CAS 74-98-6)	Listed.
Propylene (CAS 115-07-1)	Listed.

US - Pennsylvania RTK - Hazardous Substances: Listed substance

Butane (CAS 106-97-8)	Listed.
Ethane (CAS 74-84-0)	Listed.
Isobutane (CAS 75-28-5)	Listed.
Pentane and heavier (CAS Mixture)	Listed.
Propane (CAS 74-98-6)	Listed.
Propylene (CAS 115-07-1)	Listed.

16. Other Information

Further information

HMIS® is a registered trade and service mark of the NPCA.

Other information

Note: This Material Safety Data Sheet applies to the listed products and synonym descriptions for Hazard Communication purposes only. Technical Specifications vary greatly depending on the products and are not reflected in this document. Consult specification sheets for technical information.

HMIS® ratings

Health: 1
 Flammability: 4
 Physical hazard: 0

NFPA ratings

Health: 2
 Flammability: 4
 Instability: 0

Disclaimer

This Material Safety Data Sheet (MSDS) was prepared in accordance with 29 CFR 1910.1200 by Valero Marketing & Supply Co., ("VALERO"). VALERO does not assume any liability arising out of product use by others. The information, recommendations, and suggestions presented in this MSDS are based upon test results and data believed to be reliable. The end user of the product has the responsibility for evaluating the adequacy of the data under the conditions of use, determining the safety, toxicity and suitability of the product under these conditions, and obtaining additional or clarifying information where uncertainty exists. No guarantee expressed or implied is made as to the effects of such use, the results to be obtained, or the safety and toxicity of the product in any specific application. Furthermore, the information herein is not represented as absolutely complete, since it is not practicable to provide all the scientific and study information in the format of this document, plus additional information may be necessary under exceptional conditions of use, or because of applicable laws or government regulations.

Issue date

06-10-2011