



Ethane	74-84-0	0 - 10
Ethylene	74-85-1	0 - 10
Methane	74-82-8	0 - 10
Propylene	115-07-1	0 - 5
1,3-butadiene	106-99-0	0 - 0.3

#### 4. First Aid Measures

##### First aid procedures

<b>Eye contact</b>	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.
<b>Skin contact</b>	Wash frost-bitten areas with plenty of water. Do not remove clothing. Get medical attention immediately.
<b>Inhalation</b>	Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a physician or poison control center immediately.
<b>Ingestion</b>	Ingestion is not a typical route of exposures for gases or liquefied gases.
<b>Notes to physician</b>	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, CO<sub>2</sub>, 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
1,3-butadiene (106-99-0)	TWA	2 ppm
1-Butene (25167-67-3)	TWA	250 ppm
Butane (106-97-8)	TWA	1000 ppm
Ethane (74-84-0)	TWA	1000 ppm
Ethylene (74-85-1)	TWA	200 ppm
Isobutane (75-28-5)	TWA	1000 ppm
Methane (74-82-8)	TWA	1000 ppm
Propane (74-98-6)	TWA	1000 ppm
Propylene (115-07-1)	TWA	500 ppm

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

Components	Type	Value
1,3-butadiene (106-99-0)	STEL	5 ppm
	TWA	1 ppm
Propane (74-98-6)	PEL	1000 ppm
		1800 mg/m <sup>3</sup>

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

Components	Type	Value
1,3-butadiene (106-99-0)	TWA	4.4 mg/m <sup>3</sup>
		2 ppm
Butane (106-97-8)	TWA	1000 ppm
Ethane (74-84-0)	TWA	1000 ppm
Ethylene (74-85-1)	TWA	200 ppm
		229 mg/m <sup>3</sup>
Propane (74-98-6)	TWA	1000 ppm
Propylene (115-07-1)	TWA	500 ppm
		860 mg/m <sup>3</sup>

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

Components	Type	Value
1,3-butadiene (106-99-0)	TWA	2 ppm
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
Ethylene (74-85-1)	TWA	200 ppm
Isobutane (75-28-5)	TWA	1000 ppm
Methane (74-82-8)	TWA	1000 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
1,3-butadiene (106-99-0)	TWA	2 ppm
Ethane (74-84-0)	TWA	1000 ppm
Ethylene (74-85-1)	TWA	200 ppm
Methane (74-82-8)	TWA	1000 ppm
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
1,3-butadiene (106-99-0)	TWA	4.4 mg/m <sup>3</sup> 2 ppm
Butane (106-97-8)	TWA	1900 mg/m <sup>3</sup> 800 ppm
Propane (74-98-6)	TWA	1000 ppm 1800 mg/m <sup>3</sup>

**Mexico. Occupational Exposure Limit Values**

Components	Type	Value
1,3-butadiene (106-99-0)	STEL	2750 mg/m <sup>3</sup> 1250 ppm
	TWA	1000 ppm 2200 mg/m <sup>3</sup>
Butane (106-97-8)	TWA	800 ppm 1900 mg/m <sup>3</sup>

**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** Faint.

**Odor threshold** Not available.

**Physical state** Gas.

**Form** Compressed liquefied gas.

**pH** Not available.

**Melting point** Not available.

**Freezing point** -285 °F (-176.11 °C) Weighted average

**Boiling point** > -44.4 °F (> -42.44 °C)

**Flash point** -212.5 °F (-135.85 °C) Closed Cup (Methane)

**Evaporation rate** Not available.

**Flammability limits in air, upper, % by volume** 9.5 %

**Flammability limits in air, lower, % by volume** 1 %

**Vapor pressure** Not available.

**Vapor density** 1.5

**Specific gravity** 0.51

**Solubility (water)** Insoluble.

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

**Auto-ignition temperature** > 724.7 °F (> 384.85 °C) (Butylene)

**Decomposition temperature** Not available.

VOC 100 %  
Molecular weight 44.1 (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 Mouse: 680 mg/l 2 Hours
Propylene (115-07-1)	Acute Inhalation LC50 Rat: 658 mg/l 4 Hours Acute Inhalation LC50 Mouse: 680 mg/l 2 Hours
Ethylene (74-85-1)	Acute Inhalation LC50 Rat: 658 mg/l 4 Hours Acute Oral LD50 Mouse: 1093 mg/l
Propane (74-98-6)	Acute Inhalation LC50 Rat: > 1442.847 mg/l 15 Minutes
<b>Acute effects</b>	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").
<b>Chronic effects</b>	May cause central nervous system effects.
<b>Carcinogenicity</b>	
<b>ACGIH Carcinogens</b>	
1,3-butadiene (CAS 106-99-0)	A2 Suspected human carcinogen.
Ethylene (CAS 74-85-1)	A4 Not classifiable as a human carcinogen.
Propylene (CAS 115-07-1)	A4 Not classifiable as a human carcinogen.
<b>IARC Monographs. Overall Evaluation of Carcinogenicity</b>	
1,3-butadiene (CAS 106-99-0)	1 Carcinogenic to humans.
Ethylene (CAS 74-85-1)	3 Not classifiable as to carcinogenicity to humans.
Propylene (CAS 115-07-1)	3 Not classifiable as to carcinogenicity to humans.
<b>US NTP Report on Carcinogens: Known carcinogen</b>	
1,3-butadiene (CAS 106-99-0)	Known carcinogen.
<b>US OSHA Specifically Regulated Substances: Cancer hazard</b>	
1,3-butadiene (CAS 106-99-0)	Cancer hazard.

## 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:**

<b>UN number</b>	UN1075
<b>Proper shipping name</b>	Petroleum gases, liquefied
<b>Hazard class</b>	2.1
<b>Labels required</b>	2.1

**Additional information:**

<b>Special provisions</b>	T50
<b>Packaging exceptions</b>	306
<b>Packaging non bulk</b>	304
<b>Packaging bulk</b>	314, 315
<b>ERG number</b>	115

### DOT BULK

**Basic shipping requirements:**

<b>UN number</b>	UN1075
<b>Proper shipping name</b>	Petroleum gases, liquefied
<b>Hazard class</b>	2.1
<b>Labels required</b>	2.1

**Additional information:**

<b>Special provisions</b>	T50
<b>Packaging exceptions</b>	306
<b>Packaging non bulk</b>	304
<b>Packaging bulk</b>	314, 315
<b>ERG number</b>	115

### IATA

**Basic shipping requirements:**

<b>UN number</b>	1075
<b>Proper shipping name</b>	Petroleum gases, liquefied
<b>Hazard class</b>	2.1

**Additional information:**

<b>ERG code</b>	10L
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### IMDG

**Basic shipping requirements:**

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

### TDG

**Basic shipping requirements:**

<b>Proper shipping name</b>	PETROLEUM GASES, LIQUEFIED
<b>Hazard class</b>	2.1
<b>UN number</b>	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)**

Not regulated.

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

1,3-butadiene (CAS 106-99-0)	0.1 %
Ethylene (CAS 74-85-1)	1.0 %
Propylene (CAS 115-07-1)	1.0 %

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

1,3-butadiene (CAS 106-99-0)	Listed.
Ethylene (CAS 74-85-1)	Listed.
Propylene (CAS 115-07-1)	Listed.

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

Propane: 100  
 Isobutane: 100  
 Butane: 100  
 Ethane: 100  
 Ethylene: 100  
 Methane: 100  
 Propylene: 100  
 1,3-butadiene: 10

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Hazard categories**  
 Immediate Hazard - Yes  
 Delayed Hazard - Yes  
 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  
 D2A - Other Toxic Effects-VERY TOXIC  
 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

1,3-butadiene (CAS 106-99-0)	Listed.
Butane (CAS 106-97-8)	Listed.
Propylene (CAS 115-07-1)	Listed.

### US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

1,3-butadiene (CAS 106-99-0)	Listed.
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### US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

1,3-butadiene (CAS 106-99-0)	Listed: April 1, 1988 Carcinogenic.
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### US - California Proposition 65 - CRT: Listed date/Developmental toxin

1,3-butadiene (CAS 106-99-0)	Listed: April 16, 2004 Developmental toxin.
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### US - California Proposition 65 - CRT: Listed date/Female reproductive toxin

1,3-butadiene (CAS 106-99-0)	Listed: April 16, 2004 Female reproductive toxin.
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### US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

1,3-butadiene (CAS 106-99-0)	Listed: April 16, 2004 Male reproductive toxin.
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### US - Massachusetts RTK - Substance: Listed substance

1,3-butadiene (CAS 106-99-0)	Listed.
Butane (CAS 106-97-8)	Listed.
Ethane (CAS 74-84-0)	Listed.
Ethylene (CAS 74-85-1)	Listed.
Isobutane (CAS 75-28-5)	Listed.
Methane (CAS 74-82-8)	Listed.
Propane (CAS 74-98-6)	Listed.
Propylene (CAS 115-07-1)	Listed.

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

1,3-butadiene (CAS 106-99-0)	500 LBS
Butane (CAS 106-97-8)	500 LBS
Ethane (CAS 74-84-0)	500 LBS
Ethylene (CAS 74-85-1)	500 LBS
Isobutane (CAS 75-28-5)	500 LBS
Methane (CAS 74-82-8)	500 LBS
Propane (CAS 74-98-6)	500 LBS
Propylene (CAS 115-07-1)	500 LBS

### US - New Jersey RTK - Substances: Listed substance

1,3-butadiene (CAS 106-99-0)	Listed.
Ethane (CAS 74-84-0)	Listed.
Ethylene (CAS 74-85-1)	Listed.
Isobutane (CAS 75-28-5)	Listed.
Methane (CAS 74-82-8)	Listed.
Propane (CAS 74-98-6)	Listed.
Propylene (CAS 115-07-1)	Listed.

### US - Pennsylvania RTK - Hazardous Substances: Listed substance

1,3-butadiene (CAS 106-99-0)	Listed.
Butane (CAS 106-97-8)	Listed.
Ethane (CAS 74-84-0)	Listed.
Ethylene (CAS 74-85-1)	Listed.
Isobutane (CAS 75-28-5)	Listed.
Methane (CAS 74-82-8)	Listed.
Propane (CAS 74-98-6)	Listed.
Propylene (CAS 115-07-1)	Listed.

### US - Pennsylvania RTK - Hazardous Substances: Special hazard

1,3-butadiene (CAS 106-99-0)	Special hazard.
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## 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**

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