

# MATERIAL SAFETY DATA SHEET

## 1,3-BUTADIENE

Product Name:	<b>1,3-Butadiene</b>
Chemical Name:	1,3-Butadiene
Common Names/Synonyms:	Biethylene, Butadiene, Vinylethylene
Preparation Date:	August 31, 2007
Review Date:	

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## 2. Composition, Information on Ingredients

INGREDIENT	1,3-Butadiene
FORMULA	C <sub>4</sub> H <sub>6</sub>
CAS	106-99-0
LC50 (Rat)	285,000 mg/m <sup>3</sup>

## 3. Hazards Identification

### EMERGENCY OVERVIEW

Irritant to eyes and skin. Inhalation of moderate concentrations may cause dizziness, drowsiness, blurring of vision, and nausea. At higher concentrations, product becomes a simple asphyxiant. An anesthetic effect that can cause respiratory paralysis and death. Probable human carcinogen. Highly flammable.

### ROUTE OF ENTRY

<b>Skin Contact</b>	Yes
<b>Skin Absorption</b>	No
<b>Eye Contact</b>	Yes
<b>Inhalation</b>	Yes
<b>Ingestion</b>	Yes
<b>Eye Effects:</b>	Vapors may be irritating to the eyes.
<b>Skin Effects</b>	Butadiene is irritating to mucous membranes and the skin. Due to its rapid rate of evaporation, it can cause tissue freezing or frostbite on dermal contact. Frostbite effects appear as a change in color of the skin to gray or white, possibly followed by blistering. May cause skin rash.
<b>Ingestion Effects</b>	Since product is a gas at room temperature, ingestion is unlikely. Contact with liquid product may cause freezing of tissue and should be treated as frostbite. Consult a physician for treatment.
<b>Inhalation Effects</b>	In moderate concentrations, butadiene may cause dizziness, drowsiness, blurring of vision and nausea. In higher concentrations, it is an asphyxiant, an anesthetic, and can cause respiratory paralysis and death. Repeated Exposures have given no indication of cumulative action.

#### 4. First Aid Measures

EYES	Never introduce oil or ointment into the eyes without medical advice! If pain is present, refer the victim to an ophthalmologist for treatment and follow up.
SKIN	Remove contaminated clothing and flush affected area with cold water and soap. DO NOT USE HOT WATER. If irritation persists, seek medical attention.
INGESTION:	Unlikely as product is a gas at room temperature.
INHALATION	Prompt medical attention is mandatory in all cases of overexposure to product. Rescue personnel should be equipped with self-contained breathing apparatus. Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given artificial resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive

#### 5. Fire Fighting Measures

Conditions of Flammability	Flammable gas LEL(%): 2 UEL(%): 12
Flash point:	-76 deg cel (CC)
Autoignition Temperature	420 deg cel
Hazardous combustion products	Not Available
Sensitivity to mechanical shock	Not Available
Sensitivity to static discharge	Not Available
Fire and Explosion Hazards:	1,3-Butadiene is heavier than air and may travel a considerable distance to an ignition source. Product is a flammable gas! Keep away from open flame and other sources of ignition. Do not allow smoking in storage areas or when handling.
Extinguishing Media:	Water, carbon dioxide, dry chemical
Fire Fighting Instructions	If possible, stop the flow of gas with a remote valve. Use water spray to cool fire exposed containers. If fire is extinguished and flow of gas is continued, increase ventilation to prevent a build up of a flammable or explosive atmosphere in low areas or pockets. Extinguish sources of ignition.

#### 6. Accidental Release Measures

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or container valve, contact the appropriate emergency telephone number listed in Section 1.

#### 7. Handling and Storage

Earth-ground and bond all lines and equipment associated with the gas system. All electrical equipment should be non-sparking or explosion proof. Butadiene is non-corrosive and may be used with any common structural material.

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure regulator when connecting cylinder to lower pressure (<150 psig) piping or systems.

Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130oF (54oC).

Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders from being stored for excessive periods of time. There should be no sources of ignition in the areas of storage or use. Post "NO SMOKING OR OPEN FLAME" signs in storage or use areas.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

## 8. Exposure Controls, Personal Protection

Refer to individual state of provincial regulations, as applicable, for limits which may be more stringent than

Engineering Controls	Use local exhaust to prevent accumulation above exposure limit. A hood with forced ventilation is recommended. Use mechanical (general) ventilation in accordance with electrical codes
Eye/Face Protection	Safety goggles or glasses
Skin Protection	Protective gloves made of plastic or rubber
Respiratory Protection	Positive pressure air line with full-face mask and escape bottle or self-contained breathing apparatus should be available for emergency use.
Other/General Protection	Safety shoes, safety shower, eyewash "fountain"

## 9. Physical and Chemical Properties

PARAMETER	VALUE
Physical state	Gas
Vapor pressure at 70oF (21oC)	36 psia
Vapor density (Air = 1)	1.94
Evaporation point	Not Available
Boiling point	
Freezing point	
pH	Not Available
Specific gravity	Not Available

Oil/water partition coefficient	Not Available
Solubility (H2O)	Insoluble
Odor and appearance	Sharp, aromatic, colourless gas

### 10. Stability and Reactivity

Stability	Stable
Incompatible Materials	Oxidizers
Hazardous Decomposition Products	May form explosive peroxides on exposure to air.
Conditions To Avoid (Polymerization)	1,3-Butadiene is shipped with an inhibitor to prevent polymerization.
Hazardous Polymerization	May occur

### 11. Toxicological Information

1, 3, - Butadiene is listed by the International Agency for Research on Cancer (IARC) as a Group 2A agent (probably carcinogenic to humans) - limited evidence exists in humans and sufficient evidence exists in experimental animals with regard to carcinogenicity. NIOSH regards butadiene as a potential carcinogen, teratogen and as a possible reproductive hazard.

### 12. Disposal Considerations

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap

### 13. Transport Information

Proper Shipping Name:	Butadienes, Inhibited Butadienes,
Hazard Class:	2.1
Identification Number:	UN 1010
Shipping Label:	Flammable Gas

### 14. Regulatory Information

1,3-Butadiene is listed under the accident prevention provisions of section 112(r) of the Clean Air Act (CAA) with a threshold quantity (TQ) of 10,000 pounds.

Cas Number	Ingredient Name	Percent By Volume
106-99-0	1,3-Butadiene	100

### 15. Other Information

<b>MSDS Creation Date:</b>	July 22, 2015
<b>Revision #0 Date</b>	

Compressed gas cylinders shall not be refilled without the express written permission of the owner. Shipment of a compressed gas cylinder which has not been filled by the owner or with his/her (written) consent is a violation of transportation regulations.

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