

## Chemical Safety Data Sheet MSDS / SDS

**butene**Revision Date:2023-05-13 Revision Number:1

---

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****Product identifier**

Product name : butene  
CBnumber : CB8917933  
CAS : 25167-67-3  
EINECS Number : 246-689-3  
Synonyms : N-BUTYLENE)

**Relevant identified uses of the substance or mixture and uses advised against**

Relevant identified uses : For R&D use only. Not for medicinal, household or other use.  
Uses advised against : none

**Company Identification**

Company : Chemicalbook  
Address : Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing  
Telephone : 400-158-6606

---

**SECTION 2: Hazards identification****Classification of the substance or mixture**

Flammable gases, Category 1A, Flammable gas

**Label elements****Pictogram(s)**

☐

Signal word : Danger

**Hazard statement(s)**

H220 Extremely flammable gas

H280 Contains gas under pressure; may explode if heated

**Precautionary statement(s)****Prevention**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

**Response**

P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P381 In case of leakage, eliminate all ignition sources.

**Storage**

P403 Store in a well-ventilated place.

**Disposal**

none

**Other hazards**

no data available

---

## SECTION 3: Composition/information on ingredients

**Substance**

Product name	: butene
Synonyms	: N-BUTYLENE)
CAS	: 25167-67-3
EC number	: 246-689-3
MF	: C4H8
MW	: 56.11

---

## SECTION 4: First aid measures

**Description of first aid measures****If inhaled**

Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.

**Following skin contact**

ON FROSTBITE: rinse with plenty of water, do NOT remove clothes. Refer for medical attention .

**Following eye contact**

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

**Following ingestion**

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

**Most important symptoms and effects, both acute and delayed**

SYMPTOMS: This compound may be an asphyxiant or a slight anesthetic at high concentrations. It may also cause eye irritation.

ACUTE/CHRONIC HAZARDS: This material may be narcotic in high concentrations and is an asphyxiant. This chemical is extremely flammable.

(NTP, 1992)

**Indication of any immediate medical attention and special treatment needed**

Basic Treatment: Establish a patent airway. Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Monitor for pulmonary edema and treat if necessary ... Anticipate seizures and treat as necessary ... For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with normal saline during transport ... Do not use emetics. For ingestion, rinse mouth and administer 5 mL/kg up to 200 mL of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool. Administer activated charcoal ... Treat frostbite with rapid rewarming techniques ...

## SECTION 5: Firefighting measures

### Extinguishing media

Fire prevention: to reduce the likelihood of accidental leakage ... reserve valves & automatic closure devices should be provided ... sources of ignition should be prevented & fire-fighting equipment should be provided. hydrocarbons, aliphatic

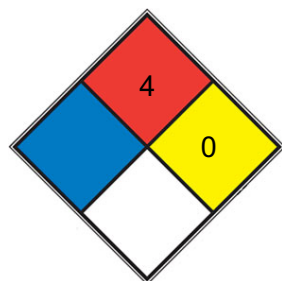
### Specific Hazards Arising from the Chemical

This chemical is flammable. Vapor is heavier than air and may travel long distances to an ignition source and flash back. (NTP, 1992)

### Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

### NFPA 704



■ HEALTH

Will rapidly or completely vaporize at normal atmospheric pressure and temperature, or is readily dispersed in air and will

■ FIRE 4 burn readily. Includes pyrophoric substances. Flash point below room temperature at 22.8 °C (73 °F). (e.g. acetylene, propane, [hydrogen gas](#))

■ REACT 0 Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium, [N<sub>2</sub>](#))

□ SPEC.

□ HAZ.

---

## SECTION 6: Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

### Environmental precautions

Evacuate danger area! Personal protection: complete protective clothing including self-contained breathing apparatus. Ventilation. Remove all ignition sources.

### Methods and materials for containment and cleaning up

Collect and arrange disposal. Keep the chemical in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

---

## SECTION 7: Handling and storage

### Precautions for safe handling

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

### Conditions for safe storage, including any incompatibilities

Fireproof. Cool. Ventilation along the floor.

---

## SECTION 8: Exposure controls/personal protection

### Control parameters

#### Occupational Exposure limit values

no data available

#### Biological limit values

no data available

### Exposure controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

### Individual protection measures

#### Eye/face protection

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

#### Skin protection

Wear fire/flammable resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

#### Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

#### Thermal hazards

no data available

---

## SECTION 9: Physical and chemical properties

### Information on basic physicochemical properties

Physical state	PHYSICAL DESCRIPTION: Colorless gas. (NTP, 1992)
----------------	--

Colour	Colorless
--------	-----------

---

Odour	Slightly aromatic odor
Melting point/freezing point	-185.3°C (FP)
Boiling point or initial boiling point and boiling range	-6.47°C at 760 mm Hg
Flammability	Extremely flammable.
Lower and upper explosion limit/flammability limit	Lower flammable limit: 1.6% by volume; Upper flammable limit: 10.0% by volume
Flash point	-110° F (NTP, 1992)
Auto-ignition temperature	723° F (NTP, 1992)
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	7.76X10 <sup>-3</sup> mPa sec of saturated vapor at 298.15K; 0.186 mPa sec of saturated liquid at 266 K
Solubility	Insoluble (NTP, 1992)
Partition coefficient n-octanol/water	log Kow= 2.40
Vapour pressure	3480 mm Hg at 70° F (NTP, 1992)
Density and/or relative density	0.625g/cm <sup>3</sup>
Relative vapour density	1.93 (NTP, 1992) (Relative to Air)
Particle characteristics	no data available

## SECTION 10: Stability and reactivity

### Reactivity

The substance may polymerize. Reacts violently with oxygen and oxidants. This generates fire and explosion hazard.

### Chemical stability

Stable

### Possibility of hazardous reactions

Highly flammable ... Dangerous fire ... risk. The gas is heavier than air and may travel along the ground; distant ignition possible. The unsaturated aliphatic hydrocarbons, such as 1-BUTENE, are generally much more reactive than the alkanes. Strong oxidizers may react vigorously with them. Reducing agents can react exothermically to release gaseous hydrogen. In the presence of various catalysts (such as acids) or initiators, compounds in this class can undergo very exothermic addition polymerization reactions. May react with oxidizing materials. Aluminum borohydride reacts with alkenes and in the presence of oxygen, combustion is initiated even in the absence of moisture.

### Conditions to avoid

no data available

### Incompatible materials

Incompatible with/ oxidizing materials, aluminum tris-tetrahydroborate.

### Hazardous decomposition products

When heated to decomposition it emits acrid smoke and fumes.

## SECTION 11: Toxicological information

### **Acute toxicity**

- Oral: no data available
- Inhalation: no data available
- Dermal: no data available

### **Skin corrosion/irritation**

no data available

### **Serious eye damage/irritation**

no data available

### **Respiratory or skin sensitization**

no data available

### **Germ cell mutagenicity**

no data available

### **Carcinogenicity**

no data available

### **Reproductive toxicity**

no data available

### **STOT-single exposure**

no data available

### **STOT-repeated exposure**

no data available

### **Aspiration hazard**

no data available

---

## SECTION 12: Ecological information

### **Toxicity**

Toxicity to fish: no data available

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

### **Persistence and degradability**

Cell free extracts and suspensions of microorganisms isolated from soil or water and raised on ethylene were found to epoxidize 1-butene to

butene-1,2-epoxide(1,2). Methanotrophic bacteria isolated from soil and water were found to epoxidize 1-butene(3). Pure cultures of *Pseudomonas oleovorans* grown on octane oxidized 1-butene to 1-butene-3-ol(4). Bacteria isolated from soil and water and raised on propane were found to epoxidize 1-butene(5). Alkenes can be utilized by a wide range of microorganisms and are catabolized via several routes(6). These include the oxidation of a terminal methyl group leaving the double bond intact and resulting in unsaturated alcohol, aldehyde and fatty acid or oxidation of the double bond resulting in the formation of epoxide, diol compounds and possibly hydroxyacids(6).

### **Bioaccumulative potential**

An estimated BCF of 14 was calculated for 1-butene(SRC), using a log Kow of 2.40(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low.

### **Mobility in soil**

Using a structure estimation method based on molecular connectivity indices(1), the Koc for 1-butene can be estimated to be 44(SRC). According to a classification scheme(2), this estimated Koc value suggests that 1-butene is expected to have very high mobility in soil.

### **Other adverse effects**

no data available

---

## SECTION 13: Disposal considerations

### **Disposal methods**

#### **Product**

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

#### **Contaminated packaging**

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

---

## SECTION 14: Transport information

### **UN Number**

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### **UN Proper Shipping Name**

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### **Transport hazard class(es)**

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### **Packing group, if applicable**

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### **Environmental hazards**

ADR/RID: No

IMDG: No

IATA: No

### **Special precautions for user**

no data available

### **Transport in bulk according to IMO instruments**

no data available

---

## SECTION 15: Regulatory information

### **Safety, health and environmental regulations specific for the product in question**

#### **European Inventory of Existing Commercial Chemical Substances (EINECS)**

Listed.

#### **EC Inventory**

Listed.

#### **United States Toxic Substances Control Act (TSCA) Inventory**

Listed.

#### **China Catalog of Hazardous chemicals 2015**

Not Listed.

#### **New Zealand Inventory of Chemicals (NZIoC)**

Listed.

#### **PICCS**

Listed.

#### **Vietnam National Chemical Inventory**

Listed.

#### **IECSC**

Listed.

#### **Korea Existing Chemicals List (KECL)**

Listed.

---

## SECTION 16: Other information



## Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

## References

IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>

HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>

IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: [http://www.echemportal.org/echemportal/index?pageID=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en)

CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>

ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>

Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>

ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

### Disclaimer:

The information in this MSDS is only applicable to the specified product, unless otherwise specified, it is not applicable to the mixture of this product and other substances. This MSDS only provides information on the safety of the product for those who have received the appropriate professional training for the user of the product. Users of this MSDS must make independent judgments on the applicability of this SDS. The authors of this MSDS will not be held responsible for any harm caused by the use of this MSDS.