

# SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.0  
Creation Date: July 15, 2019  
Revision Date: July 15, 2019

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## SECTION 1: Identification

### 1.1 GHS Product identifier

Product name But-1-ene

### 1.2 Other means of identification

Product number -  
Other names 1-BUTENE; 1-BUTYLENE; N-BUTENE

### 1.3 Recommended use of the chemical and restrictions on use

Identified uses Industrial and scientific research use.  
Uses advised against no data available

### 1.4 Supplier's details

Company Shanghai Yansheng Internet Technology Co., Ltd  
Address 513, A3 / F, green space future center, Fengxian District,  
Shanghai, 201400, China  
Telephone +86-4000-6969-66

### 1.5 Emergency phone number

Emergency phone number +86-4000-6969-66  
Service hours Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

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## SECTION 2: Hazard identification

### 2.1 Classification of the substance or mixture

Gases under pressure: Compressed gas  
Flammable gases, Category 1A, Flammable gas

### 2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word Danger  
Hazard statement(s) H220 Extremely flammable gas  
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.

<b>Storage</b>	P410+P403 Protect from sunlight. Store in a well-ventilated place. P403 Store in a well-ventilated place.
<b>Disposal</b>	none

### 2.3 Other hazards which do not result in classification

no data available

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## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
But-1-ene	But-1-ene	106-98-9	203-449-2	100%

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## SECTION 4: First-aid measures

### 4.1 Description of necessary 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.

### 4.2 Most important symptoms/effects, 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)

### 4.3 Indication of immediate medical attention and special treatment needed, if necessary

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 ... Aliphatic hydrocarbons and related compounds

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## SECTION 5: Fire-fighting measures

### 5.1 Suitable 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

### 5.2 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)

### **5.3 Special protective actions for fire-fighters**

Shut off supply; if not possible and no risk to surroundings, let the fire burn itself out. In other cases extinguish with powder, carbon dioxide. In case of fire: keep cylinder cool by spraying with water. Combat fire from a sheltered position.

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## **SECTION 6: Accidental release measures**

### **6.1 Personal precautions, protective equipment and emergency procedures**

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

### **6.2 Environmental precautions**

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

### **6.3 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.

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## **SECTION 7: Handling and storage**

### **7.1 Precautions for safe handling**

NO open flames, NO sparks and NO smoking. Closed system, ventilation, explosion-proof electrical equipment and lighting. 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.

### **7.2 Conditions for safe storage, including any incompatibilities**

Fireproof. Cool. Ventilation along the floor.

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## **SECTION 8: Exposure controls/personal protection**

### **8.1 Control parameters**

#### **Occupational Exposure limit values**

TLV: 250 ppm as TWA

#### **Biological limit values**

no data available

### **8.2 Appropriate engineering controls**

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

### **8.3 Individual protection measures, such as personal protective equipment (PPE)**

#### **Eye/face protection**

Wear face shield or eye protection in combination with breathing protection.

#### **Skin protection**

Cold-insulating gloves.

#### **Respiratory protection**

Use ventilation.

## Thermal hazards

no data available

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## SECTION 9: Physical and chemical properties and safety characteristics

<b>Physical state</b>	PHYSICAL DESCRIPTION: Colorless gas. (NTP, 1992)
<b>Colour</b>	Colorless
<b>Odour</b>	Slightly aromatic odor
<b>Melting point/freezing point</b>	-75°C(lit.)
<b>Boiling point or initial boiling point and boiling range</b>	?6.3°C(lit.)
<b>Flammability</b>	Extremely flammable.
<b>Lower and upper explosion limit/flammability limit</b>	Lower flammable limit: 1.6% by volume; Upper flammable limit: 10.0% by volume
<b>Flash point</b>	-80°C
<b>Auto-ignition temperature</b>	723°F
<b>Decomposition temperature</b>	no data available
<b>pH</b>	no data available
<b>Kinematic viscosity</b>	7.76X10-3 mPa sec of saturated vapor at 298.15K; 0.186 mPa sec of saturated liquid at 266 K
<b>Solubility</b>	Insoluble (NTP, 1992)
<b>Partition coefficient n-octanol/water</b>	log Kow= 2.40
<b>Vapour pressure</b>	1939 mm Hg ( 21.1 °C)
<b>Density and/or relative density</b>	0.625 g/cm3
<b>Relative vapour density</b>	1.93 (vs air)
<b>Particle characteristics</b>	no data available

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

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

### 10.2 Chemical stability

Stable

### 10.3 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.

### 10.4 Conditions to avoid

no data available

### 10.5 Incompatible materials

Incompatible with/ oxidizing materials, aluminum tris-tetrahydroborate.

### 10.6 Hazardous decomposition products

When heated to decomposition it emits acrid smoke and fumes.

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## 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

Rapid evaporation of the liquid may cause frostbite.

### STOT-repeated exposure

no data available

### Aspiration hazard

On loss of containment this substance can cause suffocation by lowering the oxygen content of the air in confined areas.

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## SECTION 12: Ecological information

### 12.1 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

### 12.2 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).

### 12.3 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.

## 12.4 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.

## 12.5 Other adverse effects

no data available

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# SECTION 13: Disposal considerations

## 13.1 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.

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# SECTION 14: Transport information

## 14.1 UN Number

ADR/RID: UN1012 (For reference only, please check.)	IMDG: UN1012 (For reference only, please check.)	IATA: UN1012 (For reference only, please check.)
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## 14.2 UN Proper Shipping Name

ADR/RID: BUTYLENE (For reference only, please check.)	IMDG: BUTYLENE (For reference only, please check.)	IATA: BUTYLENE (For reference only, please check.)
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## 14.3 Transport hazard class(es)

ADR/RID: 2.1 (For reference only, please check.)	IMDG: 2.1 (For reference only, please check.)	IATA: 2.1 (For reference only, please check.)
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## 14.4 Packing group, if applicable

ADR/RID: (For reference only, please check.)	IMDG: (For reference only, please check.)	IATA: (For reference only, please check.)
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## 14.5 Environmental hazards

ADR/RID: No	IMDG: No	IATA: No
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## 14.6 Special precautions for user

no data available

## 14.7 Transport in bulk according to IMO instruments

no data available

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# SECTION 15: Regulatory information

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

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Chemical name	Common names and synonyms	CAS number	EC number
But-1-ene	But-1-ene	106-98-9	203-449-2
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			Listed.
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.
Korea Existing Chemicals List (KECL)			Listed.

## SECTION 16: Other information

### Information on revision

**Creation Date** July 15, 2019

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### 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/>

### Other Information

Health effects of exposure to the substance have not been investigated. Check oxygen content before entering area.

**Any questions regarding this SDS, Please send your inquiry to [sds@xixisys.com](mailto:sds@xixisys.com)**

*Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.*

