

# Chemical Safety Data Sheet MSDS / SDS

## n-Butane

Revision Date:2024-03-16 Revision Number:1

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### Product identifier

Product name : n-Butane  
CBnumber : CB6152626  
CAS : 106-97-8  
EINECS Number : 203-448-7  
Synonyms : butane,n-Butane

#### 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 : Chengdu Hongjin Chemical Co.,Ltd  
Address : Room 402, Xixi Central International, Chenghua District, Chengdu City  
Telephone : 028-84791130

### SECTION 2: Hazards identification

#### Classification of the substance or mixture

Gases under pressure: Liquefied gas  
Flammable gases, Category 1A, Flammable gas  
Germ cell mutagenicity, Category 1B  
Carcinogenicity, Category 1A

#### 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)

P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.  
P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P403 Store in a well-ventilated place.

P410 Protect from sunlight.

#### **Prevention**

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

P203 Obtain, read and follow all safety instructions before use.

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

#### **Response**

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

P381 In case of leakage, eliminate all ignition sources.

P318 IF exposed or concerned, get medical advice.

#### **Storage**

P410+P403 Protect from sunlight. Store in a well-ventilated place.

P403 Store in a well-ventilated place.

P405 Store locked up.

#### **Disposal**

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

#### **Other hazards**

no data available

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## SECTION 3: Composition/information on ingredients

### **Substance**

Product name	: n-Butane
Synonyms	: butane,n-Butane
CAS	: 106-97-8
EC number	: 203-448-7
MF	: C4H10
MW	: 58.12

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## 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

High exposure produces drowsiness but no other evidence of systemic effect. (USCG, 1999)

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

FIRST AID: Skin--ON CONTACT WITH LIQUID FROSTBITE: rinse with plenty of water, do NOT remove clothes. Refer for medical attention; Eyes--ON CONTACT WITH LIQUID FROSTBITE. First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

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## SECTION 5: Firefighting measures

### Extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

### Specific Hazards Arising from the Chemical

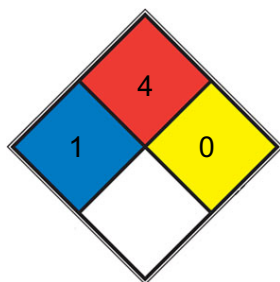
Excerpt from ERG Guide 115 [Gases - Flammable (Including Refrigerated Liquids)]: EXTREMELY FLAMMABLE. Will be easily ignited by heat, sparks or flames. Will form explosive mixtures with air. Vapors from liquefied gas are initially heavier than air and spread along ground.

CAUTION: Hydrogen (UN1049), Deuterium (UN1957), Hydrogen, refrigerated liquid (UN1966) and Methane (UN1971) are lighter than air and will rise. Hydrogen and Deuterium fires are difficult to detect since they burn with an invisible flame. Use an alternate method of detection (thermal camera, broom handle, etc.) Vapors may travel to source of ignition and flash back. Cylinders exposed to fire may vent and release flammable gas through pressure relief devices. Containers may explode when heated. Ruptured cylinders may rocket. (ERG, 2016)

### Advice for firefighters

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.

### NFPA 704



■ HEALTH 1 Exposure would cause irritation with only minor residual injury (e.g. [acetone](#), sodium bromate, potassium chloride)

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.

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## SECTION 6: Accidental release measures

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

Evacuate danger area! Consult an expert! Personal protection: self-contained breathing apparatus. Ventilation. Remove all ignition sources. NEVER direct water jet on liquid.

### **Environmental precautions**

Evacuate danger area! Consult an expert! Personal protection: self-contained breathing apparatus. Ventilation. Remove all ignition sources. NEVER direct water jet on liquid.

### **Methods and materials for containment and cleaning up**

Evacuate danger area! Consult an expert! Personal protection: self-contained breathing apparatus. Ventilation. Remove all ignition sources. NEVER direct water jet on liquid.

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## SECTION 7: Handling and storage

### **Precautions for safe handling**

NO open flames, NO sparks and NO smoking. Closed system, ventilation, explosion-proof electrical equipment and lighting. Prevent build-up of electrostatic charges (e.g., by grounding) if in liquid state. Use non-sparking handtools. 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. Butane in liquid form may be stored both above and below ground. Besides storage in liquefied form under its vapor pressure at normal atmospheric temperatures, refrigerated liquid storage at atmospheric pressure may be used. Such systems are closed and insulated, and the liquid petroleum gas vapor is circulated through pumps and compressors to serve as the refrigerant for the system. Butane may be stored in pits in the earth capped by metal domes and in underground chambers.

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## SECTION 8: Exposure controls/personal protection

### **Control parameters**

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

TLV: 1000 ppm as STEL. MAK: 2400 mg/m<sup>3</sup>, 1000 ppm; peak limitation category: II(4); pregnancy risk group: D

#### **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 face shield.

**Skin protection**

Cold-insulating gloves. Protective clothing.

**Respiratory protection**

Use closed system or ventilation.

**Thermal hazards**

no data available

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## SECTION 9: Physical and chemical properties

**Information on basic physicochemical properties**

Physical state	gas
Colour	Colorless gas [Note: Shipped as a liquefied compressed gas. A liquid below 31 degrees F]
Odour	Faint, disagreeable odor
Melting point/freezing point	-138.35°C
Boiling point or initial boiling point and boiling range	?0.5°C(lit.)
Flammability	Flammable Gas
Lower and upper explosion limit/flammability limit	Lower flammable limit: 1.9% by volume; Upper flammable limit: 8.5% by volume.
Flash point	45
Auto-ignition temperature	550° F (USCG, 1999)
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	7.5 at 300 K; 9.9 at 400 K; 12.2 at 500 K; 14.5 at 600 K (all in uPa.s) (gas)
Solubility	61 mg/L at 68° F (NTP, 1992)
Partition coefficient n-octanol/water	log Kow = 2.89
Vapour pressure	3.21, 1.26, and 0.66 mM at 4, 25, and 50 °C, respectively (Kresheck et al., 1965)
Density and/or relative density	0.579g/mL at 20°C(lit.)
Relative vapour density	2.11 (vs air)
Particle characteristics	no data available

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## SECTION 10: Stability and reactivity

**Reactivity**

no data available

**Chemical stability**

no data available

### **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 gas is heavier than air and may accumulate in lowered spaces causing a deficiency of oxygen. As a result of flow, agitation, etc., electrostatic charges can be generated. BUTANE can explode when exposed to flame or when mixed with (nickel carbonyl + oxygen). It can also react with oxidizers. Strong acids and alkalis should be avoided. (NTP, 1992).

### **Conditions to avoid**

no data available

### **Incompatible materials**

Very dangerous fire hazard when exposed to ... oxidizers.

### **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: LC50 Rat inhalation 658 mg//4 hr
- 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. The substance may cause effects on the central nervous system.

### **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

### 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

AEROBIC: A mean half-life of 5.9 days was reported for all detectable hydrocarbons in an aerobic biodegradation study of gasoline in water from a domestic sewage treatment plant(1). Among the last compounds to be degraded was butane, for which a degradation half-life was calculated as 15 days(1). Within 24 hrs, n-butane was oxidized to its corresponding methyl ketone, 2-butanone(2,3), and the corresponding alcohol, 2-butanol(3,4), by cell suspensions of over 20 methyltrophic organisms isolated from lake water and soil samples(1-3). After 192 hrs, the concentration of n-butane contained in gasoline was reduced from 0.63 to 0.37 uL/L for both a sterile control and a mixed culture sample collected from ground water contaminated with gasoline; these data indicate that n-butane was not biodegraded over the study period(5). The biodegradation of n-butane in a Columbia River soil was measured over 50 days; a degradation rate of 1.8 mgC/day/kg dry soil was reported without the addition of nitrogen(6). When nitrogen at 0.15 mg per bottle was added, the degradation rate increased to 11.4 mg C/day/kg dry soil(6). 100% of the initially added n-butane (32.9 mg/L) was biodegraded over 34 days in a screening study using an activated sludge inoculum(7).

### Bioaccumulative potential

An estimated BCF of 33 was calculated for n-butane(SRC), using a log Kow of 2.89(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is moderate(SRC).

### Mobility in soil

The Koc of n-butane is estimated as 900(SRC), using a measured log Kow of 2.89(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that n-butane is expected to have low mobility in soil.

### Other adverse effects

no data available

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## 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.

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## SECTION 14: Transport information

### UN Number

ADR/RID: UN1011 (For reference only, please check.)

IMDG: UN1011 (For reference only, please check.)

IATA: UN1011 (For reference only, please check.)

### UN Proper Shipping Name

ADR/RID: BUTANE (For reference only, please check.)

IMDG: BUTANE (For reference only, please check.)

IATA: BUTANE (For reference only, please check.)

### 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.)

### Packing group, if applicable

ADR/RID: (For reference only, please check.)

IMDG: (For reference only, please check.)

IATA: (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

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## 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**

Listed.

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

Listed.

#### **PICCS**

Listed.

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

Listed.

#### **IECSC**

Listed.

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

Listed.

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## 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/>

### **Other Information**

Check oxygen content before entering area. Turn leaking cylinder with the leak up to prevent escape of gas in liquid state. Information except physical properties also apply for Isobutane (CAS 75-28-5). High concentrations in the air cause a deficiency of oxygen with the risk of unconsciousness or death.

**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.