

## Chemical Safety Data Sheet MSDS / SDS

## ISOBUTANE

Revision Date:2023-07-01 Revision Number:1

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

**Product identifier**

Product name : ISOBUTANE  
CBnumber : CB4310831  
CAS : 75-28-5  
EINECS Number : 200-857-2  
Synonyms : ISOBUTANE,2-methylpropane

**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**

Gases under pressure: Compressed 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	: ISOBUTANE
Synonyms	: ISOBUTANE,2-methylpropane
CAS	: 75-28-5
EC number	: 200-857-2
MF	: C4H10
MW	: 58.12

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## SECTION 4: First aid measures

### **Description of first aid measures**

#### **If inhaled**

Fresh air, rest. 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

Central nervous system depression ranging from dizziness and incoordination to anesthesia and respiratory arrest, depending on concentration and extent of inhalation. Irregular heartbeat is rare but is a dangerous complication at anesthetic levels. (USCG, 1999)

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

INHALATION: Fresh air, rest. Refer for medical attention. Half-upright position. Artificial respiration may be needed. Refer for medical attention. SKIN: ON FROSTBITE: rinse with plenty of water, do NOT remove clothes. Refer for medical attention. EYES: First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.

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## SECTION 5: Firefighting measures

### Extinguishing media

Butane is a flammable gas. In case of fire, stop the flow of gas if it can be done safely. Use dry chemical, carbon dioxide, or halon extinguishers. Use water to keep fire-exposed containers cool and to protect personnel doing the shut-off. If leak or spill has caught fire, use water spray to disperse gas and to protect personnel shutting off leak. If cooling streams are ineffective (venting sound increases in volume and pitch, tank discolors, or shows any signs of deforming), withdraw immediately to a secure position. If material or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Contact your Department of Environmental Protection or your regional office of the federal EPA for specific recommendations. If employees are required to fight fires, they must be properly trained and equipped. OSHA 1910.156. Butanes

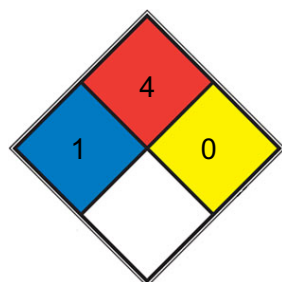
### Specific Hazards Arising from the Chemical

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 water spray. 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! Ventilation. Remove all ignition sources. NEVER direct water jet on liquid. Personal protection: filter respirator for organic vapours of low boiling point adapted to the airborne concentration of the substance.

### Environmental precautions

Evacuate danger area! Consult an expert! Ventilation. Remove all ignition sources. NEVER direct water jet on liquid. Personal protection: filter respirator for organic vapours of low boiling point adapted to the airborne concentration of the substance.

### Methods and materials for containment and cleaning up

Evacuate and restrict persons not wearing protective equipment from area of spill or leak until cleanup is complete. Remove all ignition sources. Keep the gas concentration below the explosive limit range by forced ventilation. Stop the flow of gas. If source of leak is a cylinder and the leak cannot be stopped in place, remove leaking cylinder to a safe place in the open air, and repair leak or allow cylinder to dissipate to the atmosphere. If employees are required to clean up spills, they must be properly trained and equipped. OSHA 1910.120(q) may be applicable. Butanes

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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. 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. Store in tightly closed containers in a cool, well-ventilated area away from incompatible materials ... and heat. Butanes

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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 safety goggles or face shield.

### Skin protection

Cold-insulating gloves. Protective clothing.

### Respiratory protection

Use ventilation, local exhaust or breathing protection.

### Thermal hazards

no data available

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## SECTION 9: Physical and chemical properties

### Information on basic physicochemical properties

Physical state	Colorless gas
Colour	Colorless, very flammable gas with a faint odor
Odour	Gasoline-like or natural gas odor.
Melting point/freezing point	-160°C(lit.)
Boiling point or initial boiling point and boiling range	?12°C(lit.)
Flammability	Flammable Gas
Lower and upper explosion limit/flammability limit	8.3%
Flash point	-83°C
Auto-ignition temperature	860°F
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	0.238 cP at -10 deg C
Solubility	Slight (NIOSH, 2016)
Partition coefficient n-octanol/water	log Kow = 2.76
Vapour pressure	72.2 psi ( 37.7 °C)
Density and/or relative density	2.064g/mLat 25°C(lit.)
Relative vapour density	2.01 (21 °C, vs air)
Particle characteristics	no data available

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## SECTION 10: Stability and reactivity

## Reactivity

Reacts with strong oxidants, acetylene, halogens and nitrogen oxides. This generates fire and explosion hazard.

## Chemical stability

no data available

## Possibility of hazardous reactions

SEVERE, WHEN EXPOSED TO HEAT OR FLAME. The gas is heavier than air and may travel along the ground; distant ignition possible. As a result of flow, agitation, etc., electrostatic charges can be generated. ISOBUTANE is incompatible with the following: Strong oxidizers (e.g., nitrates & perchlorates), chlorine, fluorine, (nickel carbonyl + oxygen) (NIOSH, 2016).

## Conditions to avoid

no data available

## Incompatible materials

Reacts with strong oxidants, acetylene, halogens and nitrogen oxides causing fire and explosion hazard.

## Hazardous decomposition products

no data available

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## SECTION 11: Toxicological information

### Acute toxicity

- Oral: no data available
- Inhalation: LC50 Rat inhalation (15 min) 570000 ppm
- 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 cardiovascular system. This may result in impaired functions and respiratory failure. Exposure at high levels could cause death.

### **STOT-repeated exposure**

no data available

### **Aspiration hazard**

A harmful concentration of this gas in the air will be reached very quickly on loss of containment.

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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:** Indigenous soil microorganisms will biodegrade petroleum products under aerobic conditions(1). Biodegradation may occur under anaerobic conditions at a much slower rate, particularly by sulfur-reducing bacteria(2). It was demonstrated that isobutane is oxidized by bacteria as the sole source of carbon and energy(1). The bacteria were isolated from lake water and soil near a refinery in New Jersey. In the case of a *Brevibacterium* sp., the rate of oxidation of isobutane was about 70% that of n-butane. However, no isobutane degraded in 8 days when incubated with groundwater contaminated with gasoline(3). Isobutane was subject to biodegradation in a microcosm designed to simulate conditions in Narragansett Bay, RI in September and November(4). The biodegradation half-lives for isobutane were 16-26 days for September (20 deg C) and 33-139 days for November (10 deg C)(4). The degradation rate was slower than for n-butane and fell between that of propane and ethane. The biodegradation increased markedly on acclimation. Approximately 95% of the isobutane present in the microcosm after 12.9 days degraded within the next 2 days(1).

### **Bioaccumulative potential**

An estimated BCF of 27 was calculated for isobutane(SRC), using a log Kow of 2.76(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(SRC).

### **Mobility in soil**

Using an estimation method based on molecular connectivity indices(1), the Koc for isobutane is estimated to be 35(SRC). According to a suggested classification scheme(2), this Koc value suggests that isobutane will have very high mobility in soil(SRC).

### **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: UN1969 (For reference only, please check.)

IMDG: UN1969 (For reference only, please check.)

IATA: UN1969 (For reference only, please check.)

**UN Proper Shipping Name**

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

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

IATA: ISOBUTANE (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**

Turn leaking cylinder with the leak up to prevent escape of gas in liquid state. The measures mentioned in section PREVENTION are applicable to production, filling of cylinders, and storage of the gas.

#### **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.