



Material Safety Data Sheet

Section 1- Product and Company Identification

Synonyms: 2-Methylpropane, Trimethylmethane

Chemical Name: Isobutane

Formula: C₄H₁₀

SupplierName: Miragas Co. Ltd.

Address of Supplier: Zhucun Industrial Park, Pengpo, Yichuan, Luoyang, Henan 471311, China

Telephone Number: +86 379-69581176

Emergency Telephone Number: +86 379-69581179

Fax: +86 379-69581180

Email address: Bureau@miragases.com

Restriction on Use: No Restrictions.

Section 2- Composition/information on ingredients

COMPOSITION: 99.0 to 99.9 %

PEL-OSHA¹: Simple Asphyxiant

CAS NUMBER: 75-28-5

TLV-ACGIH₂: Simple Asphyxiant

RTECS #: Not in RTECS

LD₅₀ or LC₅₀ Route/Species: Not Available

Formula: C₄H₁₀

¹ As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993).

² As stated in the ACGIH 1994-95 Threshold Limit Values for Chemical Substances and Physical Agents.

Section 3- Hazards Identification

EMERGENCY OVERVIEW

This product does not contain oxygen and may cause asphyxia if released in a confined area. Simple hydrocarbons can cause irritation and central nervous system depression at high concentrations.

Extremely flammable.

ROUTE OF ENTRY:

Skin Contact	Skin Absorption	Eye Contact	Inhalation	Ingestion
Yes	No	Yes	Yes	No

HEALTH EFFECTS:

Exposure Limits No	Irritant Yes	Sensitization No
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Teratogen No	Reproductive Hazard No	Mutagen No
Synergistic Effects None Reported		

Carcinogenicity:

NTP: No IARC: No OSHA: No

EYE EFFECTS:

None anticipated as product is a gas at room temperature.

SKIN EFFECTS:

None anticipated as product is a gas at room temperature.

INGESTION EFFECTS:

Ingestion is unlikely as product is a gas.

INHALATION EFFECTS:

Product is relatively nontoxic. Simple hydrocarbons can irritate the eyes, mucous membranes and respiratory system at high concentrations.

Inhalation of high concentrations may cause dizziness, disorientation, incoordination, narcosis, nausea or narcotic effects.

This product may displace oxygen if released in a confined space. Maintain oxygen levels above 19.5% at sea level to prevent asphyxiation.

Effects of oxygen deficiency resulting from simple asphyxiants may include: rapid breathing, diminished mental alertness, impaired muscular coordination, faulty judgement, depression of all sensations, emotional instability, and fatigue. As asphyxiation progresses, nausea, vomiting, prostration, and loss of consciousness may result, eventually leading to convulsions, coma, and death.

Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.

NFPA HAZARD CODES

Health: 1

Flammability: 4

Reactivity: 0

HMIS HAZARD CODES

Health: 1

Flammability: 4

Reactivity: 0

RATINGS SYSTEM

0 = No Hazard

1 = Slight Hazard

2 = Moderate Hazard

3 = Serious Hazard

4 = Severe Hazard

Section 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 further treatment and follow up.

SKIN:

Remove contaminated clothing and flush affected area with cold water and soap. If irritation persists, seek medical attention.

**INGESTION:**

Not normally required. Seek immediate medical attention.

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 assisted (artificial) respiration and supplemental oxygen. Further treatment should be symptomatic and supportive.

Section 5- Fire-Fighting Measures

Conditions of Flammability: Nonflammable		
Flash point: -117°F (-83°C)	Method: Closed Cup	Auto ignition Temperature: 778°F (420°C)
LEL(%): 1.8	UEL(%): 8.4	
Hazardous combustion products: Carbon monoxide, Carbon dioxide		
Sensitivity to mechanical shock: None		
Sensitivity to static discharge: None		

FIRE AND EXPLOSION HAZARDS:

Isobutane is heavier than air and may travel a considerable distance to an ignition source. Isobutane 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/explosive atmosphere. Extinguish sources of ignition.

Be cautious of a Boiling Liquid Evaporating Vapor Explosion, BLEVE, if flame is impinging on surrounding containers. Direct 500 GPM water stream onto containers above the liquid level with remote monitors. Limit the number of personnel in proximity to the fire. Evacuate surrounding areas to at least 3000 feet in all directions.

Section 6- Accidental Release Measures
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Evacuate all personnel from affected area. Use appropriate protective equipment. Increase ventilation to prevent build up of a flammable/explosive atmosphere. Extinguish all sources of ignition! 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 or call your closest Miragas location.



Section 7- Handling and Storage

Earth bond and ground all lines and equipment associated with the product system. Electrical equipment should be non-sparking and explosion proof.

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 (<250 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 130°F (54°C).

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.

Post "No Smoking" signs in storage or use areas. For additional recommendations consult Compressed Gas Association Pamphlet P-1.

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.

Section 8- Exposure Controls/Personal Protection

EXPOSURE LIMITS¹:

INGREDIENT	% VOLUME	PEL-OSHA ²	TLV-ACGIH ³	LD ₅₀ or LC ₅₀ Route/Species
Isobutane Formula: C ₄ H ₁₀ CAS: 75-28-5 RTECS#: N/A	99.0 to 99.9	Simple Asphyxiant	Simple Asphyxiant	Not Available

¹ Refer to individual state or provincial regulations, as applicable, for limits which may be more stringent than those listed here.

² As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

³ As stated in the ACGIH 1994-1995 Threshold Limit Values for Chemical Substances and Physical Agents.

ENGINEERING CONTROLS:

Use local exhaust to prevent accumulation. Use general ventilation to prevent build up of flammable concentrations. May use hood with forced ventilation when handling small quantities. If product is handled routinely where the potential for leaks exists, all electrical equipment must be rated for use in potentially flammable atmospheres. Consult the National Electrical Code for details

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.

Section 9- Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure at 70 °F	: 45	psia
Vapor density at STP (Air = 1)	: 2.06	
Evaporation point	: Not applicable	
Boiling point	: 10.9	°F
	: -11.7	°C
Freezing point	: Not applicable	°F
	: Not applicable	°C
pH	: Not Applicable	
Specific gravity	: Not Available	
Oil/water partition coefficient	: Not Available	
Solubility (H2O)	: Very slight	
Odor threshold	: Not Available	
Odor and appearance	: A colorless, odorless gas	

Section 10- Stability and Reactivity**STABILITY:**

Stable

CONDITIONS TO AVOID (Stability):

High temperatures. Product will start to decompose at 815°F (435°C).

INCOMPATIBLE MATERIALS:

Oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS:

Carbon Monoxide.

Section 11- Toxicological Information

Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.

No chronic effects data given in the Registry of Toxic Effects of Chemical Substances (RTECS) or Sax, Dangerous Properties of Industrial Materials, 7th ed.

**Section 12- Ecological Information**

No data given.

Section 13- 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 IN PLACE to Miragas or authorized distributor for proper disposal.

Section 14- Transport Information

DOT/IMO SHIPPING NAME: Isobutane

HAZARD CLASS: 2.1

IDENTIFICATION NUMBER: UN 1969

PRODUCT RQ: None

SHIPPING LABEL(s): FLAMMABLE GAS

PLACARD (when required): FLAMMABLE GAS

Section 15- Regulatory Information

ISO-butane 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.

SARA TITLE III NOTIFICATIONS AND INFORMATION

SARA TITLE III - HAZARD CLASSES:

Acute Health Hazard

Fire Hazard

Sudden Release of Pressure Hazard

Section 16- Other Information

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.

NOTES: Revisions are routinely updated every three years or on necessary.