SAFETY DATA SHEETS

According to the UN GHS revision 10

1: Identification

1.1 GHS Product identifier

Product name	Isoprene

1.2 Other means of identification

Product number	78-79-5
Other names	Isoprene

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	MolBest.com
Address	MolBest.com
Telephone	MolBest.com

1.5 Emergency phone number

Emergency phone number	MolBest.com
Service hours	MolBest.com

2: Hazard identification

2.1 Emergency Overview

Highly flammable substance, highly susceptible to fire and explosion. Its vapors can form explosive mixtures with air and explode immediately upon contact with a fire source. Open flames and static electricity are strictly prohibited.

2.2 GHS Classification

Flammable liquids : Category 1
Germ cell mutagenicity : Category 2
Carcinogenicity : Category 1, 1A, 1B
Hazardous to the aquatic environment, long-term hazard : Category 3

2.3 GHS label elements, including precautionary statements

Pictogram(s)

Signal word	Danger
Hazard statement(s)	H224 Extremely flammable liquid and vapor H341 Suspected of causing genetic defects H350 May cause cancer H412 Harmful to aquatic life with long lasting effects
Precautionary statement(s)	
Prevention	P203 Obtain, read and follow all safety instructions before use. P210 Keep away from heat, hot surface, sparks, open flames and other ignition sources. No smoking. P233 Keep container tightly closed. P240 Ground/bond container and receiving equipment. P241 Use explosion-proof [electrical/ventilating/lighting/.../] equipment. P242 Use only non-sparking tools. P243 Take precautionary measures against static discharge. P273 Avoid release to the environment. P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
Response	P318 if exposed or concerned, get medical advice. P303+P361+P353 IF ON SKIN (or hair),Take off Immediately all contaminated clothing. Rinse SKIN with water [or shower]. P370+P378 In case of fire,Use ... to extinguish.
Storage	P405 Store locked up. P403+P235 Store in a well-ventilated place. Keep cool.
Disposal	P501 Dispose of contents/container to ...

2.4 Physical and chemical

Flammable gas, which can form explosive mixtures with air, with a wide range of explosion limits. Extremely flammable liquid: has a very low flash point (usually below 23°C), is volatile, and its vapor density may be greater than that of air, accumulating in low places.

2.5 Health hazards

The main hazards come from burns and blast injuries caused by fires and explosions. Some substances are inherently toxic or asphyxiating, and high concentrations can cause poisoning or asphyxiation. Liquid splashes (cryogenic liquids) can cause frostbite.

2.6 Environmental hazards

Fires can produce toxic gases such as carbon monoxide, polluting the air. Leaks may have short-term impacts on local ecosystems. Most substances will quickly evaporate or degrade in the environment, preventing long-term pollution.

2.7 Other hazards which do not result in classification

no data available

3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Isoprene	Isoprene	78-79-5	201-143-3	99%

4: First-aid measures

4.1 General advice

If possible, immediately cut off the fire source and ventilate to dilute the flammable vapor; carry the material SDS document, record the exposure situation, and seek medical attention if necessary; avoid using mobile phones and electrostatic devices (to prevent explosion).

4.2 If inhaled

Move to a place with fresh air and keep the head elevated (to facilitate breathing); if inhaling a large amount of flammable gas leads to suffocation, immediately perform artificial respiration (wear a respirator); if dizziness or confusion occurs, seek medical attention immediately

4.3 In case of skin contact

If you come into contact with highly flammable liquids (such as ether), immediately remove contaminated clothing and rinse with plenty of running water for 10-15 minutes. If you have frostbite (caused by low-boiling-point liquids), rewarm with warm water (37-40°C) and do not use fire to burn the affected area.

4.4 In case of eye contact

Immediately rinse with saline for 10 minutes, then instill antibiotic eye drops (such as levofloxacin eye drops); wear goggles, avoid rubbing, and seek medical attention from an ophthalmologist if necessary.

4.5 If swallowed

Do not induce vomiting (to prevent vomitus from being aspirated into the lungs); if the patient is conscious, a small amount of vegetable oil can be given orally (to delay absorption); bring the substance SDS and seek medical attention immediately to monitor for aspiration pneumonia

4.6 Most important symptoms and effects, both acute and delayed

Acute symptoms include suffocation, dizziness, loss of consciousness, and frostbite (for low-boiling-point liquids). Long-term effects include damage to the nervous system if toxic or flammable gases (such as acrylonitrile) are inhaled.

4.7 Protection of first-aiders

Rescuers must wear anti-static work clothes, chemical-resistant gloves, and half-mask respirators (with organic vapor filter cartridges); use explosion-proof tools to avoid static sparks.

4.8 Notes to physician

Inform the doctor of the substance name and exposure concentration; blood gas analysis should be monitored for patients with asphyxiation, and tissue necrosis should be prevented for patients with frostbite.

5: Fire-fighting measures

5.1 Unsuitable extinguishing media

Flammable gas: Do not use water (cannot cover the gas) or carbon dioxide (may cause flashback); Extremely flammable liquids (flash point 23°C): Avoid using high-pressure water (can easily spread the liquid and expand the fire).

5.2 Specific hazards during fire fighting

Flammable gases can easily reach their explosion limits when mixed with air (such as 4%-75% hydrogen), and will explode when exposed to fire, with strong shock waves; extremely flammable liquids are highly volatile, and their vapors can easily form explosive mixtures with a fast burning speed (such as ether).

5.3 Hazardous combustion products

Carbon monoxide and incomplete combustion products of hydrocarbons (such as aldehydes and ketones).

5.4 Specific extinguishing methods

Flammable gas: first shut off the leak source (when safe). If it cannot be shut off, use dry powder to extinguish the fire (to suppress combustion) and dilute the vapor with mist water (to prevent explosion). Extremely flammable liquid: use dry powder/foam (anti-solvent foam, such as ethanol) for small areas and cover large areas with foam (to isolate oxygen). Open flames are strictly prohibited from approaching.

5.5 Special protective equipment for fire-fighters

Wear anti-static work clothes, positive pressure air respirator, and chemical-resistant gloves; carry a combustible gas detector (to measure explosion limits); use explosion-proof tools during operation to avoid static sparks.

6: Accidental release measures

6.1 Protective measures for workers

Wear anti-static work clothes, anti-static gloves, and chemical goggles; wear a gas mask (organic vapor filter cartridge) for gases/volatile liquids; wear impact protection for aerosols.

6.2 Environmental protection measure

Liquids/aerosols are prevented from flowing into sewers/rivers, and oil booms + oil absorbent cotton are used to pollute water bodies; gas leaks are monitored for concentration to prevent them from spreading to residential areas; solids are prevented from dust polluting the soil.

6.3 Containment methods for leaked chemicals

Gas: Shut off the leak source (when safe), and use explosion-proof fan to lead the leak to an open area; Liquid: Collect in anti-static container; Solid: Put non-sparking tools into anti-static container; Aerosol: Collect the leaked tank (no squeezing).

6.4 Cleanup methods for chemical spills

Liquid: absorb with a small amount of oil-absorbing cotton and transfer with a large amount of explosion-proof pump; Solid: transfer with spark-free tools (to prevent friction); Aerosol: leaking tanks are collected separately and disposed of professionally.

6.5 Measures to prevent the spread of leaks

Designate a 10-meter isolation zone and prohibit open flames/static equipment; set up fire barriers for liquids and anti-static isolation belts for gases; use explosion-proof ventilation to reduce concentration (explosion limit).

6.6 Container leakage treatment

Gas: Minor leaks should be sealed with anti-static sealant, serious leaks should be transferred after pressure relief; Liquid: Anti-static sealant should be used to seal, serious leaks should be transferred with explosion-proof pump; Aerosol: Do not squeeze, wrap in sealed bag.

6.7 Special considerations

Eliminate static electricity before operation; provide good ventilation to prevent gas accumulation; perform anti-static testing on tools; clean protective equipment and perform anti-static testing after leak treatment.

7: Handling and storage

7.1 Safe storage conditions

Flammable gases are stored in explosion-proof gas cylinder warehouses (in compliance with fire protection regulations) and equipped with combustible gas detectors (alarm threshold ? 10% of the lower explosion limit); extremely flammable liquids are stored in cool warehouses with anti-static floors (resistance ? 10??) and containers made of anti-static plastic or metal (grounded); warehouse ventilation is explosion-proof (air changes ? 10 times/hour).

7.2 Storage precautions

Flammable gases should be kept away from fire sources and static electricity sources (such as mobile phones and non-explosion-proof lamps). Gas cylinders should be stored upright and secured. Extremely flammable liquids must not be stacked (stored in single layers). The distance between containers should be ? 10 cm. Check the gas detector daily and the container seal weekly. In case of leakage, cut off the gas source/fire source immediately and ventilate to dilute the gas.

7.3 VCI Storage Grade

Level 3 (Medium): The outer surface of the metal gas cylinder is coated with VCI anti-rust paint (thickness ? 30?m) and maintained once every year; the grounding resistance of the metal pipeline in the warehouse is ? 4? to prevent explosions caused by static electricity and avoid pipeline corrosion and leakage.

7.4 Recommended storage temperature

Flammable gases: 0-30?, strictly prohibited from exceeding 35?; extremely flammable liquids: 10-25?, liquids with a flash point 23? need to be ?20?; shade and cool down in summer, avoid direct sunlight, temperature fluctuation ?±5? (if the label has a recommended storage temperature, follow the label).

7.5 Handling

For precautions see Safety Data Sheet section 2
Advice on safe handling : Work under hood. Do not inhale substance/mixture.

8: Exposure controls/personal protection

8.1 Respiratory protection

When exposed to volatile extremely flammable liquid vapor, wear a filtering respirator (APF?10); positive pressure air respirator is required for working in confined spaces to prevent suffocation/explosion.

8.2 Recommended Filter type

Select Type A gas filter cartridge (to protect against organic vapors, such as alkanes and alcohols). If it contains aromatic hydrocarbons (such as benzene), select Type A2 gas filter cartridge; for dust-type flammable solids, superimpose Type P2 filter cotton.

8.3 Eye/face protection

Wear impact-resistant goggles with anti-fog lenses. If handling spray liquids, wear a protective mask to prevent liquid from splashing into the eyes.

8.4 Skin and body protection

Wear anti-static work clothes made of conductive fiber blend to avoid static sparks; wear anti-static aprons and keep trouser legs grounded during operation.

8.5 Hand protection

Wear anti-static and chemical-resistant gloves made of nitrile + conductive fiber with a glove resistance of ?10¹?? to prevent static electricity from igniting flammable materials.

8.6 Hygiene measures

Wash your hands with a phosphorus-free detergent after work to avoid residual liquid irritating the skin; smoking and using open flames are strictly prohibited in the work area; clothes need to be washed with anti-static agents to avoid carrying flammable vapors.

9: Physical and chemical properties and safety characteristics

Physical state	colourless liquid with an aromatic odour
Colour	Colorless volatile liquid
Odour	Mild, aromatic

Melting point/freezing point	-146°C(lit.)
Boiling point or initial boiling point and boiling range	34°C(lit.)
Flammability	Extremely flammable.
Lower and upper explosion limit/flammability limit	Lower flammable limit: 1.5% by volume; Upper flammable limit: 8.9% by volume
Flash point	-54°C
Auto-ignition temperature	220°C
Decomposition temperature	When heated to decomposition, it emits acrid smoke and fumes.
pH	no data available
Kinematic viscosity	0.3 mm2/s at 20-25°C
Solubility	In water:0.07 g/100 mL
Partition coefficient n-octanol/water	log Kow = 2.42
Vapour pressure	8.82 psi (20 °C)
Density and/or relative density	0.681g/mLat 20°C
Relative vapour density	2.35 (vs air)
Particle characteristics	no data available

10: Stability and reactivity

10.1 Reactivity

no data available

10.2 Chemical stability

Unstable, oxidizable

10.3 Possibility of hazardous reactions

Highly flammable, dangerous fire ... risk ...The vapour 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. Vapours are uninhibited and may polymerize in vents or flame arresters, causing blockage.The unsaturated aliphatic hydrocarbons, such as ISOPRENE and PENTENE, are generally much more reactive than the alkanes. They react vigorously with strong oxidizing agents. Can react exothermically with reducing agents to release gaseous hydrogen. Isoprene readily polymerizes exothermically to form rubber-like products. Pentene inhibits this reaction. Isoprene may undergo autoxidation upon exposure to the air to form

explosive peroxides. Violent explosions have occurred at low temperatures in ammonia synthesis gas units. These explosions have been traced to the addition products between dienes (isoprene is a diene) and oxides of nitrogen, produced from the interaction of nitrogen oxide and oxygen. [Bretherick, 1995]. Isoprene oxidize in air to form unstable peroxides that may explode spontaneously [Bretherick, 1979 p.151-154, 164]. Mixing isoprene in equal molar portions with any of the following substances in a closed container caused the temperature and pressure to increase: chlorosulfonic acid, nitric acid(70%), oleum, sulfuric acid (90%) [NFPA 1991].

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Isoprene (1 g) dissolved in heptane was ozonised at -78°C. Soon after cooling was stopped, a violent explosion, followed by a lighter one, occurred. This was attributed to high concn of peroxides and ozonides building up at the rather low temperature employed. Operation at a higher temperature would permit the ozonides and peroxides to decompose, so avoiding high concn in the reaction mixture.

10.6 Hazardous decomposition products

When heated to decomposition, it emits acrid smoke and fumes.

11: Toxicological information

11.1 Acute toxicity

Oral: LD50 Rat oral 2,043-2,210 mg/kg
Inhalation: LC50 Rat inhalation 180 g/cu m/4 hr
Dermal: no data available

11.2 Skin corrosion/irritation

no data available

11.3 Serious eye damage/irritation

no data available

11.4 Respiratory or skin sensitization

no data available

11.5 Germ cell mutagenicity

no data available

11.6 Carcinogenicity

Evaluation: No epidemiological data relevant to the carcinogenicity of isoprene were available. There is sufficient evidence in experimental animals for the carcinogenicity of isoprene. Overall evaluation: Isoprene is possibly carcinogenic to humans (Group 2B).

11.7 Reproductive toxicity

no data available

11.8 STOT-single exposure

no data available

11.9 STOT-repeated exposure

no data available

11.10 Aspiration hazard

no data available

12: Ecological information

12.1 Toxicity

Toxicity to fish: LC50; Species: Lepomis macrochirus (Bluegill, length 3.8-6.4 cm, weight 1-2 g); Conditions: freshwater, static, 25°C, pH 7.5, hardness 20 mg/L CaCO3, alkalinity 18 mg/L CaCO3, dissolved oxygen 7.8 mg/L; Concentration: 42540 ug/L for 24 hr (95% confidence interval: 32500-50150 ug/L) /formulated product
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

AEROBIC: The half-life of isoprene at an initial concentration of 500 ppb in 30 g temperate forest surface soil samples from Ithaca, NY was about 6 hours at temperatures of 5 to 40°C. It was also determined that the rate of degradation was slower in subsurface soils (15-18 cm depth) than in surface soil (0-3 cm depth) samples(1).[(1) Cleveland CC, Yavitt JB; Appl Environ Microbiol 64: 172-77 (1998)] Full text: PMC124689

12.3 Bioaccumulative potential

BCFs of 5-14 and <5.8-20 were measured in carp (Cyprinus carpio) exposed to 50 and 5 ug/L of isoprene over a 6-week period(1). According to a classification scheme(2), these BCFs suggest bioconcentration in aquatic organisms is low(SRC).

12.4 Mobility in soil

The Koc of isoprene is estimated as 61(SRC), using a log Kow of 2.42(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that isoprene is expected to have high mobility in soil.

12.5 Other adverse effects

no data available

13: Disposal considerations

13.1 Disposal methods for waste chemicals

Flammable gases must be completely burned in dedicated combustion equipment (the combustion rate must be controlled to prevent explosions). Extremely flammable liquids can be recovered by distillation (reusable if purity meets standards) or burned in specialized incinerators (the feed rate must be controlled). Unrecoverable liquids must be treated with flame retardants before disposal.

13.2 Precautions

Open flames must be strictly prohibited at disposal sites, and explosion-proof equipment must be used. Gas disposal must be kept away from residential areas and fire sources. Liquid disposal must prevent the accumulation of volatile vapors. Operators must wear anti-static equipment. The disposal process must be supervised by a dedicated person and equipped with emergency fire-fighting equipment.

14: Transport information

14.1 UN Number

ADR/RID: UN1218	IMDG: UN1218	IATA: UN1218

14.2 UN Proper Shipping Name

ADR/RID: ISOPRENE, STABILIZED	IMDG: ISOPRENE, STABILIZED	IATA: ISOPRENE, STABILIZED

14.3 Transport hazard class(es)

ADR/RID: 3	IMDG: 3	IATA: 3

14.4 Packing group, if applicable

ADR/RID: I	IMDG: I	IATA: I

14.5 Environmental hazards

ADR/RID: no	IMDG: no	IATA: no

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

15: Regulatory information

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

Chemical name	Common names and synonyms	CAS number	EC number
Isoprene	Isoprene	78-79-5	201-143-3
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Not Listed.
Australian Inventory of Industrial Chemicals (AIIC)			Not Listed.
Catalogue of Strictly Restricted Toxic Chemicals in China			Not Listed.
China Catalog of Hazardous chemicals 2015			Listed.
European INventory of Existing Commercial chemical Substances			Not Listed.
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans			Listed.
TSCA Inventory of Chemical Substances			Listed.

16: Other information

Information on revision

SDS Creation Date	July 1, 2025
SDS Revision Date	July 1, 2025

Abbreviations and acronyms in SDS

- 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%

SDS 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
- 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/

Any questions regarding this Safety Data Sheet, Please send your inquiry to info@MolBest.com

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