

# Praxair Material Safety Data Sheet

## 1. Chemical Product and Company Identification

<b>Product Name:</b> Isoprene, stabilized (MSDS No. P-19-6394)	<b>Trade Names:</b> Not available.
<b>Chemical Name:</b> 2-methyl-1,3,-butadiene	<b>Synonyms:</b> 2-methyl-1,3,-butadiene, isopentadiene, methyl bivinyll
<b>Chemical Family:</b> Diene	<b>Product Grades:</b> None assigned.
<b>Telephone:</b> <b>Emergencies:</b> 1-800-645-4633* <b>CHEMTREC:</b> 1-800-424-9300* <b>Routine:</b> 1-800-PRAXAIR	<b>Company Name:</b> Praxair, Inc. 39 Old Ridgebury Road Danbury, CT 06810-5113

*\*Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier, Praxair sales representative, or call 1-800-PRAXAIR (1-800-772-9247).*

## 2. Hazards Identification

### EMERGENCY OVERVIEW



**DANGER!** Extremely flammable liquid and vapor.  
Suspect cancer hazard-may cause cancer.  
Vapor may cause flash fire.  
Causes severe eye, skin, and respiratory irritation.  
Harmful or fatal if inhaled or swallowed.  
Harmful if absorbed through the skin.  
Self-contained breathing apparatus and protective clothing  
must be worn by rescue workers.  
Under ambient conditions, this is a clear, colorless liquid  
with a mild, aromatic odor.



**OSHA REGULATORY STATUS:** This material is considered hazardous by the OSHA Hazard Communications Standard (29 CFR 1910.1200).

#### POTENTIAL HEALTH EFFECTS:

##### Effects of a Single (Acute) Overexposure

**Inhalation.** Product causes severe irritation to the upper respiratory tract.

**Skin Contact.** Product causes severe irritation of the skin.

**Swallowing.** Ingestion may cause gastrointestinal distress, nausea, vomiting, and headache.

**Eye Contact.** The liquid causes severe irritation of the eyes.

**Effects of Repeated (Chronic) Overexposure.** Repeated or prolonged exposure of the skin may cause dermatitis (inflammation of the skin). May cause cancer.

**Other Effects of Overexposure.** None known.

**Medical Conditions Aggravated by Overexposure.** The skin irritating properties of isoprene may aggravate an existing dermatitis.

**CARCINOGENICITY:** Isoprene is listed by the NTP as *reasonably anticipated to be human carcinogen*. Isoprene is listed by the IARC as *Group 2B: Possibly Carcinogenic to Humans*. Isoprene is not listed by OSHA as a carcinogen.

**POTENTIAL ENVIRONMENTAL EFFECTS:** None known. For further information, see section 12, Ecological Information.

### 3. Composition/Information on Ingredients

See section 16 for important information about mixtures.

COMPONENT	CAS NUMBER	CONCENTRATION
Isoprene	78-79-5	>99%*

\*The symbol > means "greater than."

### 4. First Aid Measures

**INHALATION:** Immediately remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may give oxygen. Get immediate medical attention, even if no symptoms are present. Call a physician.

**SKIN CONTACT:** Remove contaminated clothing and shoes, and wash exposed areas with soap and plenty of water. Wash contaminated clothing prior to reuse or discard it. Discard contaminated shoes and gloves. If irritation persists or contact has been prolonged, call a physician.

**SWALLOWING:** Keep the victim calm, and get immediate medical aid. If conscious, the victim may be given water. Do not induce vomiting unless directed to do so by medical personnel.

**EYE CONTACT:** Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. See a physician, preferably an ophthalmologist, immediately.

**NOTES TO PHYSICIAN:** *There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.*

Contact the Poison Control Center in your area for additional information on patient management and follow-up.

### 5. Fire Fighting Measures

**FLAMMABLE PROPERTIES:** Extremely flammable liquid.

**SUITABLE EXTINGUISHING MEDIA:** CO<sub>2</sub>, dry chemical, water spray, or foam.

**PRODUCTS OF COMBUSTION:** CO, CO<sub>2</sub>

**PROTECTION OF FIREFIGHTERS: DANGER! Extremely flammable liquid and vapor.** Readily ignites from flame, sparks, friction, static discharge, or heat. Evacuate all personnel from danger area. Use self-contained breathing apparatus and protective clothing. Immediately deluge containers with water spray from maximum distance until cool; then move them away from fire area if without risk. On-site fire brigades must comply with OSHA 29 CFR 1910.156.

**Specific Physical and Chemical Hazards.** Vapors can form flammable mixtures with air. Fumes and vapors may spread from spill. Vapors are heavier than air and may collect in low spots.

**Protective Equipment and Precautions for Firefighters.** Firefighters should wear self-contained breathing apparatus and full fire-fighting turnout gear.

## 6. Accidental Release Measures

### STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

**DANGER!** Extremely flammable liquid and vapor.

**Personal Precautions.** Immediately evacuate all personnel from danger area. Use self-contained breathing apparatus and protective clothing. Remove all sources of ignition if without risk. Vapors may spread from leak. Vapors are heavier than air and may collect in low spots. Ventilate area or move container to a well-ventilated area.

**Environmental Precautions.** Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, state, and local regulations. If necessary, call your local supplier for assistance.

## 7. Handling and Storage

**PRECAUTIONS TO BE TAKEN IN HANDLING:** Avoid inhalation. Avoid contact with eyes, skin, and clothing. Keep away from heat, sparks, and open flame. Use only spark-proof tools and explosion-proof equipment. Ground all equipment. Have safety showers and eye baths available. Do not eat, drink, or smoke in areas where this material is stored or used. After working with this material, wash face and hands thoroughly with soap and water before eating drinking, smoking, applying cosmetics, or using the toilet. Avoid prolonged or repeated exposure.

**PRECAUTIONS TO BE TAKEN IN STORAGE:** Store and use with adequate ventilation. Keep containers closed. Store only where temperature will not exceed 125°F (52°C). Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods.

## 8. Exposure Controls/Personal Protection

COMPONENT	OSHA PEL	ACGIH TLV-TWA (2009)
Isoprene	Not Established.	Not Established.

IDLH = Not available.

### ENGINEERING CONTROLS:

**Local Exhaust** Inadequate; see SPECIAL.

**Mechanical (General).** Inadequate; see SPECIAL.

**Special.** Use only in a closed system.

**Other.** See SPECIAL.

**PERSONAL PROTECTIVE EQUIPMENT:**

**Skin Protection.** Wear work gloves when handling containers; rubber where contact with product may occur.

**Eye/Face Protection.** Wear safety glasses when handling containers. Select eye protection in accordance with OSHA 29 CFR 1910.133.

**Respiratory Protection.** A respiratory protection program that meet OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable) requirements must be followed whenever workplace conditions warrant respirator use. Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure (e.g., an organic vapor cartridge). For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus.

<b>9. Physical and Chemical Properties</b>
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<b>APPEARANCE:</b>	Clear, colorless Liquid
<b>ODOR:</b>	Mild, aromatic
<b>ODOR THRESHOLD:</b>	Not available.
<b>PHYSICAL STATE:</b>	Liquid at normal temperature and pressure
<b>pH:</b>	Not applicable.
<b>MELTING POINT</b> at 1 atm:	-230.8°F (-146.0°C)
<b>BOILING POINT</b> at 1 atm:	93.3°F (34.07°C)
<b>FLASH POINT</b> (test method):	-65.2°F (-54°C) CC
<b>EVAPORATION RATE</b> (Butyl Acetate = 1):	Not available.
<b>FLAMMABILITY:</b>	Flammable
<b>FLAMMABLE LIMITS IN AIR</b> , % by volume:	<b>LOWER:</b> 1.5% <b>UPPER:</b> 9.7%
<b>VAPOR PRESSURE</b> at 68°F (20°C):	455 mm Hg (60.7 kPa, abs)
<b>LIQUID DENSITY</b> at 68°F (20°C):	42.51 lb/ft <sup>3</sup> (0.681 g/ml)
<b>SPECIFIC GRAVITY</b> (H <sub>2</sub> O = 1) at 19.4°F (-7°C):	Not available.
<b>SPECIFIC GRAVITY</b> (Air = 1) at 70°F (21.1°C) and 1 atm:	2.35
<b>SOLUBILITY IN WATER</b> 68°F (20°C):	Very slight
<b>PARTITION COEFFICIENT: n-octanol/water:</b>	Not available.
<b>AUTOIGNITION TEMPERATURE:</b>	428°F (220°C)
<b>DECOMPOSITION TEMPERATURE:</b>	Not available.
<b>PERCENT VOLATILES BY VOLUME:</b>	100
<b>MOLECULAR WEIGHT:</b>	68.12 g/mole
<b>MOLECULAR FORMULA:</b>	C <sub>5</sub> H <sub>8</sub>

### 10. Stability and Reactivity

**CHEMICAL STABILITY:**  Unstable  Stable

**CONDITIONS TO AVOID:** Heat, sparks, and open flame.

**INCOMPATIBLE MATERIALS:** Oxidizing materials.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Thermal decomposition of this material may produce CO and CO<sub>2</sub>.

**POSSIBILITY OF HAZARDOUS REACTIONS:**  May Occur  Will Not Occur

Thermal decomposition of this material may produce CO and CO<sub>2</sub>.

### 11. Toxicological Information

**ACUTE DOSE EFFECTS:** LC<sub>50</sub>, 4 hr, rat = 46301 ppm

**STUDY RESULTS:** None known.

### 12. Ecological Information

**ECOTOXICITY:** LC<sub>50</sub>, 96 hr, fathead minnow (pimephales promelas) = 75000 ug/L

**OTHER ADVERSE EFFECTS:** None known. This material does not contain any Class I or Class II ozone-depleting chemicals.

### 13. Disposal Considerations

**WASTE DISPOSAL METHOD:** Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.

### 14. Transport Information

**DOT/IMO SHIPPING NAME:** Isoprene, stabilized

HAZARD CLASS:	PACKING GROUP/Zone:	IDENTIFICATION NUMBER:	PRODUCT RQ:
3	I	UN1218	100 lbs

**SHIPPING LABEL(s):** FLAMMABLE LIQUID

**PLACARD (when required):** FLAMMABLE LIQUID

**MARINE POLLUTANTS:** Isoprene is not listed as a marine pollutant by DOT.

### 15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, state, and local regulations.

**U.S. FEDERAL REGULATIONS:**

EPA (ENVIRONMENTAL PROTECTION AGENCY)

CERCLA: COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980 (40 CFR Parts 117 and 302):

**Reportable Quantity (RQ):** 100 lbs (45.4 kg)

**SARA: SUPERFUND AMENDMENT AND REAUTHORIZATION ACT:**

**SECTIONS 302/304:** Require emergency planning based on Threshold Planning Quantity (TPQ) and release reporting based on Reportable Quantities (RQ) of Extremely Hazardous Substances (EHS) (40 CFR Part 355):

**TPQ:** None

**EHS RQ (40 CFR 355):** 100 lbs (45.4 kg)

**SECTIONS 311/312:** Require submission of MSDSs and reporting of chemical inventories with identification of EPA hazard categories. The hazard categories for this product are as follows:

**IMMEDIATE:** Yes

**PRESSURE:** No

**DELAYED:** Yes

**REACTIVITY:** Yes

**FIRE:** Yes

**SECTION 313:** Requires submission of annual reports of release of toxic chemicals that appear in 40 CFR Part 372.

Isoprene is not subject to reporting under Section 313.

**40 CFR 68: RISK MANAGEMENT PROGRAM FOR CHEMICAL ACCIDENTAL RELEASE PREVENTION:** Requires development and implementation of risk management programs at facilities that manufacture, use, store, or otherwise handle regulated substances in quantities that exceed specified thresholds.

Isoprene is listed as a regulated substance in quantities of 10,000 lb (4536 kg) or greater.

**TSCA: TOXIC SUBSTANCES CONTROL ACT:** Isoprene is listed on the TSCA inventory.

**OSHA: OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION:**

**29 CFR 1910.119: PROCESS SAFETY MANAGEMENT OF HIGHLY HAZARDOUS CHEMICALS:** Requires facilities to develop a process safety management program based on Threshold Quantities (TQ) of highly hazardous chemicals.

Isoprene is not listed in Appendix A as a highly hazardous chemical. However, any process that involves a flammable liquid on site in one location in quantities of 10,000 lb (4536 kg) or greater is covered under this regulation unless the liquid is used as a fuel.

**STATE REGULATIONS:**

**CALIFORNIA:** Isoprene is listed by California under the SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (Proposition 65).

**WARNING:** Isoprene is a chemical known to the State of California to cause cancer; developmental, fetal, female reproductive, and/or male reproductive toxicity. (*California Health and Safety Code §25249.5 et seq.*)

**PENNSYLVANIA:** Isoprene is subject to the PENNSYLVANIA WORKER AND COMMUNITY RIGHT-TO-KNOW ACT (35 P.S. Sections 7301-7320).

## 16. Other Information

Be sure to read and understand all labels and instructions supplied with all containers of this product.

**OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:** *Extremely flammable liquid and vapor.* Use only with compatible materials and equipment.

**Mixtures.** When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Remember, chemicals have properties that can cause serious injury or death

### HAZARD RATING SYSTEMS:

#### NFPA RATINGS:

HEALTH = 1  
FLAMMABILITY = 4  
INSTABILITY = 2  
SPECIAL = None

#### HMIS RATINGS:

HEALTH = 2\*  
FLAMMABILITY = 4  
PHYSICAL HAZARD = 0

\*Note: Suspect Cancer Hazard-May cause cancer.

Praxair asks users of this product to study this MSDS and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this MSDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

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The opinions expressed herein are those of qualified experts within Praxair, Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair, Inc., it is the user's obligation to determine the conditions of safe use of the product.

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