

CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Description 1-BUTENE (1,2-13C2, 99%)

Cambridge Isotope Laboratories, Inc. 50 Frontage Rd ANDOVER, MA 01810 USA

E-mail cilsales@isotope.com Web Site www.isotope.com

Phone Numbers

Emergency Contact Chemtrec

Emergency Phone 1-800-424-9300 (24 hours)

Customer Service

1-800-322-1174 (8:30-5:30 EST)

Phone

1-202-483-7616 (24 hours) Transportation

2 HAZARDS IDENTIFICATION

OSHA Hazards

Flammable gas, Compressed Gas

GHS Classification

Flammable gases (Category 1) Gases under pressure (Liquified gas)

GHS Label Information

Signal Word Danger

Hazards Identification

Flame

Gas cylinder

Hazard Statement(s)

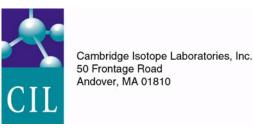
Extremely flammable gas.

Contains gas under pressure; may explode if heated.

Precautionary Statement(s)

Keep away from heat/sparks/open flames/hot surfaces- No smoking.

Protect from sunlight. Store in a well-ventilated place.



HMIS Ratings

Physical 3 Flammability 4 0 Health

NFPA Codes

Fire 4 Health 0 0 Reactivity

Potential Health Effects

May cause eye irritation. Eyes Ingestion May be harmful if swallowed.

Inhalation May be harmful if inhaled. May cause respiratory tract irritation. Skin May be harmful if absorbed through skin. May cause skin irritation.

COMPOSITION / INFORMATION ON INGREDIENTS 3

Composition / Information on Ingredients

CAS No. 106-98-9 (unlabeled)

EC No. 203-449-2 Index No. 601-012-00-4

FIRST AID MEASURES

First Aid Measures

Eyes Flush eyes with water as a precaution.

Ingestion Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth

with water. Consult a physician.

Inhalation If breathed in, move person to fresh air. If not breathing, give artificial respiration. Consult a

physician.

Skin Wash with soap and plenty of water. Consult a physician.

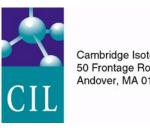
Additional Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of

Information dangerous area.

FIRE FIGHTING MEASURE 5

Fire Fighting Measures

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MATERIAL SAFETY DATA SHEET

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

Explosion Hazards Flammable in the presence of an oxidizing gas (eg air), a source of ignition, and when the

concentration of the gas is between the lower and upper explosive limits. Keep away from heat,

sparks, open flames, hot surfaces, oxidizing gases. No smoking.

Fire Fighting Equipment

Wear self contained breathing apparatus for fire fighting if necessary.

Fire Fighting Procedures

Use water spray to cool unopened containers.

ACCIDENTAL RELEASE MEASURES

Accidental Release Measures

Personal Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition.

Precautions Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive

concentrations. Vapours can accumulate in low areas.

Environmental

Precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods and materials for containment and

cleanup

Clean up promptly by sweeping or vacuum.

HANDLING AND STORAGE 7

Precautions for Safe Handling

Handling Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Use explosion-proof

equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build

up of electrostatic charge.

Conditions for Safe Storage

Store at room temperature away from light and moisture. Storage

8 **EXPOSURE CONTROL / PERSONAL PROTECTION**

OSHA HAZARDOUS COMPONENTS (29 CFR 1910.1200)

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MATERIAL SAFETY DATA SHEET

CHEMICAL NAME OSHA PEL **ACGIH TLV** 1-BUTENE TWA 250 ppm

Personal Protecton

Eyes - Face Wear safety glasses with side shields (or goggles) and a face shield.

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing, The type Skin

of protective equipment must be selected according to the concentration and amount of the

dangerous substance at the specific workplace.

Respiratory When appropriate, use NIOSH/CEN approved respirator.

Protective Clothing Wear suitable protective clothing and gloves.

Work Hygienic Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks

Practices and at the end of workday.

9 PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties (Unlabeled Compound)

Liquefied gas Form

Color No data available

Odor No data available Odor Threshold No data available

рΗ No data available Melting Point -185 °C (-301 °F) **Boiling Point** 6.3 °C (43.3 °F)

-80 °C (-112 °F) - closed cup Flashpoint

Evaporation Rate No data available

Lower Explosion 1.6% (V)

Limit

Upper Explosion 9.3% (V)

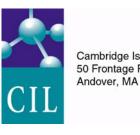
Limit

4,346 hPa (3,260 mmHg) at 37.7 °C (99.9 °F) Vapor Pressure

Vapor Density 1.94 - (Air = 1.0)No data available Solubility in Water Partition Coefficient No data available Auto Ignition No data available

Temperature

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MATERIAL SAFETY DATA SHEET

STABILITY AND REACTIVITY 10

Stability and Reactivity

Chemical Stability Stable if stored under recommended conditions.

Conditions to Avoid Heat, flames and sparks. Extremes of temperature and direct sunlight.

Hazardous decomposition Formed under fire conditions: Carbon oxides

products

Materials to avoid Strong oxidizing agents, Stong acids

11 **TOXICOLOGICAL INFORMATION**

Acute Toxicity

Serious No data available

Damage/Eye Irritation

Skin No data available

Corrosion/Irritation

Inhalation No data available

Respiratory or Skin

Sensitization

Not available

Germ Cell

IARC

Not available

Mutagenicity

No component of this product present at levels greater than or equal to 0.1% is identifiable as

probable, possible, or confirmed human carcinogen by IARC.

ACGIH No component of this product present at levels greater than or equal to 0.1% is identifiable as a

carcinogen or potential carcinogen by ACGIH.

NTP No component of this product present at levels greater than or equal to 0.1% is identifiable as a

known or anticipated carcinogen by NTP.

OSHA No component of this product present at levels greater than or equal to 0.1% is identified as a

carcinogen or potential carcinogen by OSHA.

Reproductive

Not available

Toxicity

Specific Target Organ Toxicity

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MATERIAL SAFETY DATA SHEET

Single Exposure No data available Repeated Exposure No data available

Signs and Symptoms of Exposure

Dizziness Heartburn

Central nervous system depression

12 **ECOLOGICAL INFORMATION**

Toxicity

Persistance and Degradability

Not available

Bioaccumulative

Potential

Not available

Mobility in Soil

Not available

PBT and vPvB

Assessment

Not available

Other Adverse

Effects

Not available

13 **DISPOSAL CONSIDERATIONS**

Disposal Considerations

Product Disposal Waste materials should be disposed of under conditions which meet Federal, State, and Local

environmental control regulations.

14 TRANSPORT INFORMATION

Transportation Information-DOT/IATA/IMDG

UN Number 1012 Prop. Ship. Name Butylene 2.1 **Hazard Class** Marine Pollutant No Poison Inhalation No

Hazard



Special Shipping

IATA Passenger: Not permitted for transport.

Notes

15 **REGULATORY INFORMATION**

Regulatory Information

Flammable gas, Compressed Gas

SARA

Sara 302 No chemicals in this material are subject to the reporting requirements.

Component

No chemicals in this material are subject to the reporting requirements. Sara 313

Component

SARA 311/312 Hazards

Fire (Y/N)

Pressure Υ

Generating (Y/N)

STATE REGULATIONS

Massachusetts Yes

Right to Know

Pennsylvania Right Yes

to Know

New Jersey Right

to Know

Yes

California This product does not contain any chemicals known to State of California to cause cancer, birth

Proposition 65 defects, or any other reproductive harm.

Canada

All components are on the Canadian DSL list. **DSL Status**

ΕU

Extremely flammable Hazard

Safety Statements

Keep container in a well-ventilated place.

Keep away from sources of ignition - No smoking.

Take precautionary measures against static discharges.

Risk Statements

Extremely flammable.



16 OTHER INFORMATION

Additional MSDS Information

This product is not radioactive. The data given for this product are those of the corresponding unlabeled compound, unless specifically indicated otherwise. Health and safety data for labeled compounds are generally not available, but are assumed to be similar or identical to the corresponding unlabeled compound.

Approved On Version Number 08/24/11

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