



Cambridge Isotope Laboratories, Inc.  
50 Frontage Road  
Andover, MA 01810

Number:  
Issue Date

CLM-7114  
07/31/14

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## MATERIAL SAFETY DATA SHEET

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### 1 CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Description 1,3-BUTADIENE (13C4, 99%) + HYDROQUINONE

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

E-mail [cilsales@isotope.com](mailto:cilsales@isotope.com)  
Web Site [www.isotope.com](http://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  
Transportation 1-202-483-7616 (24 hours)

### 2 HAZARDS IDENTIFICATION

#### OSHA Hazards

Flammable Gas, Compressed Gas, Carcinogen, Target Organ Effect, Mutagen

#### Target Organs

Blood, Heart. Eyes, Central nervous system

#### GHS Classification

Flammable gases (Category 1)  
Gases under pressure (Liquified gas)  
Germ cell mutagenicity (Category 1B)  
Carcinogenicity (Category 1A)

#### GHS Label Information

Signal Word Danger

#### Hazards Identification

Flame  
Gas cylinder  
Health hazard



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### Hazard Statement(s)

- Extremely flammable gas.
- Contains gas under pressure; may explode if heated.
- May cause genetic defects.
- May cause cancer.

### Precautionary Statement(s)

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Keep away from heat/sparks/open flames/hot surfaces- No smoking.
- Use personal protective equipment as required.
- IF exposed or concerned: Get medical advice/attention.
- Leaking gas fire - do not extinguish unless leak can be stopped safely.
- Eliminate all ignition sources if safe to do so.
- Protect from sunlight. Store in a well-ventilated place.

### HMIS Ratings

Chronic Health	*
Physical	3
Flammability	4
Health	0

### NFPA Codes

Fire	4
Health	0
Reactivity	0

### Potential Health Effects

Eyes	May cause eye irritation.
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.

## 3 COMPOSITION / INFORMATION ON INGREDIENTS

### Composition / Information on Ingredients

Chemical Formula	*CH2=*CH*C*H=*CH2
Molecular Weight	58.06
CAS No.	106-99-0 (Unlabeled)
EC No.	203-450-8
Index No.	601-013-00-X

## 4 FIRST AID MEASURES

### First Aid Measures



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

### 5 FIRE FIGHTING MEASURE

#### Fire Fighting Measures

Extinguishing Media	Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.
General Hazard	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.
Hazardous Decomposition	Hazardous decomposition products formed under fire conditions: Carbon oxides
Fire Fighting Equipment	Wear self contained breathing apparatus for fire fighting if necessary.
Fire Fighting Procedures	Use water spray to cool unopened containers.

### 6 ACCIDENTAL RELEASE MEASURES

#### Accidental Release Measures

Personal Precautions	Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. 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.



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Methods and materials for containment and cleanup      Clean up promptly by sweeping or vacuum.

### 7 HANDLING AND STORAGE

#### Precautions for Safe Handling

Handling      Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge. Use explosion-proof equipment.

#### Conditions for Safe Storage

Storage      Store at room temperature away from light and moisture.

### 8 EXPOSURE CONTROL / PERSONAL PROTECTION

#### OSHA HAZARDOUS COMPONENTS (29 CFR 1910.1200)

CHEMICAL NAME	TWA	OSHA PEL	ACGIH TLV
1,3-BUTADIENE	STEL	1 ppm 5 ppm	2 ppm

#### Personal Protection

Eyes - Face      Safety glasses with side-shields conforming to EN166.

Skin      Wear complete suit protecting against chemicals according to concentration and amount of substance.

Respiratory      When appropriate, use NIOSH/CEN approved respirator.

Protective Clothing      Wear suitable protective clothing and gloves.

Work Hygienic Practices      Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

### 9 PHYSICAL AND CHEMICAL PROPERTIES

#### Physical and Chemical Properties (Unlabeled Compound)

Form      Liquified gas

Color      no data available



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Odor	no data available
Odor Threshold	no data available
pH	No data available
Melting Point	-109 °C (-164 °F)
Boiling Point	4.5 °C (40.1 °F)
Flashpoint	-76 °C (-105 °F) - closed cup.
Evaporation Rate	no data available
Fammability	no data available
Flammable Limits	no data available
Lower Explosion Limit	1.4 %(V)
Upper Explosion Limit	16.3 %(V)
Vapor Pressure	ca.2,400 hPa (1,800 mmHg) at 20 °C (68 °F)
Vapor Density	no data available
Density	0.62 g/cm <sup>3</sup> at 20 °C (68 °F)
Solubility in Water	0.5 g/l at 20 °C (68 °F) - Tested according to Annex V of Directive 67/548/EEC.
Partition Coefficient	log Pow: 1.85 at 23 °C (73 °F)
Auto Ignition Temperature	415 °C (779 °F)
Decomposition Temperature	no data available
Viscosity	no data available

### 10 STABILITY AND REACTIVITY

#### Stability and Reactivity

Chemical Stability	Stable if stored under recommended conditions.
Conditions to Avoid	Moisture, Heat, Flames, Sparks, Extremes of temperature, and direct sunlight
Hazardous decomposition products	Formed under fire conditions: Carbon oxides
Materials to avoid	Oxidizing agents, Oxygen, Copper, Copper alloys, Carbides, Halogens,
Additional Information	Metal oxides, Metals

### 11 TOXICOLOGICAL INFORMATION

#### Acute Toxicity

LC50 Inhalation Rat 285 mg/l - 4 h



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LD50 Oral Rat 5,480 mg/kg  
Serious No data available  
Damage/Eye  
Irritation

Skin No data available  
Corrosion/Irritation

Inhalation No data available

Respiratory or Skin Not available  
Sensitization

Germ Cell In vivo tests showed mutagenic effects.  
Mutagenicity

Carcinogenicity Carcinogenicity - rat - Inhalation  
Tumorigenic: Carcinogenic by RTECS criteria. Cardiac: Tumors, Lungs, Thorax or Respiration:  
tumors.

This is or contains a component that has been reported to be a carcinogenic based on its IARC,  
OSHA, ACGIH, NTP or EPA Classification.

Human Carcinogen.

IARC 1 - Group 1: Carcinogenic to humans.  
NTP Known to be a human carcinogen.  
OSHA OSHA specifically regulated carcinogen.

Reproductive Reproductive toxicity - mouse - Inhalation  
Toxicity Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number  
of implants). Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical  
cord). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

### Specific Target Organ Toxicity

Single Exposure No data available  
Repeated Exposure No data available

### Signs and Symptoms of Exposure

Cholinesterase inhibitors can cause heavy salivation and secretion in the lungs, lachrymation, blurred vision, involuntary defecation, diarrhea, tremor, ataxia, sweating, hypothermia, lowered heart rate, and/or a fall in blood pressure as a result of their action at cholinergic nerve sites, narcosis, headache, nausea, vomiting, dizziness, drowsiness, confusion, weakness, muscle cramps/spasms, change in pupil size, tremors, seizures, incoordination, convulsions, coma.

Stomach - Irregularities - Based on Human Evidence



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### Other Information

RTECS no data available

General Comments Developmental Toxicity - rat - Inhalation  
Specific Developmental Abnormalities: Musculoskeletal system.

### 12 ECOLOGICAL INFORMATION

#### Toxicity

Toxicity to Fish Other fish - 71.5 mg/l - 24 h

LC50

Persistence 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

Special Shipping IATA Passenger: Not permitted for transport.

Notes

UN Number 1010

Prop. Ship. Name Budadiens, Stabilized

Hazard Class 2.1

Reportable Quantity 10 lbs



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(RQ) DOT US  
Marine Pollutant      No  
Poison Inhalation    No  
Hazard

### 15 REGULATORY INFORMATION

#### Regulatory Information

Flammable Gas, Carcinogen, Target Organ Effect, Mutagen.

#### SARA

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

Component

Sara 313                      Yes

Component

#### SARA 311/312 Hazards

Fire (Y/N)                  Y

Pressure                    Y

Generating (Y/N)

Chronic (Y/N)              Y

#### STATE REGULATIONS

Massachusetts            Yes

Right to Know

Pennsylvania Right      Yes

to Know

New Jersey Right        Yes

to Know

California                      WARNING! This product contains a chemical known by the state of California to cause birth  
Proposition 65                defects or other reproductive harm.  
WARNING! This product contains a chemical known by the state of California to cause cancer.

#### Canada

DSL Status                    All components are on the Canadian DSL list.

#### EU

Hazard                        Extremely Flammable. Toxic.

#### Safety Statements





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Keep container tightly closed in a cool, well-ventilated place.  
Keep in a cool, well-ventilated place away from sunlight.  
Keep away from sources of ignition - No smoking.  
Wear suitable protective clothing, gloves and eye/face protection.  
In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).  
Avoid exposure - obtain special instructions before use.  
Dispose of this material and its container at hazardous or special waste collection point.

### Risk Statements

Heating may cause an explosion.  
Extremely flammable.  
May cause cancer.  
May cause heritable genetic damage.  
May cause cancer by inhalation.

### 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                      07/31/14  
Version Number                 2