

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

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Phone Numbers

Emergency Contact Chemtrec

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

Customer Service

Phone

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

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



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 saftey 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

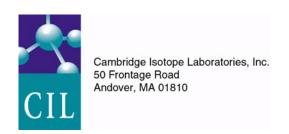
Molecular Weight 58.06

CAS No. 106-99-0 (Unlabeled)

EC No. 203-450-8 Index No. 601-013-00-X

4 FIRST AID MEASURES

First Aid Measures



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.

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

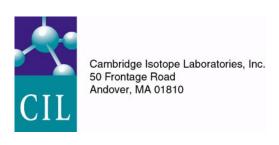
Accidental Release Measures

Personal Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate Precautions 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.



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

to prevent the build up of electrostatic charge. Use explosion-proof equipment.

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)

OSHA PEL **ACGIH TLV** CHEMICAL NAME

1,3-BUTADIENE **TWA** 1 ppm 2 ppm

> STEL 5 ppm

Personal Protecton

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 Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks **Practices**

and at the end of workday.

PHYSICAL AND CHEMICAL PROPERTIES 9

Physical and Chemical Properties (Unlabeled Compound)

Form Liquified gas

Color no data available

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MATERIAL SAFETY DATA SHEET

Odor no data available Odor Threshold no data available

рΗ No data available Melting Point -109 °C (-164 °F) **Boiling Point** 4.5 °C (40.1 °F)

-76 °C (-105 °F) - closed cup. Flashpoint

Evaporation Rate no data available Fammability no data available Flammable Limits no data available

Lower Explosion 1.4 %(V)

Limit

Upper Explosion 16.3 %(V)

Limit

Vapor Pressure ca.2,400 hPa (1,800 mmHg) at 20 °C (68 °F)

Vapor Density no data available

0.62 g/cm3 at 20 °C (68 °F) Density

Solubility in Water 0.5 g/l at 20 °C (68 °F) - Tested according to Annex V of Directive 67/548/EEC.

log Pow: 1.85 at 23 °C (73 °F) Partition Coefficient

Auto Ignition 415 °C (779 °F)

Temperature

Decomposition no data available

Temperature

Viscosity no data available

10 STABILITY AND REACTIVITY

Stability and Reactivity

Stable if stored under recommended conditions. **Chemical Stability**

Conditions to Avoid Moisture, Heat, Flames, Sparks, Extremes of temperature, and direct sunlight

Hazardous Formed under fire conditions: Carbon oxides decomposition

Materials to avoid

Oxidizing agents, Oxygen, Copper, Copper alloys, Carbides, Halogens,

Additional

Metal oxides, Metals

Information

products

TOXICOLOGICAL INFORMATION 11

Acute Toxicity

LC50 Inhilation Rat 285 mg/l - 4 h

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MATERIAL SAFETY DATA SHEET

LD50 Oral Rat

Serious

5,480 mg/kg No data available

Damage/Eye Irritation

Skin

No data available

Corrosion/Irritation

Inhalation No data available

Respiratory or Skin

Not available

Sensitization

Germ Cell Mutagenicity In vivo tests showed mutagenic effects.

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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MATERIAL SAFETY DATA SHEET

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

Persistance and

Degradability

Not available

Bioaccumulative

Potential

Not available

Mobility in Soil

Not available

 $\mathsf{PBT} \ \mathsf{and} \ \mathsf{vPvB}$

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.

IATA Passenger: Not permitted for transport.

14 TRANSPORT INFORMATION

Transportation Information-DOT/IATA/IMDG

Notes

Special Shipping

UN Number 1010

Prop. Ship. Name Budadiens, Stabilized

Hazard Class 2.1 Reportable Quantity 10 lbs

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MATERIAL SAFETY DATA SHEET

(RQ) DOT US

Marine Pollutant Poison Inhalation

No 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) Υ

Pressure Υ

Generating (Y/N)

Chronic (Y/N) Υ

STATE REGULATIONS

Massachusetts

Yes

Right to Know

Pennsylvania Right

Yes

to Know

New Jersey Right

Yes

to Know

California

Proposition 65

WARNING! This product contains a chemical known by the state of California to cause birth

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



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