



Safety Data Sheet

Version 7.0

Revision Date: 18/10/2018

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name: **1,3-Butadiene-d₆**
Product abbreviation: D6Bd
Product use: For laboratory research purposes.
Supplier / Manufacturer: Polymer Source, Inc.
Address: 124 Avro street, Dorval (Montreal), Quebec H9P 2X8, Canada
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2. HAZARDS IDENTIFICATION

Emergency overview: Target organs: Central nervous system.
WHMIS classification: A. Compressed gas.
B1. Flammable gas.
D2A. Very toxic material causing other toxic effects: Carcinogen.
D2B. Toxic material causing other toxic effects: Mutagen.
GHS classification: Flammable gases (Category 1);
Gases under pressure (Liquefied gas);
Germ cell mutagenicity (Category 1B);
Carcinogenicity (Category 1A).

GHS Label elements, including precautionary statements:

Pictogram:



Signal word: Danger

Hazard statements: H220. Extremely flammable gas.
H280. Contains gas under pressure; may explode if heated.
H340. May cause genetic defects.
H350. May cause cancer.

Precautionary statements: P201. Obtain special instructions before use.

P210. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P308 + P313. *IF exposed or concerned:*
Get medical advice/ attention.

P410 + P403. Protect from sunlight. Store in a well-ventilated place.

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| HMIS classification: | Health hazard: | 0 |
| | Chronic health hazard: | * |
| | Flammability: | 4 |
| | Physical hazards: | 3 |
| Potential health effects: | Inhalation: | May be harmful if inhaled. May cause respiratory tract irritation. |
| | Skin: | May be harmful if absorbed through skin. May cause skin irritation. |
| | Eyes: | May cause eye irritation. |
| | Ingestion: | May be harmful if swallowed. |
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3. COMPOSITION / INFORMATION ON INGREDIENTS

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| Formula: | Deuterated 1,3-butadiene-d ₆ : | C ₄ D ₆ |
| Molecular weight: | 60.13 g/mol | |
| Concentration: | ≤ 100 % | |
| CAS registry number: | 1,3-Butadiene-d ₆ : | 1441-56-1 |

4. FIRST AID MEASURES

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| General advice: | Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area. |
| If inhaled: | If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. |
| In case of skin contact: | Wash off with soap and plenty of water. Consult a physician. |
| In case of eye contact: | Flush eyes with water as a precaution. |
| If swallowed: | Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician. |

5. FIRE-FIGHTING MEASURES

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| Conditions of flammability: | 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 flame/hot surface/oxidizing gas. No smoking. |
| Suitable extinguishing media: | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. |

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| Special protective equipment for firefighters: | Wear self contained breathing apparatus for firefighting if necessary. |
| Hazardous combustion products: | Hazardous decomposition products formed under fire conditions: Carbon oxides. |
| Explosion data: | Sensitivity to mechanical impact: no data available Sensitivity to static discharge: no data available |
| Further information: | Use water spray to cool unopened containers. |

6. ACCIDENTAL RELEASE MEASURES

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| Personal precautions: | Use personal protective equipment. Avoid breathing vapours, 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. Discharge into the environment must be avoided. |
| Methods and materials for containment and cleaning up: | Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). |

7. HANDLING AND STORAGE

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| Precautions for safe handling: | 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: | Keep container tightly closed in a dry and well-ventilated place. Store under inert gas. hygroscopic |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Components with workplace control parameters:

| <i>Components</i> | <i>Value</i> | <i>Control parameters</i> | <i>Basis</i> | <i>Remarks</i> |
|--|--------------|--|--|--|
| 1,3-Butadiene-d6 (CAS-No.: 1441-56-1) | TWA | 2.000000 ppm 4.400000 mg/m ³ | Canada. Alberta, Occupational Health and Safety Code (table 2: OEL) | Suspected Human Carcinogen (means that the human data are accepted as adequate in quality but are conflicting or insufficient to classify the agent as A1) |

| <i>Components</i> | <i>Value</i> | <i>Control parameters</i> | <i>Basis</i> | <i>Remarks</i> |
|--|--------------|--|--|--|
| 1,3-Butadiene-d6 (CAS-No.: 1441-56-1) | TWA | 2.000000 ppm | Canada. British Columbia OEL | IARC '1' applies to substances categorized as carcinogenic to humans, and used when there is sufficient evidence of carcinogenicity in humans. ACGIH 'A2' applies to those substances that are considered suspected human carcinogens. |
| | TWAEV | 2.000000 ppm | Canada. Ontario OELs | |
| | TWAEV | 2.000000 ppm 4.400000 mg/m ³ | Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants | A substance to which exposure must be reduced to a minimum in accordance with section 42 Carcinogenic effect suspected in humans |
| | TWAEV | 2 ppm 4.4 mg/m ³ | Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants | A substance to which exposure must be reduced to a minimum in accordance with section 42 Carcinogenic effect suspected in humans |
| | TWA | 2 ppm | USA. ACGIH Threshold Limit Values (TLV) | |
| | TWA | 2.000000 ppm | USA. ACGIH Threshold Limit Values (TLV) | |

Personal protective equipment:

- Respiratory protection: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
- Hand protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
- Eye protection: Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

- Skin and body protection: Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
- Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
- Specific engineering controls: Use mechanical exhaust or laboratory fumehood to avoid exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

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| Appearance: | Form: | Liquefied gas |
| | Colour: | no data available |
| Safety data: | pH: | no data available |
| | Melting point / Freezing point: | m.p. = -109 °C (lit.) |
| | Boling point: | no data available |
| | Flash point: | no data available |
| | Ignition temperature: | no data available |
| | Auto-ignition temperature: | no data available |
| | Lower explosion limit: | 1.4 %(V) at 1013 hPa (760 mmHg) |
| | Upper explosion limit: | 16.3 %(V) at 1013 hPa (760 mmHg) |
| | Vapour pressure: | 2,430.00 hPa (1,822.65 mmHg) at 20 °C (68 °F) |
| | Density: | no data available |
| | Water solubility: | no data available |
| | Partition coefficient: n-octanol/water: | no data available |
| | Relative vapour density: | no data available |
| | Odour: | no data available |
| | Odour threshold: | no data available |
| | Evaporation rate: | no data available |

10. STABILITY AND REACTIVITY

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| Chemical stability: | Stable under recommended storage conditions. |
| Radioactivity: | Stable isotope compound. Not radioactive. |
| Possibility of hazardous reactions: | no data available |
| Conditions to avoid: | Heat, flames and sparks. Extremes of temperature and direct sunlight. |
| Materials to avoid: | Strong oxidizing agents. |
| Hazardous decomposition products: | Hazardous decomposition products formed under fire conditions: Carbon oxides. Other decomposition products: no data available. |

11. TOXICOLOGICAL INFORMATION

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| Acute toxicity: | Oral LD50: | no data available |
| | Inhalation LC50: | no data available |
| | Dermal LD50: | no data available |
| | Other information on acute toxicity: | no data available |
| Skin corrosion/irritation: | no data available | |
| Serious eye damage/eye irritation. | no data available | |
| Respiratory or skin sensitization: | no data available | |
| Germ cell mutagenicity: | May alter genetic material. In vitro tests showed mutagenic effects | |
| Carcinogenicity: | Human carcinogen. | |
| | IARC: Group 1: Carcinogenic to humans (1,3-Butadiene-d6) | |
| Reproductive toxicity: | no data available | |
| Teratogenicity: | no data available | |
| Specific target organ toxicity: | Single exposure (Globally Harmonized System): | no data available |
| | Repeated exposure (Globally Harmonized System): | no data available |
| Aspiration hazard: | no data available | |
| Potential health effects: | Inhalation: | May be harmful if inhaled. May cause respiratory tract irritation. |
| | Ingestion: | May be harmful if swallowed. |
| | Skin: | May be harmful if absorbed through skin. May cause skin irritation. |
| | Eyes: | May cause eye irritation. |
| | Nausea, dizziness, headache, narcosis, dermatitis. | |
| Signs and symptoms of exposure: | Nausea, dizziness, headache, narcosis, dermatitis. | |
| Synergistic effects: | no data available | |
| Additional information: | RTECS: not available | |

12. ECOLOGICAL INFORMATION

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| Toxicity: | no data available |
| Persistence and degradability: | no data available |
| Bioaccumulative potential: | no data available |
| Mobility in soil: | no data available |
| PBT and vPvB assessment: | no data available |
| Other adverse effects: | An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Toxic to aquatic life with long lasting effects. |

13. DISPOSAL CONSIDERATIONS

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| Product: | Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. |
| Contaminated packaging: | Dispose of as unused product. |

14. TRANSPORT INFORMATION

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| DOT (US): | UN number: 1010 Class: 2.1 Proper shipping name: Butadiene, stabilized Reportable Quantity (RQ): 10 lbs Marine pollutant: No Poison Inhalation Hazard: No |
| IMDG: | UN number: 1010 Class: 2.1 Packing group: I EMS-No: F-D, S-U Proper shipping name: Butadiene, stabilized Marine pollutant: No |
| IATA: | UN number: 1010 Class: 2.1 Proper shipping name: Butadiene, stabilized IATA Passenger: Not permitted for transport |

15. REGULATORY INFORMATION

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| WHMIS classification: | A | Compressed gas. |
| | B1 | Flammable gas. |
| | D2A. | Very toxic material causing other toxic effects: Carcinogen. |
| | D2B. | Toxic material causing other toxic effects: Mutagen. |

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

16. OTHER INFORMATION

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| Date of the latest revision: | 18 October 2018 |
| Further information: | The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Polymer Source, Inc. shall not be held liable for any damage resulting from handling or from contact with the above product. See www.polymersource.ca for additional terms and conditions of sale. |