



Safety Data Sheet

Version 7.0
Revision Date: 08/02/2019

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name: **Deuterated 1,4-phenylenediamine**
Product abbreviation: D4PDA, D8PDA
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: Liver, Kidney.

WHMIS classification: D1B. Toxic material causing immediate and serious toxic effects: Toxic by ingestion.
D2B. Toxic material causing other toxic effects:
Toxic by skin absorption, Toxic by inhalation,
Moderate eye irritant, Skin sensitizer.

GHS classification: Acute toxicity, Oral (Category 3),
Acute toxicity, Inhalation (Category 3),
Acute toxicity, Dermal (Category 3),
Eye irritation (Category 2A),
Skin sensitisation (Category 1),
Acute aquatic toxicity (Category 1),
Chronic aquatic toxicity (Category 1).

GHS Label elements, including precautionary statements:

Pictogram:  

Signal word: Danger

Hazard statements: H301 + H311 + H331. Toxic if swallowed, in contact with skin or if inhaled.
H317. May cause an allergic skin reaction.
H319. Causes serious eye irritation.
H410. Very toxic to aquatic life with long lasting effects.

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| Precautionary statements: | P261. Avoid breathing dust / fume / gas / mist / vapours / spray. |
| | P273. Avoid release to the environment. |
| | P280. Wear protective gloves/ protective clothing. |
| | P301 + P310. <i>IF SWALLOWED</i> : Immediately call a Poison Center or doctor / physician. |
| | P305 + P351 + P338. <i>IF IN EYES</i> : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| | P311. Call a Poison Center or doctor / physician. |
| | P501. Dispose of contents/ container to an approved waste disposal plant. |
| HMIS classification: | Health hazard: 2 |
| | Chronic health hazard: * |
| | Flammability: 1 |
| | Physical hazards: 0 |
| Potential health effects: | Inhalation: Toxic if inhaled. Causes respiratory tract irritation. |
| | Skin: Toxic if absorbed through skin. Causes skin irritation. |
| | Eyes: Causes eye irritation. |
| | Ingestion: Toxic if swallowed. |

3. COMPOSITION / INFORMATION ON INGREDIENTS

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| Formula: | 1,4-phenylenediamine-d ₄ : | C ₆ D ₄ H ₄ N ₂ |
| | 1,4-phenylenediamine-d ₈ : | C ₆ D ₈ N ₂ |
| Synonyms: | 1,4-Diaminobenzene, 1,4-Benzenediamine, p-Aminoaniline, 4-Aminoaniline | |
| Concentration: | ≤ 100 % | |
| CAS registry number: | 1,4-phenylenediamine-d ₄ : | 153200-72-7 |
| | 1,4-phenylenediamine-d ₈ : | 153200-73-8 |

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: | Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. |
| If swallowed: | 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: | Not flammable or combustible. |
| Suitable extinguishing media: | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. |
| 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, Nitrogen 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: | Wear respiratory protection. Avoid dust formation. Avoid breathing dust, vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe 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: | Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal. |

7. HANDLING AND STORAGE

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| Precautions for safe handling: | Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. |
| Conditions for safe storage: | Keep container tightly closed in a dry and well-ventilated place. Store under inert gas. Hygroscopic. Light sensitive. May darken on storage. |

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> |
|------------------------------------|--------------|---------------------------|--|--|
| Deuterated 1,4-phenylene-diamine | TWA | 0.1 mg/m ³ | Canada. Alberta, Occupational Health and Safety Code (Table 2: OEL). | Sensitizer: Sensitization critical effect. |
| (CAS-No: 153200-72-7; 153200-73-8) | TWA | 0.1 mg/m ³ | Canada. British Columbia OEL. | |

| <i>Components</i> | <i>Value</i> | <i>Control parameters</i> | <i>Basis</i> | <i>Remarks</i> |
|--|--------------|---------------------------|--|--------------------------------|
| Deuterated 1,4-phenylene-diamine (CAS-No: 153200-72-7; 153200-73-8) | TWAEV | 0.1 mg/m ³ | Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants | Skin (percutaneous) Sensitizer |
| | TWA | 0.1 mg/m ³ | USA. ACGIH Threshold Limit Values (TLV). | |

Personal protective equipment:

- Respiratory protection: Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (EN 143) 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: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.
- Specific engineering controls: Use mechanical exhaust or laboratory fumehood to avoid exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

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| Appearance: | Form: | Solid |
| | Colour: | no data available |
| Safety data: | pH: | (lit.): ca. 9 at ca.50 g/L at ca.20 °C (68 °F) |
| | Melting point / Freezing point: | (lit.): m.p. = 138–143 °C (280–289 °F) |
| | Boling point: | (lit.): b.p. = 267 °C (513 °F) |
| | Flash point: | (lit.): ca.110 °C (230 °F), closed cup |
| | Ignition temperature: | no data available |
| | Auto-ignition temperature: | no data available |
| | Lower explosion limit: | no data available |
| | Upper explosion limit: | no data available |

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| Vapour pressure: | (lit.): ca.1.44 hPa (1.08 mmHg) at ca.100 °C (212 °F) |
| Density: | no data available |
| Water solubility: | (lit.): ca.10 g/L at ca.20 °C (68 °F) |
| Partition coefficient: n-octanol/water: | log Pow: ca. -0.25 |
| 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 |
| Materials to avoid: | Acids, Acid chlorides, Chloroformates, Strong oxidizing agents. |
| Hazardous decomposition products: | Hazardous decomposition products formed under fire conditions: Carbon oxides, Nitrogen 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: | no data available | |
| Carcinogenicity: | IARC: | Group 3 Not classifiable as to its carcinogenicity to humans (1,4-Phenylenediamine-d8). |
| | ACGIH: | no data available |
| 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 | |

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| Potential health effects: | <p>Inhalation: Toxic if inhaled. Causes respiratory tract irritation.</p> <p>Ingestion: Toxic if swallowed.</p> <p>Skin: Toxic if absorbed through skin. Causes skin irritation.</p> <p>Eyes: Causes eye irritation.</p> |
| Signs and symptoms of exposure: | <p>Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis.</p> <p>Onset may be delayed 2 to 4 hours or longer.</p> <p>To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.</p> |
| 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: | <p>Very toxic to aquatic life with long lasting effects.</p> <p>An environmental hazard cannot be excluded in the event of unprofessional handling or disposal</p> |

13. DISPOSAL CONSIDERATIONS

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| Product: | Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. |
| Contaminated packaging: | Dispose of as unused product. |

14. TRANSPORT INFORMATION

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| DOT (US): | <p>UN number: 1673</p> <p>Class: 6.1</p> <p>Packing group: III</p> <p>Proper shipping name: Phenylenediamines</p> <p>Reportable Quantity (RQ): 5000 lbs</p> <p>Marine pollutant: No</p> <p>Poison Inhalation Hazard: No</p> |
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IMDG: UN number: 1673
Class: 6.1
Packing group: III
EMS-No: F-A, S-A
Proper shipping name: Phenylenediamines
Marine pollutant: No

IATA: UN number: 1673
Class: 6.1
Packing group: III
Proper shipping name: Phenylenediamines

15. REGULATORY INFORMATION

WHMIS classification: D1B. Toxic Material Causing Immediate and Serious Toxic Effects:

- Toxic by ingestion.

D2B. Toxic Material Causing Other Toxic Effects:

- Toxic by skin absorption.
- Toxic by inhalation.
- Moderate eye irritant
- Skin sensitizer

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

Date of the latest revision: 8 February 2019

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.