

BHS Marketing

Western Briquette

MATERIAL SAFETY DATA SHEET

Adipic Acid

I Company Identification

Company: BHS Marketing / Western Briquette
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II Product Identification

Product Name: Adipic Acid
Formula: $\text{HOOC}(\text{CH}_2)_4\text{COOH}$
Molecular Weight: 146.14
CAS Name/Number: Hexanedioic Acid / 124-04-9

III Typical Physical Properties

Appearance: White Powder
Odor: Odorless
Molecular Weight: 146.14
pH: 3.2 @ 1 g/L in H₂O
Boiling Point: 337 C (639 F) @ 760 mm Hg with decomposition
Melting Point: 152 C (306 F)
Specific Gravity: 1.34 @ 18 C (64 F)
Vapor Density: 5.04 (Air = 1)
Vapor Pressure: 0.106 mm Hg @ 25 C (77 F)
% Volatile by Weight: 0 WT% @ 20 C (68 F)
Solubility in Water: 2.5 WT% @ 25 C (77 F)

IV Reactivity Data

Chemical Stability: Stable
Materials to Avoid: Incompatible with strong oxidants such as perchloric acid.
Decomposition Range: Slowly decomposes above boiling point.
Hazardous Polymerization: Polymerization will not occur.

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V Toxicological Information and Interpretation

Animal Data

Oral LD50: 940 mg/kg in rats
Inhalation 1-hr LC50: > 31 mg/l in rate

Eyes: This compound is an eye irritant.
Skin: This compound is a slight to mild skin irritant, but is not a skin sensitizer.
Respiratory: Inhalation caused depression, shortness of breath, incoordination, and convulsions.
Ingestion: Ingestion produced only nonspecific effects such as weight loss or irritation. Long-term exposure by ingestion to high dose levels (800 mg/day) caused gastrointestinal effects, and nonspecific effects such as that this compound does not have carcinogenic, mutagenic, or developmental effects. Tests in animals for reproductive effects have not been performed.

VI Ecological Information

Ecotoxicological Information: Aquatic toxicity
96-hour LC50, fathead minnows: 88 mg/L

VII Fire and Explosion Hazard Data

Primary Routes of Exposure: Adipic Acid is a naturally occurring chemical found in some plants. The compound has slight acute oral toxicity, and is a mild skin, and an eye and upper respiratory tract irritant.

Target Organs: Skin, eyes, respiratory tract
Effects of Overexposure:
Eye Contact: Eye contact may include eye irritation with discomfort, tearing, or blurring of vision; or slight to moderate transient corneal injury.
Skin Contact: Skin contact may include eye irritation with discomfort or rash.
Ingestion: Ingestion may include irritation of mucosal surfaces.

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| Inhalation: | Inhalation may include irritation of the upper respiratory passages. Literature reports indicate that one individual experienced asthma-like reactions with shortness of breath, wheezing, and cough. |
| Carcinogenicity Information: | None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen. |

VIII Recommended First Aid Measures

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| Eye Exposure: | In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. |
| Skin Exposure: | Flush skin with water after contact. Wash contaminated clothing before reuse. |
| Inhalation Exposure: | If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician. |
| Ingestion Exposure: | If swallowed, do not induce vomiting. Immediately give 2 glasses of water. Never give anything by mouth to an unconscious person. Call a physician. |
| Notes to physicians: | Activated charcoal mixture may be beneficial. Suspend 50 g activated charcoal in 400 mL water and mix well. Administer 5 mL/kg, or 350 mL for an average adult. |

IX Fire Fighting Measures

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| Flash Point: | 196 C (385 F) |
| Extinguishing Media: | Water, foam, dry chemical Carbon Dioxide (CO ₂) |
| Autoignition: | 420 C (788 F) |
| Special fire fighting measures: | Wear self-contained breathing apparatus. Wear full protective equipment. Cool tank/container with water spray. |

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X Accidental Release Measures

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| Evacuation Procedure: | Keep personnel removed and upwind of fire. Water may cause frothing. |
| Waste Disposal: | Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State, and Local regulations. Recover for reclamation. Remove non-usable solid material and/or contaminated soil, for disposal in an approved and permitted landfill. Do not flush to surface water or sanitary sewer system. |
| Initial Containment: | Remove source of heat, sparks, flame, impact, friction or electricity. |
| Containment of Spills: | Recover undamaged and minimally contaminated material for reuse and reclamation. Shovel or sweep up. Neutralize with soda ash. |

XI Handling and Storage

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| Handling (personnel): | Avoid breathing dust. Avoid contact with eyes, skin, or clothing. Wash thoroughly after handling. |
| Handling (physical aspects): | Avoid dust generation. Keep away from heat, sparks and flames. |
| Storage: | Store in well-ventilated place. Keep container tightly closed. |

XII Exposure Controls/Personal Protection

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| Engineering Controls: | Use sufficient ventilation to keep employee exposure below recommended limits. |
| Personal Protective Equip.: | |
| Eye/Face Protection: | Wear safety glasses. Wear coverall chemical splash goggles and face shield when the possibility exists for eye or face contact from airborne material. |
| Respirators: | A NIOSH/MSHA approved air purifying respirator with a dust/mist filter cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection. |

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Clothing: Wear impervious clothing, such as gloves, apron, boots, or whole bodysuit made from neoprene protection.

Exposure Guidelines:

Applicable Exposure Limits

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| ADIPIC ACID | |
| PEL (OSHA) | None Established |
| AEL (ACGIH) | 5 mg/m ³ , 8 Hr. TWA |
| AEL * (DuPont) | 5 mg/m ³ , 8 & 12 Hr. TWA |
| WEEL AIHA) | 5 mg/m ³ , 15 minute TWA |

*Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

XIII Additional Information

Transportation Information

Shipping Information:

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| DOT/IMO | |
| Proper Shipping Name: | ENVIRONMENTALLY HAZARDOUS SUBSTANCES Solid, N.O.S. (Adipic Acid) |
| Hazard Class: | 9 |
| UN No.: | 3077 |
| DOT/IMO Label: | Class 9 |
| Packing Group: | III |
| Special Information: | NOT REGULATED IF LESS THAN 5,000 LBS/PKG |
| Reportable Quantity: | 5,000 lb (2270 kg) |

US Federal Regulations

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| TSCA Inventory Status: | Reported/Included |
| Superfund Reportable Discharge: | RQ: 5,000 |

Title III Hazard Classification Sections 311, 312

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| Acute: | Yes |
| Chronic: | No |
| Fire: | No |
| Reactivity: | No |
| Pressure: | No |

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LISTS:

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| Extremely Hazardous Substance: | No |
| CERCLA Hazardous Material: | Yes |
| Toxic Chemicals: | No |

CANADIAN WHMIS CLASSIFICATION: D-2B

NFPA, NPCA-HMIS

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| NFPA Rating: | 1 |
| Flammability: | 0 |

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|-------------------|---|
| NPCA-HMIS Rating: | |
| Health: | 1 |
| Flammability: | 1 |
| Reactivity: | 0 |

Personal Protection rating to be supplied by user depending on use conditions.

Adipic Acid has not been rated for Health effects by the NFPA (National Fire Protection Association).

Additional Information

Unloading of 2,000 pound bulk bags of adipic acid can generate voltage levels necessary to constitute a spark hazard. The spark hazard is of concern as it can potentially be an ignition source for solvent air mixtures typical of many common ester reaction applications.

Appropriate safe handling procedures should be practiced when using bulk bags for adipic acid.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

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*n/a=Not Applicable