# Material Safety Data Sheet
## 1,4-Diaminobutane, 99%

ACC# 86826

## Section 1 - Chemical Product and Company Identification

**MSDS Name:** 1,4-Diaminobutane, 99%
**Catalog Numbers:** AC112120000, AC112120250, AC112121000, AC112125000
**Synonyms:** Putrescine; 1,4-Butanediamine
**Company Identification:**

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

**For information in North America, call:** 800-ACROS-01
**For emergencies in the US, call CHEMTREC:** 800-424-9300

## Section 2 - Composition, Information on Ingredients

| CAS# | Chemical Name | Percent | EINECS/ELINCS |
|---|---|---|---|
| 110-60-1 | 1,4-Diaminobutane | 99 | 203-782-3 |

## Section 3 - Hazards Identification

**EMERGENCY OVERVIEW**

Appearance: yellow to brown crystals. Flash Point: 63 deg C.
**Danger!** Corrosive. Causes eye and skin burns. Harmful if swallowed. May be harmful if absorbed through the skin. May cause severe respiratory tract irritation with possible burns. May cause severe digestive tract irritation with possible burns.
**Target Organs:** None.

**Potential Health Effects**
**Eye:** Causes eye burns.
**Skin:** Causes skin burns. May be harmful if absorbed through the skin.
**Ingestion:** Harmful if swallowed. May cause severe and permanent damage to the digestive tract. Causes gastrointestinal tract burns.
**Inhalation:** May cause severe irritation of the respiratory tract with sore throat, coughing, shortness of breath and delayed lung edema. Causes chemical burns to the respiratory tract.
**Chronic:** No information found.

## Section 4 - First Aid Measures

**Eyes:** Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes).
**Skin:** Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes.
**Ingestion:** Never give anything by mouth to an unconscious person. Get medical aid immediately. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.
**Inhalation:** Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation.
**Notes to Physician:** Treat symptomatically and supportively.

## Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas.
**Extinguishing Media:** In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam. Cool containers with flooding quantities of water until well after fire is out.
**Flash Point:** 63 deg C ( 145.40 deg F)
**Autoignition Temperature:** Not available.
**Explosion Limits, Lower:**N/A
**Upper:** N/A
**NFPA Rating:** (estimated) Health: 3; Flammability: 1; Instability: 0

## Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.
**Spills/Leaks:** Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions. Provide ventilation.

## Section 7 - Handling and Storage

**Handling:** Keep container tightly closed. Do not get on skin or in eyes. Do not ingest or inhale. Use with adequate ventilation. Discard contaminated shoes.
**Storage:** Keep container closed when not in use. Store in a cool, dry, well-ventilated area away from incompatible substances. Corrosives area.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.
**Exposure Limits**

| Chemical Name | ACGIH | NIOSH | OSHA - Final PELs |
|---|---|---|---|
| 1,4-Diaminobutane | none listed | none listed | none listed |

**OSHA Vacated PELs:** 1,4-Diaminobutane: No OSHA Vacated PELs are listed for this chemical.
**Personal Protective Equipment**
**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
**Skin:** Wear appropriate protective gloves to prevent skin exposure.
**Clothing:** Wear appropriate protective clothing to minimize contact with skin.
**Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

## Section 9 - Physical and Chemical Properties

**Physical State:** Crystals
**Appearance:** yellow to brown
**Odor:** None reported.
**pH:** Not available.
**Vapor Pressure:** Not available.
**Vapor Density:** 3.0
**Evaporation Rate:**Not available.
**Viscosity:** Not available.
**Boiling Point:** 158.0 - 160.0 deg C @ 760.00m
**Freezing/Melting Point:**27.00 - 28.00 deg C
**Decomposition Temperature:**Not available.
**Solubility:** 40 g/l (20 c)
**Specific Gravity/Density:**.8770g/cm3
**Molecular Formula:**C4H12N2
**Molecular Weight:**88.15

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.
**Conditions to Avoid:** Incompatible materials, dust generation, excess heat, oxidizers.
**Incompatibilities with Other Materials:** Strong oxidizing agents.
**Hazardous Decomposition Products:** Nitrogen oxides, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide, nitrogen.
**Hazardous Polymerization:** Has not been reported.

## Section 11 - Toxicological Information

**RTECS#:**
**CAS#** 110-60-1: EJ6800000
**LD50/LC50:**
CAS# 110-60-1:
Oral, rat: LD50 = 463 mg/kg;
Skin, rabbit: LD50 = 1576 mg/kg;
.
Oral, rat: LD50=463mg/kg rabbit:
**Carcinogenicity:**
CAS# 110-60-1: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information available.
**Teratogenicity:** No information available.
**Reproductive Effects:** No information available.
**Mutagenicity:** No information available.
**Neurotoxicity:** No information available.
**Other Studies:**

## Section 12 - Ecological Information

No information available.

## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
**RCRA P-Series:** None listed.
**RCRA U-Series:** None listed.

## Section 14 - Transport Information

| | US DOT | Canada TDG |
|---|---|---|
| **Shipping Name:** | AMINES, SOLID, CORROSIVE, N.O.S. | CAUSTIC ALKALI LIQUID NOS (1,4-DIAMINOBUTANE) |
| **Hazard Class:** | 8 | 8 |
| **UN Number:** | UN3259 | UN1719 |
| **Packing Group:** | II | II |

## Section 15 - Regulatory Information

### US FEDERAL

**TSCA**
CAS# 110-60-1 is listed on the TSCA inventory.
**Health & Safety Reporting List**
None of the chemicals are on the Health & Safety Reporting List.
**Chemical Test Rules**
None of the chemicals in this product are under a Chemical Test Rule.
**Section 12b**
None of the chemicals are listed under TSCA Section 12b.
**TSCA Significant New Use Rule**
None of the chemicals in this material have a SNUR under TSCA.
**CERCLA Hazardous Substances and corresponding RQs**
None of the chemicals in this material have an RQ.
**SARA Section 302 Extremely Hazardous Substances**
None of the chemicals in this product have a TPQ.
**Section 313** No chemicals are reportable under Section 313.
**Clean Air Act:**
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
**Clean Water Act:**
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
**OSHA:**
None of the chemicals in this product are considered highly hazardous by OSHA.
**STATE**
CAS# 110-60-1 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

**California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

### European/International Regulations
**European Labeling in Accordance with EC Directives**
**Hazard Symbols:**
XN C
**Risk Phrases:**
R 21/22 Harmful in contact with skin and if swallowed.
R 34 Causes burns.

**Safety Phrases:**
S 28A After contact with skin, wash immediately with plenty of water
.

**WGK (Water Danger/Protection)**
CAS# 110-60-1: 2
**Canada - DSL/NDSL**
CAS# 110-60-1 is listed on Canada's NDSL List.
**Canada - WHMIS**
not available.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.
**Canadian Ingredient Disclosure List**

## Section 16 - Additional Information

**MSDS Creation Date:** 10/09/1998
**Revision #3 Date:** 10/03/2005

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.*