***** MATERIAL SAFETY DATA SHEET *****

Spermidine, 99%

***** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION *****

MSDS Name: Spermidine, 99%
Catalog Numbers: 13274-0000, 13274-0010, 13274-0050
Synonyms: N-(3-Aminopropyl)-1,4-butanediamine
Company Identification (Europe): Acros Organics BVBA
Janssen Pharmaceuticaalaa 3a
2440 Geel, Belgium
Company Identification (USA): Acros Organics
One Reagent Lane
Fairlawn, NJ 07410
For information in North America, call: 800-ACROS-01
For information in Europe, call: 0032(0) 14575211
For emergencies in the US, call CHEMTREC: 800-624-9300
For emergencies in Europe, call: 0032(0) 14575299

***** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS *****

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
<th>%</th>
<th>EINECS#</th>
<th>Haz Symbols</th>
<th>Risk Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>124-208-5</td>
<td>Spermidine</td>
<td>99%</td>
<td>204-689-0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hazard Symbols: C
Risk Phrases: 34

***** SECTION 3 - HAZARDS IDENTIFICATION *****

EMERGENCY OVERVIEW

Causes burns. Air sensitive. Hygroscopic (absorbs moisture from the air).

Potential Health Effects

Eye:
- Causes eye burns.

Skin:
- Causes skin burns.

Ingestion:
- Causes gastrointestinal tract burns.

Inhalation:
- Causes chemical burns to the respiratory tract.

Chronic:
- Not available.

***** SECTION 4 - FIRST AID MEASURES *****

Eyes:
- Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

Skin:
- Get medical aid immediately. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Ingestion:
- Do not induce vomiting. Get medical aid immediately.

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.

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.

Extinguishing Media:
- In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam. Use foam, dry chemical, or carbon dioxide.

***** SECTION 6 - ACCIDENTAL RELEASE MEASURES *****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:
- Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container.

***** SECTION 7 - HANDLING and STORAGE *****

Handling:
- Do not breathe dust, vapor, mist, or gas. Do not get in eyes, on skin, or on clothing. Use only in a chemical fume hood.
Storage:
Store in a tightly closed container. Store in a dry area. Keep refrigerated. (Store below 4°C/39°F.) Store under an inert atmosphere.

**** 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.

Personal Protective Equipment

  Eyes:  
  Wear chemical goggles.

  Skin:  
  Wear appropriate protective gloves to prevent skin exposure.

  Clothing:  
  Wear appropriate protective clothing to prevent skin exposure.

  Respirators:  
  Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State: Clear liquid
Color: colorless
Odor: None reported.
pH: Not available.
Vapor Pressure: Not available.
Viscosity: Not available.
Boiling Point: 128 – 130 deg C @14mmHg
Freezing/Melting Point: 22 – 25 deg C
Autoignition Temperature: Not available.
Flash Point: > 110 deg C (> 230.00 deg F)
Explosion Limits, lower: Not available.
Explosion Limits, upper: Not available.
Decomposition Temperature: 
Solubility in water: Soluble.
Specific Gravity/Density: 0.925
Molecular Formula: C7H19N3
Molecular Weight: 145.25

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable under normal temperatures and pressures.
Conditions to Avoid:
Incompatible materials, exposure to air, exposure to moist air or water.
Incompatibilities with Other Materials:
Strong oxidizing agents, oxidizing agents, acids, acid chlorides, acid anhydrides.
Hazardous Decomposition Products:
Nitrogen oxides, carbon monoxide, carbon dioxide.
Hazardous Polymerization: Will not occur.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#: 
CAS# 124-20-9: EJ7000000
LD50/LC50: Not available.
Carcinogenicity:
Spermidine -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
See actual entry in RTECS for complete information.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Dispose of in a manner consistent with federal, state, and local regulations.

**** SECTION 14 - TRANSPORT INFORMATION ****

IATA
Shipping Name: AMINES, LIQUID, CORROSIVE, N.O.S.*
Hazard Class: 8
UN Number: 2735
Packing Group: II

IMO
Shipping Name: AMINES, LIQUID, CORROSIVE, N.O.S.
Hazard Class: 8
UN Number: 2735
Packing Group: II

RID/ADR
Shipping Name: AMINES, LIQUID, CORROSIVE, N.O.S.
Hazard Class: 8
UN Number: 2735
Packing group: II
European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols: C
Risk Phrases:
  R 34 Causes burns.
Safety Phrases:
  S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
  S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
  S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)
  CAS# 124-20-9: 1

United Kingdom Occupational Exposure Limits

United Kingdom Maximum Exposure Limits

Canada
  CAS# 124-20-9 is listed on Canada’s DSL List.
  CAS# 124-20-9 is not listed on Canada’s Ingredient Disclosure List.

Exposure Limits

US FEDERAL
  TSCA
  CAS# 124-20-9 is listed on the TSCA inventory.

**** SECTION 15 - REGULATORY INFORMATION ****

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 7/16/1996  Revision #1 Date: 1/27/2004

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