N,N'-Bis(3-aminopropyl)-1,4-butane-d_{20}-diamine

Section 1. Chemical product and company identifications

Product code: D-7515
Chemical formula: C_{10}H_{20}D_{6}N_{4}
CAS: N/A
CAS (unlabelled): 71-44-3
Synonyms: Spermine

Supplier / Manufacturer:
C/D/N Isotopes Inc.
88 Leacock Street
Pointe-Claire (Québec) H9R 1H1
Phone: 514-697-6254
Toll-Free (Canada & USA): 1-800-565-4696
Fax: 514-697-6148
Website: www.cdnisotopes.com

In case of emergency:
TOXYSCAN HOTLINE: 1-855-780-0599

Section 2. Hazards identifications

Physical state: Solid
Warning: Causes severe skin burns and eye damage.
Routes of entry: Inhalation, ingestion, skin and eyes

GHS (Globally Harmonized System of Classification and Labelling of Chemicals):

GHS Classification:
- Skin corrosion (Category 1B)
- Serious eye damage (Category 1)

GHS Label elements:
- Pictograms: 
- Signal word: Danger

Hazard statement: H314 Causes severe skin burns and eye damage.

Precautionary statement:
- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P302 + P351 IF ON SKIN: Wash with plenty of soap and water.
- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310 Immediately call a POISON CENTER or doctor/ physician.

Section 3. Composition and information on ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS</th>
<th>Concentration %</th>
</tr>
</thead>
<tbody>
<tr>
<td>N,N'-Bis(3-aminopropyl)-1,4-butane-d_{20}-diamine</td>
<td>71-44-3</td>
<td>&gt; 97</td>
</tr>
</tbody>
</table>

Section 4. First aid measures

Eye contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
Skin contact: Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.
Inhalation: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
Ingestion: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
General advice: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
Section 5. Firefighting measures

- **Flammability of the product**: Not flammable or combustible.
- **Lower explosion limit**: No data available.
- **Upper explosion limit**: No data available.
- **Auto-ignition temperature**: No data available.
- **Flash point**: 110 °C (230 °F)
- **Products of combustion**: Hazardous decomposition products formed under fire conditions: Carbon oxides, nitrogen oxides.
- **Firefighting media and instructions**: 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.

Section 6. Accidental release measures

- **Personal precautions**: Use personal protective equipment. Avoid dust formation. Ensure adequate ventilation. Avoid breathing dust.
- **Environmental precautions**: Do not let product enter drains.
- **Methods for cleaning up**: Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

Section 7. Handling and storage

- **Handling**: Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation.
- **Storage**: Store at room temperature. Adequate ventilation. Protect from air. Protect from moisture.

Section 8. Exposure Controls, Personal Protections

- **Engineering controls**: Use mechanical exhaust or laboratory fume hood to avoid exposure.
- **Eyes**: Safety glasses with side-shields conforming to NIOSH (US) or EN 166 (EU).
- **Respiratory**: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (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).
- **Hands**: Handle with gloves. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
- **Skin/body**: Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Section 9. Physical and chemical properties

- **Molecular weight**: 202.34 g/mol
- **Physical status**: Solid
- **Color**: White to off-white
- **Odour**: No data available
- **Density**: No data available
- **Melting point**: 28 - 30 °C (82 - 86 °F)
- **Boiling point**: 150 °C (302 °F) at 7 hPa (5 mmHg)
- **Vapour pressure**: No data available
- **Vapour density**: No data available
- **Partition coefficient (octanol/water)**: No data available
- **Water solubility**: Soluble

Section 10. Stability and reactivity

- **Stability and reactivity**: Stable under recommended storage conditions.
- **Incompatibility**: Acids, acid chlorides, acid anhydrides, oxidizing agents.
- **Products of combustion**: Hazardous decomposition products formed under fire conditions: Carbon oxides, nitrogen oxides.
- **Reactivity conditions**: No data available.
Section 11. Toxicological information

Toxicological data: Spermine

Information on ingredients:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS</th>
<th>LD₅₀</th>
<th>LC₅₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spermine</td>
<td>71-44-3</td>
<td>Intraperitoneal - Rat - 33 mg/kg</td>
<td>No data available</td>
</tr>
</tbody>
</table>

Potential acute effects
- **Eyes:** Causes severe eye damage.
- **Skin:** May be harmful if absorbed through skin. Causes severe skin burns.
- **Inhalation:** May be harmful if inhaled. May cause respiratory tract irritation.
- **Ingestion:** May be harmful if swallowed.

Potential chronic effects
- **Carcinogenic effects:** IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
- **Teratogenic effects:** No data available.
- **Medical conditions aggravated by overexposure:** No data available.

Section 12. Ecological information

Ecological data:

<table>
<thead>
<tr>
<th>Name</th>
<th>Results</th>
<th>Species</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spermine</td>
<td>No data available</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Effects on environment: No data available.
Moiblity: No data available.
Environmental precautions: No data available.
Persistence and degradability: No data available.
Bioaccumulative potential: No data available.

Section 13. Disposal considerations

Waste disposal: Contact a licensed professional waste disposal service to dispose of this material.

Section 14. Transportation information

Classification DOT/IMDG/IATA label:

Shipping name: Polymines, solid, corrosive n.o.s. (Spermine)
UN number: UN3259
Class: 8
Packaging group: II

Additional information: None
Section 15. Regulatory information

UNITED STATES:
NFPA classification

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<thead>
<tr>
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<tbody>
<tr>
<td>Health</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flammable</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reactivity</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special conditions</td>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend: 4: Severe, 3: High, 2: Moderate, 1: Slightly, 0: Not hazardous

U.S. Federal regulations:

TSCA 8(b) inventory: Spermine
SARA 302/304/311/312 extremely hazardous substances: Not Listed
SARA 302/304 emergency planning and notification: Not Listed
SARA 302/304/311/312 hazardous chemicals: Not Listed
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard: Not Listed
CWA (Clean Water Act) 307: Not Listed
CWA (Clean Water Act) 311: Not Listed
CAA (Clean Air Act) 112 accidental release prevention: Not Listed
CAA (Clean Air Act) 112 regulated flammable substances: Not Listed
CAA (Clean Air Act) 112 regulated toxic substances: Not Listed

State regulations:

DEA List I Chemicals (Precursor Chemicals): Not Listed
DEA List II Chemicals (Essential Chemicals): Not Listed
Substances in Massachusetts: Not Listed
New York – Dangerous substances with acute effects: Not Listed
Dangerous substances in Pennsylvania – right to know: Not Listed

WHMIS (Canada):

 tested material

E - Corrosive material

Section 16. Additional information

References:

- Manufacturer's Material Safety Data Sheet.
- 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. -Canada
- Federal act on the controlled products
- Toxicological repertory, HSC.
- Material safety data sheet from the components.

Date of issue: October 2nd, 2018
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Elaborated by: Toxyscan Inc., 1-866-780-0599

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