Material Safety Data Sheet
Diethylamine

ACC# 07250

Section 1 - Chemical Product and Company Identification

**MSDS Name:** Diethylamine  
**Catalog Numbers:** D46-1, D46-500, D46POP50  
**Synonyms:** N,N-Diethylamine; N-Ethylethanamine; Diethylamine; DEN; DEA.  
**Company Identification:**  
Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410  
For information, call: 201-796-7100  
Emergency Number: 201-796-7100  
For CHEMTREC assistance, call: 800-424-9300  
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
<th>Percent</th>
<th>EINECS/ELINCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>109-89-7</td>
<td>Diethylamine</td>
<td>99</td>
<td>203-716-3</td>
</tr>
</tbody>
</table>

Section 3 - Hazards Identification

**EMERGENCY OVERVIEW**

Appearance: colorless liquid. Flash Point: -28 deg C.  
**Danger!** Extremely flammable liquid and vapor. Vapor may cause flash fire. Causes eye and skin burns. Causes digestive and respiratory tract burns. Harmful if absorbed through the skin. May be harmful if inhaled. May be harmful if swallowed.  
**Target Organs:** Eyes, skin, mucous membranes.

**Potential Health Effects**  
**Eye:** Causes eye burns. Vapors may cause eye irritation. A 10% aqueous solution of DEN caused severe eye burns in rabbits.  
**Skin:** Causes skin burns. May be absorbed through the skin in harmful amounts. Prolonged or repeated contact may dry/defat the skin and cause irritation. The dermal sensitization potential of diethylamine was evaluated in mice and results showed that it is not a skin sensitizer.  
**Ingestion:** Causes gastrointestinal tract burns. May be harmful if swallowed.  
**Inhalation:** Inhalation may produce coughing, nausea, and pulmonary edema. Animal inhalation studies have shown lung, liver and heart damage from overexposure.  
**Chronic:** Chronic exposure may cause effects similar to those of acute exposure.

Section 4 - First Aid Measures

**Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid immediately.  
**Skin:** In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash clothing before reuse.  
**Ingestion:** If swallowed, do NOT induce vomiting. Get medical aid immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

### Section 5 - Fire Fighting Measures

**General Information:** Use water spray to keep fire-exposed containers cool. Wear appropriate protective clothing to prevent contact with skin and eyes. Wear a self-contained breathing apparatus (SCBA) to prevent contact with thermal decomposition products. Extremely flammable liquid and vapor. Vapor may cause flash fire. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas.

**Extinguishing Media:** For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. Water may be ineffective.

- **Flash Point:** -28 deg C ( -18.40 deg F)
- **Autoignition Temperature:** 312 deg C ( 593.60 deg F)
- **Explosion Limits, Lower:** 1.8
- **Upper:** 10.1

**NFPA Rating:** (estimated) Health: 3; Flammability: 3; Instability: 0

### 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. Use water spray to dilute spill to a non-flammable mixture. Use water spray to disperse the gas/vapor. Remove all sources of ignition. Provide ventilation. Approach spill from upwind.

### Section 7 - Handling and Storage

**Handling:** Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Do not get in eyes, on skin, or on clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Use only with adequate ventilation. Keep away from heat, sparks and flame.

**Storage:** Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from organic halogens. Keep away from acids.

### 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 general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

**Exposure Limits**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA - Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylamine</td>
<td>5 ppm TWA; 15 ppm STEL; Skin - potential significant contribution to overall exposure by the cutaneous route</td>
<td>10 ppm TWA; 30 mg/m3 TWA 200 ppm IDLH</td>
<td>25 ppm TWA; 75 mg/m3 TWA</td>
</tr>
</tbody>
</table>

**OSHA Vacated PELs:** Diethylamine: 10 ppm TWA; 30 mg/m3 TWA

**Personal Protective Equipment**

**Eyes:** Wear chemical splash goggles and face shield.
Skin: Wear appropriate 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. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Liquid</td>
</tr>
<tr>
<td>Appearance</td>
<td>colorless</td>
</tr>
<tr>
<td>Odor</td>
<td>fishy ammonical</td>
</tr>
<tr>
<td>pH</td>
<td>very alkaline</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>195 mm Hg @ 20 deg C</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>2.5</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>16.9 (butyl acetate=1)</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not available</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>55 - 58 deg C</td>
</tr>
<tr>
<td>Freezing/Melting Point</td>
<td>-50 deg C</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>Solubility</td>
<td>Miscible in water</td>
</tr>
<tr>
<td>Specific Gravity/Density</td>
<td>0.71</td>
</tr>
<tr>
<td>Molecular Formula</td>
<td>C4H11N</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>73.13</td>
</tr>
</tbody>
</table>

Section 10 - Stability and Reactivity

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Stability</td>
<td>Stable under normal temperatures and pressures.</td>
</tr>
<tr>
<td>Conditions to Avoid</td>
<td>Ignition sources, excess heat.</td>
</tr>
<tr>
<td>Incompatibilities with Other Materials</td>
<td>Strong oxidizing agents, acids, epichlorohydrin, cellulose nitrate, some metals.</td>
</tr>
<tr>
<td>Hazardous Decomposition Products</td>
<td>Nitrogen oxides, carbon monoxide, carbon dioxide, amines.</td>
</tr>
<tr>
<td>Hazardous Polymerization</td>
<td>Will not occur.</td>
</tr>
</tbody>
</table>

Section 11 - Toxicological Information

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTECS#</td>
<td>109-89-7: HZ8750000</td>
</tr>
<tr>
<td>CAS#</td>
<td>109-89-7:</td>
</tr>
<tr>
<td>LD50/LC50</td>
<td>CAS# 109-89-7:</td>
</tr>
<tr>
<td>Inhalation, rat: LC50 = 4000 ppm/4H; Oral, mouse: LD50 = 500 mg/kg; Oral, rat: LD50 = 540 mg/kg; Skin, rabbit: LD50 = 820 uL/kg;</td>
<td></td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Not listed by ACGIH, IARC, NTP, or CA Prop 65.</td>
</tr>
<tr>
<td>Epidemiology</td>
<td>Edema of the epithelium of the cornea, generally without pain, has been produced by amine vapors, causing colored haloes to be seen around lights, usually in the evening, after industrial exposure to the vapors of various amines.</td>
</tr>
<tr>
<td>Teratogenicity</td>
<td>No data available.</td>
</tr>
<tr>
<td>Reproductive Effects</td>
<td>No data available.</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td>See actual entry in RTECS for complete information.</td>
</tr>
</tbody>
</table>
Neurotoxicity: No data 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

<table>
<thead>
<tr>
<th></th>
<th>US DOT</th>
<th>Canada TDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping Name:</td>
<td>DIETHYLAMINE</td>
<td>No information available.</td>
</tr>
<tr>
<td>Hazard Class:</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>UN Number:</td>
<td>UN1154</td>
<td></td>
</tr>
<tr>
<td>Packing Group:</td>
<td>II</td>
<td></td>
</tr>
</tbody>
</table>

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 109-89-7 is listed on the TSCA inventory.

Health & Safety Reporting List
CAS# 109-89-7: Effective 6/1/87, Sunset 6/1/97

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
CAS# 109-89-7: 100 lb final RQ; 45.4 kg final RQ

SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.

SARA Codes
CAS# 109-89-7: immediate, delayed, fire.

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:
CAS# 109-89-7 is listed as a Hazardous Substance 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# 109-89-7 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

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:
  F C
Risk Phrases:
  R 11 Highly flammable.
  R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
  R 35 Causes severe burns.

Safety Phrases:
  S 16 Keep away from sources of ignition - No smoking.
  S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
  S 29 Do not empty into drains.
  S 3 Keep in a cool place.
  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# 109-89-7: 1

Canada - DSL/NDSL
CAS# 109-89-7 is listed on Canada's DSL List.

Canada - WHMIS
This product has a WHMIS classification of B2, D1B, E.
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
CAS# 109-89-7 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 12/12/1997
Revision #5 Date: 6/07/2006

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.