1 PRODUCT AND COMPANY IDENTIFICATION

Taminco Higher Amines Inc.  
Two Windsor Plaza, Suite 411  
7540 Windsor Drive  
Allentown, PA 18195

EMERGENCY PHONE NUMBERS:  
Chemtrec: (800) 424-9300 (24hrs)  
or (703) 527-3887

Information Telephone Numbers            Phone Number            Available Hrs
Customer Service                        1-800-223-3258            8:00 to 5:00 EST

Product Name: DIETHYLAMINOETHANOL (ALL GRADES)  
Product Synonym(s): DEAE, Diethylethanolamine (DEEA)

Chemical Family: Alkyl Alkanolamine
Chemical Formula: (C2H5)2NC2H4OH
Chemical Name: Ethanol, 2-(Diethylamino)-

2 COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>CAS RegistryNumber</th>
<th>Typical %</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIETHYLAMINOETHANOL</td>
<td>100-37-8</td>
<td>&gt;99 %</td>
<td>Y</td>
</tr>
</tbody>
</table>

The substance(s) marked with a “Y” in the OSHA column, are identified as hazardous chemicals according to the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200)

This material is classified as hazardous under Federal OSHA regulation.

The components of this product are all on the TSCA Inventory list.

3 HAZARDS IDENTIFICATION

Emergency Overview
Clear, colorless liquid, ammonia-like odor  
DANGER!  
FLAMMABLE LIQUID AND VAPOR.  
CAUSES EYE AND SKIN BURNS. MAY CAUSE BLINDNESS.  
CAUSES DIGESTIVE TRACT BURNS.  
MAY BE HARMFUL IF SWALLOWED.  
MAY BE HARMFUL IF ABSORBED THROUGH SKIN

Potential Health Effects
Inhalation and skin contact are expected to be the primary routes of occupational exposure to this material. Based on single exposure animal tests, it is considered to be slightly toxic if swallowed, absorbed through skin, or inhaled and corrosive to the eyes, skin, digestive tract and mucous membranes. This material has a strong objectionable odor that may cause nausea, vomiting, headache or dizziness. Vapor may be severely irritating to the eyes, skin and upper respiratory tract and may produce temporary blurring of vision, coughing, chest pain and shortness of breath. Medical conditions which may be aggravated by exposure to this material include lung disease or limited respiratory capacity.
4 FIRST AID MEASURES

IF IN EYES, immediately flush with plenty of water for at least 15 minutes. Get medical attention immediately.

IF ON SKIN, immediately flush with plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Destroy contaminated shoes.

IF SWALLOWED, do NOT induce vomiting. Give water to drink. Get medical attention immediately. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

IF INHALED, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

5 FIRE FIGHTING MEASURES

Fire and Explosive Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto-Ignition Temperature</td>
<td>NE</td>
</tr>
<tr>
<td>Flash Point</td>
<td>50 C (122 F)</td>
</tr>
<tr>
<td>Flammable Limits- Upper</td>
<td>12</td>
</tr>
<tr>
<td>Flash Point Method</td>
<td>Seta CC</td>
</tr>
<tr>
<td>Lower</td>
<td>7</td>
</tr>
</tbody>
</table>

Extinguishing Media

Use water spray, carbon dioxide, foam or dry chemical.

Fire Fighting Instructions

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand NIOSH approved or equivalent). Fire fighting equipment should be thoroughly decontaminated after use.

Fire and Explosion Hazards

When burned, the following hazardous products of combustion can occur: Oxides of carbon and nitrogen

6 ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

Extinguish or turn off all ignition sources. Ventilate the space involved. Wear appropriate personal protection equipment as indicated in Section 8 of this MSDS. Contain spill with inert materials. Construct a dike to prevent spreading. Collect with non-sparking tools to a suitable container. Prevent waterway contamination. Absorb liquid onto inert absorbent and place in DOT approved drums for disposal. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

7 HANDLING AND STORAGE

Handling

Do not get in eyes, on skin or on clothing.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.
Keep away from heat, sparks and flame.
7 HANDLING AND STORAGE

Do not taste or swallow.

CONTAINER HAZARDOUS WHEN EMPTY. Emptied container retains vapor and product residue. Follow labeled warnings even after container is emptied. RESIDUAL VAPORS MAY EXPLODE ON IGNITION. DO NOT CUT, DRILL GRIND OR WELD ON OR NEAR THIS CONTAINER. Improper disposal or reuse of this container may be dangerous and/or illegal.

Storage
Store in well ventilated area away from heat and sources of ignition such as flame, sparks and static electricity. Ensure that all storage and handling equipment is properly rated, grounded and installed to satisfy electrical classification requirements. Static electricity may accumulate and create a fire hazard. All storage containers, including containers such as drums, cylinders and IBC’s, must be bonded and grounded during filling and emptying operations. Store away from oxidizers and reactive materials. Keep container tightly closed. Observe all federal, state and local regulations and National Fire Protection Association (NFPA) Codes which pertain to the specific local conditions of storage and use, including OSHA 29 CFR 1910.106 and NFPA 30, 70, 77, and 497.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls
Investigate engineering techniques to reduce exposures below airborne exposure limits. Provide ventilation if necessary to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment. Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

Eye / Face Protection
Where there is potential for eye contact, wear a face shield, chemical goggles, and have eye flushing equipment immediately available.

Skin Protection
Butyl rubber, Nitrile or Polyvinyl alcohol Gloves should be worn when handling this material. Wear chemical goggles, a face shield, and chemical resistant clothing such as a rubber apron when splashing may occur. Rinse immediately if skin is contaminated. Remove contaminated clothing promptly and wash before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash skin thoroughly after handling.

Respiratory Protection
Avoid breathing vapor or mist. When airborne exposure limits are exceeded (see below), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and chemical goggles. Consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

Airborne Exposure Guidelines for Ingredients

<table>
<thead>
<tr>
<th>Exposure Limit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylaminoethanol</td>
<td>ACGIH Skin designator Y</td>
</tr>
</tbody>
</table>
9 PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance/Odor</td>
<td>Clear, colorless liquid, ammonia-like odor</td>
</tr>
<tr>
<td>pH</td>
<td>NE</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.88 @ 22 C</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>1.4 mmHg</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>4.0</td>
</tr>
<tr>
<td>Melting Point</td>
<td>NE</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>-56 C (-69 F)</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>158 - 163.5 C (316-326 F)</td>
</tr>
<tr>
<td>Solubility In Water</td>
<td>Completely soluble @ 20 C</td>
</tr>
<tr>
<td>Solubility in Other Materials</td>
<td>Alcohols</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>0.2</td>
</tr>
<tr>
<td>Percent Volatile</td>
<td>100</td>
</tr>
<tr>
<td>Viscosity</td>
<td>3.5 cP @ 20 C</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>117.19</td>
</tr>
<tr>
<td>n-Octanol/Water Partition Coefficient</td>
<td>log Pow = 0.43</td>
</tr>
<tr>
<td>Other Physical Data</td>
<td>Odor threshold: 0.05 - 0.20 mg/m3</td>
</tr>
</tbody>
</table>

10 STABILITY AND REACTIVITY

Stability
This material is chemically stable under normal and anticipated storage and handling conditions.

Incompatibility
Avoid contact with strong oxidizers (perchlorates, nitrates, peroxides), strong acids, and halogens. All amines, under certain conditions, may form nitrosamines; avoid mixing with nitrates.

Hazardous Decomposition Products
None known.

11 TOXICOLOGICAL INFORMATION

Toxicological Information
Single exposure (acute) studies indicate:
Oral - Slightly Toxic to Rats (LD50 1,260 mg/kg)
Dermal - Slightly Toxic to Rabbits (LD50 1,110-1,260 mg/kg)
Inhalation - Slightly Toxic to Rats (4-hr LDlo 4.5 mg/l)
Eye Irritation - Corrosive to Rabbits
Skin Irritation - Corrosive to Rabbits (1-hr and 4-hr exposures)
11 TOXICOLOGICAL INFORMATION

No skin allergy was observed in guinea pigs following repeated exposure. Repeated exposure to vapor produced irritation of the nose, respiratory tract and eyes with nasal turbinate lesions, corneal opacities and slightly decreased body weights in rats. Longer-term vapor exposure of rats also resulted in irritation of the eyes, nose and respiratory tract. Long term feeding studies with dogs produced convulsions and death. Testicular atrophy occurred in a long term feeding study in rats, but no tumors were observed. Oral administration to pregnant rats produced a decrease in the number of viable embryos. No birth defects or any effects on offspring were noted in rats after inhalation exposure during pregnancy, even at a levels which produced irritant effects and reduced weight gain in the mothers. No genetic changes were observed in standard tests using bacteria, animals or animal cells.

12 ECOLOGICAL INFORMATION

Ecotoxicological Information
This material is practically non-toxic to Daphnia magna (24-hr LC50 180 mg/l, 48-hr EC50 165 mg/l), fathead minnow (96-hr EC50 1,780 mg/l) and Leuciscus idus (96-hr LC50 100-220 mg/l). It is slightly toxic to algae (72-hr EC50 30 mg/l).

Chemical Fate Information
This material has a low biological oxygen demand and is not expected to cause oxygen depletion in aquatic systems. Degradation of 100% resulted after 11 days.

13 DISPOSAL CONSIDERATIONS

Waste Disposal
Incineration is the recommended method for disposal observing all local, state and federal regulations. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

14 TRANSPORT INFORMATION

DOT Name: 2-Diethylaminoethanol
DOT Technical Name: DIETHYLAMINOETHANOL (ALL GRADES)
DOT Hazard Class: 8(3)
UN Number: UN2686
DOT Packing Group: PG II
RQ: No
Marine Pollutant: No
DOT Special Information:
Primary Hazard - CORROSIVE
Subsidiary Hazard - FLAMMABLE

15 REGULATORY INFORMATION

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370)
Immediate (Acute) Health: Y Fire: Y Delayed (Chronic) Health: N Reactive: N Sudden Release of Pressure: N

The components of this product are all on the TSCA Inventory list.
Material Safety Data Sheet
Taminco Higher Amines Inc.

DIETHYLAMINOETHANOL (ALL GRADES)

Ingredient Related Regulatory Information:

SARA Reportable Quantities

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CERCLA RQ</th>
<th>SARA TPQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylaminoethanol</td>
<td>NE</td>
<td></td>
</tr>
</tbody>
</table>

Massachusetts Right to Know
This product does contain the following chemicals(s), as indicated below, currently on the Massachusetts Right to Know Substance List.
  Diethylaminoethanol

New Jersey Right to Know
This product does contain the following chemical(s), as indicated below, currently on the New Jersey Right-to-Know Substances List.
  Diethylaminoethanol

Pennsylvania Right to Know
This product does contain the following chemical(s), as indicated below, currently on the Pennsylvania Hazardous Substance List.
  Diethylaminoethanol

16 OTHER INFORMATION

Revision Information

Revision Date 15 DEC 2005  
Supercedes Revision Dated 17-MAR-2005

Revision Summary

Revised section 5.

Key

NE= Not Established  NA= Not Applicable  (R) = Registered Trademark

Miscellaneous

Diethylaminoethanol, low voe

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