Material Safety Data Sheet
Triethanolamine

MSDS# 23930

Section 1 - Chemical Product and Company Identification

MSDS Name: Triethanolamine
Synonyms: TEA; 2,2',2''-Nitrilotriethanol; 2,2',2''-Trihydroxytriethylamine; Tri(2-hydroxyethyl)amine.

Company Identification:
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
For information in the US, call: 201-796-7100
Emergency Number US: 201-796-7100
CHEMTREC Phone Number, US: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#: 102-71-6
Chemical Name: Triethanolamine
%: 97
EINECS#: 203-049-8

Hazard Symbols: XI
Risk Phrases: 36

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Warning! Causes eye irritation. May cause liver and kidney damage. May cause dermatitis. Corrosive to metal. Target Organs: Kidneys, liver, eyes, skin.

Potential Health Effects
Eye: Causes eye irritation.
Skin: May cause skin irritation. Prolonged and/or repeated contact may cause irritation and/or dermatitis. Causes redness and pain.
Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea.
Inhalation: May cause respiratory tract irritation. Inhalation of vapors will cause coughing or breathing difficulty.
Chronic: Prolonged or repeated skin contact may cause dermatitis. May cause liver and kidney damage.

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.
Skin: Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Get medical aid immediately. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4
Ingestion: cupfuls of milk or water.

Inhalation: Remove from exposure and move to fresh air immediately. 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: 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.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or chemical foam.

Autoignition Temperature: 315 deg C (599.00 deg F)
Flash Point: 179 deg C (354.20 deg F)

Explosion Limits:
Lower: 1.3
Upper: 8.5

NFPA Rating: health: 2; flammability: 1; instability: 1;

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. Clean up spills immediately, observing precautions in the Protective Equipment section. Do not let this chemical enter the environment.

Section 7 - Handling and Storage

Handling: Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation. Keep container closed when not in use. Store in a cool, dry, well-ventilated area away from incompatible substances. Do not store in aluminum containers. Store protected from moisture. Store protected from light and air. Store protected from light.

Section 8 - Exposure Controls, Personal Protection

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA - Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triethanolamine</td>
<td>5 mg/m3</td>
<td>none listed</td>
<td>none listed</td>
</tr>
</tbody>
</table>

OSHA Vacated PELs: Triethanolamine: None listed

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

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 prevent skin exposure.

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: solid or liquid
Color: viscous - colorless to pale yellow
Odor: ammonia-like - weak odor
pH: 10.5 (15 g/l H2O)
Vapor Pressure: 3.59E-006 mm Hg @ 25 deg C
Vapor Density: 5.14 (air=1)
Evaporation Rate: Not available
Viscosity: 601 cps @ 25 deg C
Boiling Point: 335 deg C (635.00°F)
Freezing/Melting Point: 21 deg C (69.80°F)
Decomposition Temperature:
Solubility in water: Soluble
Specific Gravity/Density: 1.125
Molecular Formula: (HOCH2CH2)3N
Molecular Weight: 149.19

Section 10 - Stability and Reactivity
Conditions to Avoid: Light, moisture, exposure to air, excess heat.
Incompatibilities with Other Materials: Strong oxidizing agents, strong acids, aluminum, copper, copper alloys, zinc.
Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, carbon dioxide.
Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information
RTECS#: CAS# 102-71-6: KL9275000
RTECS: CAS# 102-71-6: Draize test, rabbit, eye: 20 mg Severe; Draize test, rabbit, eye: 10 mg Mild; Draize test, rabbit, skin: 560 mg/24H Mild; Oral, mouse: LD50 = 5846 mg/kg;
LD50/LC50: Oral, rabbit: LD50 = 2200 mg/kg; Oral, rat: LD50 = 4920 uL/kg; Skin, rabbit: LD50 = >20 mL/kg; Skin, rat: LD50 = >16 mL/kg;

Other: Carcinogenicity: Triethanolamine - IARC: Group 3 (not classifiable)
Other: See actual entry in RTECS for complete information.

Section 12 - Ecological Information
Ecotoxicity: Fish: Fathead Minnow: 5600 mg/L; 96H; LC50
Other: Do not empty into drains.

Section 13 - Disposal Considerations
Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 - Transport Information
US DOT
Shipping Name: AMINES, SOLID, CORROSIVE, N.O.S.
Hazard Class: 8
UN Number: UN3259
Packing Group: III
Canada TDG
Shipping Name: AMINES, SOLID, CORROSIVE, N.O.S. (TRIETHANOLAMINE)
Hazard Class: 8
UN Number: UN3259
Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XI
Risk Phrases:
R 36 Irritating to eyes.

Safety Phrases:
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 39 Wear eye/face protection.

WGK (Water Danger/Protection)
CAS# 102-71-6: 1

Canada

CAS# 102-71-6 is listed on Canada's DSL List
Canadian WHMIS Classifications: D2B
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.
CAS# 102-71-6 is listed on Canada's Ingredient Disclosure List

US Federal
TSCA

CAS# 102-71-6 is listed on the TSCA Inventory.

Section 16 - Other Information

MSDS Creation Date: 5/04/1999
Revision #8 Date 7/20/2009

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantibility 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 the company 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 the company has been advised of the possibility of such damages.

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