Material Safety Data Sheet

Section 1. Chemical Product and Company Identification

Common Name/Trade Name: Triethanolamine

Manufacturer:
SPECTRUM LABORATORY PRODUCTS INC.
14422 S. SAN PEDRO STREET
GARDENA, CA 90248

Commercial Name(s): Trolamine

Catalog Number(s): YY1485, T2561, T2564, TR143

CAS#: 102-71-6

RTECS: KL9275000

TSCA: TSCA 8(b) inventory: Triethanolamine

CI#: Not applicable.

Chemical Name: Ethanol,2,2',2''-nitrilotris-

Chemical Family: Alkanolamine. (Alkali.)

Chemical Formula: (HOCH2CH2)3N

Supplier:
SPECTRUM LABORATORY PRODUCTS INC.
14422 S. SAN PEDRO STREET
GARDENA, CA 90248

Section 2. Composition and Information on Ingredients

Exposure Limits

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>TWA (mg/m³)</th>
<th>STEL (mg/m³)</th>
<th>CEIL (mg/m³)</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Triethanolamine</td>
<td>102-71-6</td>
<td>5</td>
<td></td>
<td></td>
<td>&gt;99</td>
</tr>
<tr>
<td>2) Diethanolamine</td>
<td>111-42-2</td>
<td>3</td>
<td></td>
<td></td>
<td>0.4 max.</td>
</tr>
</tbody>
</table>

Toxicological Data on Ingredients

Triethanolamine:

| ORAL (LD50):          | Acute: 4190 mg/kg [Rat]. 5846 mg/kg [Mouse]. 2200 mg/kg [Rabbit]. |
| DERMAL (LD50):        | Acute: >2000 mg/kg [Rabbit]. >2000 mg/kg [Rat]. |

Section 3. Hazards Identification

Potential Acute Health Effects: Hazardous in case of eye contact (irritant). Slightly hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

Potential Chronic Health Effects: Slightly hazardous in case of skin contact (sensitizer). CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, liver, skin, eyes. Repeated or prolonged exposure to the substance can produce target organs damage.

Continued on Next Page
**Section 4. First Aid Measures**

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eye Contact</strong></td>
<td>Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention. Finish by rinsing thoroughly with running water to avoid a possible infection.</td>
</tr>
<tr>
<td><strong>Skin Contact</strong></td>
<td>Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used.</td>
</tr>
<tr>
<td><strong>Serious Skin Contact</strong></td>
<td>Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.</td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td>If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.</td>
</tr>
<tr>
<td><strong>Serious Inhalation</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Ingestion</strong></td>
<td>Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.</td>
</tr>
<tr>
<td><strong>Serious Ingestion</strong></td>
<td>Not available.</td>
</tr>
</tbody>
</table>

**Section 5. Fire and Explosion Data**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flammability of the Product</strong></td>
<td>May be combustible at high temperature.</td>
</tr>
<tr>
<td><strong>Auto-Ignition Temperature</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Flash Points</strong></td>
<td>CLOSED CUP: 179.44°C (355°F). OPEN CUP: 190.5°C (374.9°F) (Cleveland).</td>
</tr>
<tr>
<td><strong>Flammable Limits</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Products of Combustion</strong></td>
<td>These products are carbon oxides (CO, CO2).</td>
</tr>
<tr>
<td><strong>Fire Hazards in Presence of Various Substances</strong></td>
<td>Slightly flammable to flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.</td>
</tr>
<tr>
<td><strong>Fire Fighting Media and Instructions</strong></td>
<td>SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.</td>
</tr>
<tr>
<td><strong>Special Remarks on Fire Hazards</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Special Remarks on Explosion Hazards</strong></td>
<td>Not available.</td>
</tr>
</tbody>
</table>

**Section 6. Accidental Release Measures**

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Small Spill</strong></td>
<td>Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: <strong>Neutralize the residue with a dilute solution of acetic acid.</strong> Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.</td>
</tr>
<tr>
<td><strong>Large Spill</strong></td>
<td>If the product is in its solid form: Use a shovel to put the material into a convenient waste disposal container. If the product is in its liquid form: Absorb with an inert material and put the spilled material in an appropriate waste disposal. <strong>Neutralize the residue with a dilute solution of acetic acid.</strong> Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.</td>
</tr>
</tbody>
</table>

**Continued on Next Page**
Section 7. Handling and Storage

Precautions
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/vapor/spray. Avoid contact with eyes. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, metals, acids.

Storage

Section 8. Exposure Controls/Personal Protection

Engineering Controls
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection
Splash goggles. Synthetic apron. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Due to the low vapor pressure, vapor inhalation is not likely to be a significant route of exposure unless it is heated. Use respirator if ventilation is inadequate and the airborne concentrations of vapors/mist have exceeded the threshold limit value. Gloves (impervious).

Personal Protection in Case of a Large Spill
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits
TWA: 5 (mg/m³) from ACGIH (TLV) [United States] Inhalation
Consult local authorities for acceptable exposure limits.

Section 9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Physical state and appearance</th>
<th>Liquid. (Clear viscous liquid.)</th>
<th>Odor</th>
<th>Ammoniacal. (Slight.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular Weight</td>
<td>149.19 g/mole</td>
<td>Taste</td>
<td>Not available.</td>
</tr>
<tr>
<td>pH (1% soln/water)</td>
<td>10 [Basic.]</td>
<td>Color</td>
<td>Colorless to light yellow.</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>335°C (635°F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melting Point</td>
<td>20.5-21°C (68.9-70.7°F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical Temperature</td>
<td>Not available.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.124 (Water = 1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>0 kPa (@ 20°C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapor Density</td>
<td>5.14  (Air = 1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volatility</td>
<td>Not available.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not available.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water/Oil Dist. Coeff.</td>
<td>The product is more soluble in water; log(oil/water) = -2.53 to -1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ionicity (in Water)</td>
<td>Not available.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dispersion Properties</td>
<td>See solubility in water, methanol, acetone.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solubility</td>
<td>Easily soluble in cold water, hot water. Soluble in methanol, acetone. Very slightly soluble in diethyl ether. Soluble in Chloroform, Benzene</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 10. Stability and Reactivity Data

<table>
<thead>
<tr>
<th>Stability</th>
<th>The product is stable.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instability Temperature</td>
<td>Not available.</td>
</tr>
<tr>
<td>Conditions of Instability</td>
<td>Excess heat, light, exposure to air, exposure to moist air or water, incompatible materials</td>
</tr>
<tr>
<td>Incompatibility with various substances</td>
<td>Reactive with oxidizing agents, metals, acids. Slightly reactive to reactive with moisture.</td>
</tr>
<tr>
<td>Corrosivity</td>
<td>Non-corrosive in presence of glass.</td>
</tr>
</tbody>
</table>

Special Remarks on Reactivity

- Very hygroscopic.
- Turns brown on exposure to air and light. Sensitive to light.
- Incompatible with alkali metals, copper and copper alloys

Special Remarks on Corrosivity

Not available.

Polymerization

Will not occur.

Section 11. Toxicological Information

Routes of Entry

- Absorbed through skin. Dermal contact. Eye contact.

Toxicity to Animals

- Acute oral toxicity (LD50): 2200 mg/kg [Rabbit].
- Acute dermal toxicity (LD50): >2000 mg/kg [Rat].

Chronic Effects on Humans

CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC.
- May cause damage to the following organs: kidneys, liver, skin, eyes.

Other Toxic Effects on Humans

- Slightly hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals

- LD50 [Rat] - Route: Oral; Dose: 4920 ul/kg
- LD50 [Rabbit] - Route: Skin; Dose: >20ml/kg
- LD50 [Rat] - Route: Skin; Dose: >16ml/kg
- LD50 [Guinea Pig] - Route: Oral; Dose: 2200 mg/kg

Special Remarks on Chronic Effects on Humans

- May cause cancer (tumorigenic) based on animal data.
- May affect genetic material (mutagen): cytogenic analysis (human lymphocyte) = 100 umol/L; sister chromatid exchange (human lymphocyte) = 1mmol/L.

Special Remarks on other Toxic Effects on Humans

- Acute Potential Health Effects:
  - Skin: May cause skin irritation with burning pain, itching, and redness. May be absorbed through the skin and affect the liver, metabolism (anorexia), and urinary tract (kidneys).
  - Eyes: Causes eye irritation with tearing (lacrimation) and burning pain. May cause transient corneal injury.
  - Ingestion: Causes gastrointestinal (digestive) tract irritation with nausea, vomiting, hypermotility, and diarrhea. May also affect behavior/central nervous system (convulsions), liver and urinary system (kidneys).
  - Inhalation: Due to the low vapor pressure, vapor inhalation is not likely to be a significant route of exposure. Inhalation of mist may cause respiratory tract irritation. May also affect the liver, blood, urinary system and cardiovascular system.
  - Chronic Potential Health Effects:
    - Inhalation and Ingestion: Prolonged or repeated ingestion or inhalation of mist may cause liver and kidney damage.
    - Skin: Prolonged or repeated contact may cause allergic skin reaction (dermatitis) or possible skin necrosis and/or ulceration of the skin. Prolonged or repeated skin absorption may affect the liver and kidneys, and cause weight loss.

Section 12. Ecological Information

Ecotoxicity

- Ecotoxicity in water (LC50): 169 mg/l 72 hours [Algae (Desmodesmus subspicatus)]. 216 mg/l 96 hours [Algae (Desmodesmus subspicatus)]. 10600-13000 mg/l 96 hours [Fish (Pimephales promelas)]. 450-1000 mg/l 96 hours [Fish (Lepomis macrochirus)]. >1000 mg/l 96 hours [Fish (Pimephales promelas)]. 1386 mg/l 24 hours [Daphnia (daphnia)].

BOD5 and COD

Not available.

Products of Biodegradation

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Continued on Next Page
The product itself and its products of degradation are not toxic.

Section 13. Disposal Considerations

Waste Disposal

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14. Transport Information

DOT Classification

Not a DOT controlled material (United States).

Identification

Not applicable.

Special Provisions for Transport

Not applicable.

DOT (Pictograms)

Section 15. Other Regulatory Information and Pictograms

Federal and State Regulations

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Diethanolamine

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Diethanolamine

Pennsylvania RTK: Triethanolamine

Minnesota: Triethanolamine

Massachusetts RTK: Triethanolamine

New Jersey: Triethanolamine

TSCA 8(b) inventory: Triethanolamine

TSCA 8(d) H and S data reporting: Triethanolamine

California Proposition 65 Warnings

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Diethanolamine

California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

Other Regulations


EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances (EINECS No. 203-049-8).

Canada: Listed on Canadian Domestic Substance List (DSL).

China: Listed on National Inventory.

Japan: Listed on National Inventory (ENCS).

Korea: Listed on National Inventory (KECI).

Philippines: Listed on National Inventory (PICCS).

Australia: Listed on AICS.

Other Classifications

WHMIS (Canada) Not controlled under WHMIS (Canada).

DSCL (EEC) R36/38- Irritating to eyes and skin.

S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S37/39- Wear suitable gloves and eye/face protection.

HMIS (U.S.A.) Health Hazard 2

1

1

National Fire Protection Association (U.S.A.)

1

Health 2

Flammability 0

Reactivity

Continued on Next Page
### Personal Protection

**WHMIS (Canada)**  
(Pictograms)

**DSCL (Europe)**  
(Pictograms)

**TDG (Canada)**  
(Pictograms)

**ADR (Europe)**  
(Pictograms)

### Protective Equipment

- Gloves.
- Synthetic apron.
- Vapor respirator. Be sure to use an approved/certified respirator or equivalent.
- Splash goggles.

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### Section 16. Other Information

**MSDS Code**  
T4050

**References**  
Not available.

**Other Special Considerations**  
Major Uses:  
Intermediate, in making emulsions, solvent, mfr of synthetic resins; pharmaceutic aid (alkalizing agent); increasing penetration of organic liquids into wood and paper; in prodn of lubricants for textile industry; intermediate in mfr of surface active agents, textile specialties, waxes, polishes, herbicides, petroleum demulsifiers, toilet goods, cement additives, cutting oils. In making emulsions with mineral & vegetable oils, paraffin and waxes. Solvent for casein, shellac, dyes. Fatty acid soaps used in dry-cleaning, cosmetics, household detergents, and emulsions. Wool scouring, textile antifume agent and water-repellent, dispersion agent; corrosion inhibitor; softening agent, emulsifier, humectant and plasticizer, chelating agent; and rubber accelerator.

Validated by Sonia Owen on 8/21/2013.  
Verified by Sonia Owen.  
Printed 8/21/2013.

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**Continued on Next Page**
Notice to Reader

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.