

SECTION 1) CHEMICAL PRODUCT AND SUPPLIER'S IDENTIFICATION

CAS Number: 102-71-6; 111-42-2
Product Name: Triethanolamine 85% (15% DEA)
Revision Date: Sep 04, 2019 **Date Printed:** Sep 04, 2019
Version: 3.0 **Supersedes Date:** May 29, 2018
Manufacturer's Name: Thames River Chemical Corp.
Address: 5230 Harvester Road Burlington, ON, CA, L7L 4X4
Emergency Phone: CHEMTREC (800) 424-9300
Information Phone Number: 905-681-5353
Fax: 905-681-5377
Product/Recommended Uses: For laboratory or industrial use only.

SECTION 2) HAZARDS IDENTIFICATION

Classification

Serious Eye Damage - Category 1
Skin Irritation - Category 2
Specific Target Organ Toxicity - Repeated Exposure - Category 2

Pictograms



Signal Word

Danger

Hazard Statements - Health

Causes serious eye damage
Causes skin irritation
May cause damage to organs through prolonged or repeated exposure.

Precautionary Statements - General

If medical advice is needed, have product container or label at hand.
Keep out of reach of children.
Read label before use.

Precautionary Statements - Prevention

Wear protective gloves/protective clothing/eye protection/face protection.
Wash/Wash hands thoroughly after handling.
Do not breathe dust/fume/gas/mist/vapors/spray.

Precautionary Statements - Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Immediately call a POISON CENTER or doctor.
IF ON SKIN: Wash with plenty of water and soap.
Specific treatment (see first-aid on the SDS).
If skin irritation occurs: Get medical advice/attention.
Take off contaminated clothing. And wash it before reuse.
Get Medical advice/attention if you feel unwell.

Precautionary Statements - Storage

No precautionary statement available.

Precautionary Statements - Disposal

Dispose of contents/container in accordance with local/national/international regulation. Waste management should be in full compliance with national, regional and local laws.

Physical Hazards Not Otherwise Classified

No data available.

Health Hazards Not Otherwise Classified

No data available.

SECTION 3) COMPOSITION/INFORMATION ON INGREDIENTS

| CAS | Chemical Name | % By Weight |
|--------------|-----------------|-------------|
| 0000102-71-6 | TRIETHANOLAMINE | 85% - 88% |
| 0000111-42-2 | DIETHANOLAMINE | 12% - 15% |

Specific chemical identity and/or exact percentage (concentration) of the composition has been withheld to protect confidentiality or to reflect batch to batch variation.

SECTION 4) FIRST-AID MEASURES

Inhalation

Get medical advice/attention if you feel unwell or are concerned. Remove source of exposure or move person to fresh air and keep comfortable for breathing.

Eye Contact

Immediately call a POISON CENTER/doctor. Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for a duration of 30 minutes or until medical aid is available. Take care not to rinse contaminated water into the unaffected eye or onto the face.

Skin Contact

Take off immediately all contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Wash contaminated clothing before reuse. Immediately call a POISON CENTER/doctor. Rinse skin with lukewarm, gently flowing water/shower for a duration of 20 minutes or until medical aid is available.

Ingestion

Never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Do not induce vomiting. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Have victim rinse mouth with water. Quickly transport victim to an emergency care facility. Immediately obtain medical advice or contact a Poison Control Center.

Most Important Symptoms and Effects, Both Acute and Delayed

Inhalation: Symptoms of exposure may include coughing, wheezing, sore throat, difficult breathing.

Eye Contact: Causes eye irritation. Irritation may be severe and may cause eye damage. Symptoms include redness, pain and tearing.

Skin Contact: Causes skin irritation. Symptoms include local redness and dryness.

Ingestion: Swallowing can cause irritation of the digestive tract, abdominal and chest pain, nausea, vomiting and diarrhea.

Indication of Any Immediate Medical Attention and Special Treatment Needed

No data available.

SECTION 5) FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Water fog or fine spray, alcohol-resistant foam or dry chemical. Use water spray to cool fire-exposed containers. Violent steam generation or eruption may occur upon application of direct water stream to hot product. High pressure water streams may scatter hot liquid.

Unsuitable Extinguishing Media

Do not use straight stream of water.

Specific Hazards in Case of Fire

Product can burn if heated

Auto-ignition temperature of TEA = 350°C

Product will burn if involved in a fire.

Hazardous decomposition may occur above 200°C. During a fire, smoke may contain vaporized TEA in addition to unidentified toxic and/or irritating compounds. Combustion products may include toxic nitrogen oxide, hydrogen cyanide, formaldehyde carbon monoxide, carbon dioxide and ammonia gases. Heat from a fire can cause a rapid build-up of pressure inside containers, which may cause explosive rupture.

Fire-fighting Procedures

Isolate immediate hazard area and keep unauthorized personnel out. Move undamaged containers from immediate hazard area if it can be done safely. Stop spill/release if it can be done safely. Cool containers with flooding quantities of water until well after fire is out. Caution should be exercised when using water or foam as frothing may occur, especially if sprayed into containers of hot, burning liquid. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations. Large Fire: Dike fire-control water for later disposal; do not scatter the material

Special Protective Actions

Wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear. Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

SECTION 6) ACCIDENTAL RELEASE MEASURES

Emergency Procedure

Isolate the area; keep all unprotected people away from the spill area. Ventilate the area. Wear protective gloves/protective clothing/eye protection/face protection. Prevent inhalation exposures, skin and possible eye contact. Ensure clean-up is conducted by trained personnel only. Do not touch or walk through the spilled material. Extinguish or remove all ignition sources. Spilled material may pose a slipping hazard.

Recommended Equipment

Wear chemical protective clothing and positive pressure self-contained breathing apparatus (SCBA). Wear liquid tight chemical protective clothing in combination with positive pressure self-contained breathing apparatus (SCBA).

Personal Precautions

DO NOT get on skin, eyes or clothing. Avoid breathing vapor or mist.

Environmental Precautions

Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems and natural waterways by using sand, earth, or other appropriate barriers.

Methods and Materials for Containment and Cleaning up

Stop the spill if it is safe to do so. Contain the spill with earth, sand or other suitable non-combustible absorbent. Keep materials which can burn away from spilled product. Do not absorb with sawdust, woodchips or other cellulose materials. Clean up spills immediately. Scoop up spilled product and any contaminated absorbents into appropriate, labeled containers. Contaminated absorbent may pose the same hazards as the spilled product. Flush the area with water and collect wash-water for proper disposal.

SECTION 7) HANDLING AND STORAGE

General

Wear personal protective gloves, clothing and other equipment required for the workplace.

Avoid breathing fume/gas/mist/vapors/spray.

Avoid generating airborne fumes/vapors/mist from this product.

Handle this product with adequate ventilation.

Wash exposed skin thoroughly, immediately after exposure to product and at the end of the work-shift.

Do not eat or drink when using this product.

Keep away from flames and hot surfaces. – No smoking.

Prevent handling with incompatible materials such as strong acids and oxidizing agents.

Prevent release of this material to the environment; prevent spills and keep away from drains.

Never perform any welding, cutting, soldering, drilling or other hot work on an empty vessel, container or piping until all liquid and vapors have been cleared.

Inspect containers for leaks before handling. Prevent damage to containers. Keep containers closed when not in use. Assume that empty containers contain residues which are hazardous.

Ventilation Requirements

Use only with adequate ventilation to control air contaminants to their exposure limits. Report ventilation failures immediately. The use of local ventilation is recommended to control emissions near the source.

Storage Room Requirements

Keep containers tightly closed when not in use. Store in a cool, dry and well-ventilated place. Store away from sunlight, heat and ignition sources. Keep storage area away from work areas. Store away from strong oxidants, strong acids and other incompatible materials. Do not store in containers made of aluminum, copper, brass or other copper alloys. Store separated from food and feedstuffs.

Empty container retain residue and may be dangerous. Keep containers securely sealed when not in use. Protect containers against banging or other physical damage when storing, transferring, or using them. Procedures must be conducted in a fume hood, glove box, or other suitable containment device. Segregate from other hazard classes and store in a cool, dry, well ventilated area, away from sources of ignition and incompatibilities. Provide secondary containment for toxic materials. Store, handle, and use corrosive materials in well-ventilated areas. Do not store on metal shelves. Store containers in plastic tubs or trays as secondary containment. Keep the smallest amount of material in work areas. Avoid rapid temperature changes in liquid storage areas. Store at temperatures above their respective freezing/melting point. Never store corrosives above eye level. Label cabinets with "TOXIC CHEMICALS" or similar warning.

SECTION 8) EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye protection

Wear indirect-vent, impact and splash resistant goggles when working with liquids

Skin Protection

Use of gloves approved to relevant standards made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Use an apron and over-boots of chemically impervious materials such as neoprene or nitrile rubber.

Respiratory Protection

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker, a respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 should be followed. Check with respiratory protective equipment suppliers.

Appropriate Engineering Controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

| Chemical Name | CANsmg | CANspmm | CANtmg | CANtppm | OSHA STEL (mg/m3) | OSHA STEL (ppm) | OSHA TWA (mg/m3) | OSHA TWA (ppm) |
|-----------------|--------|---------|--------|---------|-------------------|-----------------|------------------|----------------|
| DIETHANOLAMINE | 26 | 6 | 13 | 3 | | | | |
| TRIETHANOLAMINE | | | | | | | | |

| Chemical Name | OSHA Carcinogen | OSHA Tables (Z1, Z2, Z3) | OSHA Skin designation | ACGIH STEL (mg/m3) | ACGIH STEL (ppm) | ACGIH TWA (mg/m3) | ACGIH TWA (ppm) | ACGIH TLV Basis |
|-----------------|-----------------|--------------------------|-----------------------|--------------------|------------------|-------------------|-----------------|--------------------|
| DIETHANOLAMINE | | | | | | 1 (IFV) | | Liver & kidney dam |
| TRIETHANOLAMINE | | | | | | 5 | | Eye & skin irr |

| Chemical Name | ACGIH Carcinogen | ACGIH Notations |
|-----------------|------------------|-----------------|
| DIETHANOLAMINE | A3 | Skin; A3 |
| TRIETHANOLAMINE | | |

(IFV) - Inhalable fraction and vapor, A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans, dam - Damage, irr - Irritation

SECTION 9) PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

| | |
|------------------------|--|
| Density | 9.35 lb/gal |
| Specific Gravity | 1.12 |
| <hr/> | |
| Appearance | clear, colourless to pale yellow |
| Odor Description | slight ammonia-like, disagreeable odor |
| Odor Threshold | 160 mg/L (TEA in water at 60°C) |
| pH | 10.5 (10% aqueous solution) |
| Melting/Freezing Point | 17 °C |
| Low Boiling Point | 325 °C |
| High Boiling Point | N/A |
| Flash Point | 179 °C |
| Vapor Pressure | <0.1 mmHg @ 20 °C |
| Vapor Density | 5.14 (for TEA) |
| Evaporation Rate | <0.01 (n-Butyl Acetate = 1) |
| Upper Explosion Level | N/A |
| Lower Explosion Level | N/A |
| Water Solubility | Complete |
| Coefficient Water/Oil | -1.75 (n-octanol/water) |
| Viscosity | 150 centipoises @ 25°C |

SECTION 10) STABILITY AND REACTIVITY

Reactivity

No data available.

Stability

Stable under normal storage and handling conditions.

Conditions to Avoid

Avoid high temperatures and contact with sources of ignition. Avoid exposing product to air, light and moisture. Avoid direct sunlight.

Hazardous Reactions/Polymerization

Heating above 60°C in aluminum can result in corrosion and generation of flammable hydrogen gas.

Reacts with cellulose nitrate causing fire and explosion hazard.

Reacts violently with strong acids and strong oxidants (e.g. nitric acid, hydrogen peroxide).

Contact with nitrosating agents, under acidic conditions such as nitrous acid, nitrite or nitrogen oxides, can form nitrosamines some of which are potent carcinogens.

Alkanolamine substances are decomposed by light and slowly oxidized by air, turning yellow and then brown. This reaction is accelerated by heat and the presence of metals.

Alkanolamine substances are oxidized by air slowly with evolution of heat. This reaction may lead to spontaneous combustion if the substance is on an adsorbent or on a high surface area material (e.g. absorbent material or thermal insulation).

Incompatible Materials

Avoid contact with strong acids, strong oxidizing agents, halogenated hydrocarbons, nitrating agents, alkali metals, metal hydrides and aluminum.

Product may be corrosive to aluminum alloys at elevated temperatures, many 400 series stainless steel alloys, copper, zinc, and aluminum bronze.

In combination with water, the product may be corrosive to copper and copper alloys (e.g. brass), some aluminum alloys, zinc, zinc alloys, and galvanized surfaces.

Triethanolamine attacks some polymers including polyvinylchloride, polyurethane, polyamide imide, high-density polyethylene and polyacetal at elevated temperatures.

Hazardous Decomposition Products

Decomposition products may include nitrogen oxides, ammonia, irritating aldehydes and ketones. Hazardous decomposition products depend upon temperature, air supply and the presence of other materials.

Oxidation in air may form transient, organic peroxides or thermally unstable N-oxides such as hydroxylamines and carbamates form as well as nitrosamines, which are suspected cancer causing chemicals. Oxidation of triethanolamine and decomposition of products is accelerated by light, heat, and/or presence of metals or metal oxides.

Likely Route of Exposure

Inhalation, ingestion, skin absorption

Acute Toxicity

No data available.

Aspiration Hazard

No data available.

Carcinogenicity

0000102-71-6 TRIETHANOLAMINE

Not carcinogenic

Germ Cell Mutagenicity

0000102-71-6 TRIETHANOLAMINE

Not genotoxic

Reproductive Toxicity

0000102-71-6 TRIETHANOLAMINE

Not toxic to development or the reproductive system.

0000111-42-2 DIETHANOLAMINE

Limited animal evidence suggesting reproductive damage in males.

Respiratory/Skin Sensitization

0000111-42-2 DIETHANOLAMINE

Repeated exposure may cause skin sensitization.

Serious Eye Damage/Irritation

Causes serious eye damage

0000111-42-2 DIETHANOLAMINE

Can irritate and potentially damage the eyes.

Skin Corrosion/Irritation

Causes skin irritation

0000102-71-6 TRIETHANOLAMINE

Mild skin irritation following repeated exposures using the dermal route.

0000111-42-2 DIETHANOLAMINE

Can irritate the skin.

Specific Target Organ Toxicity - Repeated Exposure

May cause damage to organs through prolonged or repeated exposure.

Specific Target Organ Toxicity - Single Exposure

0000102-71-6 TRIETHANOLAMINE

Triethanolamine is of low toxicity following single exposures.

0000111-42-2 DIETHANOLAMINE

May cause headache, nausea, and vomiting. Inhalation may irritate the nose and throat and result in coughing and wheezing.

Likely Routes of Exposure

0000111-42-2 DIETHANOLAMINE

Inhalation, ingestion.

0000102-71-6 TRIETHANOLAMINE

LD50 (oral, rat): 5000-9110 mg/kg (2,8,17,18)

LD50 (oral, mouse): 7400 mg/kg (18)

LD50 (oral, rabbit): 2200 mg/kg (18) (reported but cannot be confirmed)

LD50 (oral, guinea pig): 8000 mg/kg (8,17); 2200 mg/kg (18) (reported but cannot be confirmed)

LD50 (oral, rat): Values have been reported ranging from 710-3540 mg/kg(1,2,3,4,5)

LD50 (oral, mouse): 3300 mg/kg (1)

LD50 (oral, guinea pig): 2000 mg/kg (1)

LD50 (dermal, rabbit): 12200 mg/kg (unverifiable; this value seems inappropriately high; see skin absorption below) (1)

SECTION 12) ECOLOGICAL INFORMATION

Toxicity

Toxicity Data for TEA:

Algae:

72 Hr EC50 *Desmodesmus subspicatus*: 216 mg/L

96 Hr EC50 *Desmodesmus subspicatus*: 169 mg/L

Freshwater fish:

96 Hr LC50 *Pimephales promelas*: 10600-13000 mg/L

96 Hr LC50 *Pimephales promelas*: >1000 mg/L

96 Hr LC50 *Lepomis macrochirus*: 450-1000 mg/L

24 Hr EC50 *Daphnia magna*: 1386 mg/L

0000102-71-6 TRIETHANOLAMINE

Triethanolamine is a basic compound, thus if it is released to water in large quantities, effects on the pH of the receiving water might be expected.

Mobility in Soil

Data for TEA:

Henry's Law Constant(H) is estimated to be 3.38E-19 atm m³/mole at 25°C.

Potential for mobility in soil is very high (Koc between 0 and 50).

Log soil organic carbon partition coefficient (log Koc) is estimated to be 0.48.

Bio-accumulative Potential

0000111-42-2 DIETHANOLAMINE

Potential for bioaccumulation is low.

Persistence and Degradability

Data for TEA:

Material is readily biodegradable.

Passes OECD Test(s) for ready biodegradability.

Material is ultimately biodegradable. Reaches more than 70% mineralization in OECD tests for inherent biodegradability.

Theoretical oxygen demand (ThOD) is calculated to be 2.04 p/p.

Inhibitory concentration (IC50) in OECD "Activated Sludge, Respiratory Inhibition Test" (Guideline #209) is > 1000 mg/L.

0000111-42-2 DIETHANOLAMINE

Readily biodegradeable.

Other Adverse Effects

No data available.

Results of the PBT and vPvB assessment

0000111-42-2 DIETHANOLAMINE

Not a PBT/vPvB substance.

SECTION 13) DISPOSAL CONSIDERATIONS

Waste Disposal

Empty Containers retain product residue which may exhibit hazards of material, therefore do not pressurize, cut, glaze, weld or use for any other purposes. It is the responsibility of the user of the product to determine at the time of disposal whether the product meets local criteria for hazardous waste. Waste management should be in full compliance with national, provincial and local laws.

SECTION 14) TRANSPORT INFORMATION

Transport Canada Information

Hazard class: N/A

Packaging group: N/A
Proper shipping name: N/A
UN number: N/A

U.S. DOT Information

Hazard class: N/A
Packaging group: N/A
Proper shipping name: N/A
UN number: N/A

Reportable Quantity for Bulk Shipments (USA only):
100lbs (45kg) (for DEA)
667lbs (300kg) (for TEA 85% with 15% DEA)
UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (DIETHANOLAMINE), Class 9, PG III.

SECTION 15) REGULATORY INFORMATION

| CAS | Chemical Name | % By Weight | Regulation List |
|--------------|-----------------|-------------|--|
| 0000102-71-6 | TRIETHANOLAMINE | 85% - 88% | DSL,TSCA,EU_EC_Inventory |
| 0000111-42-2 | DIETHANOLAMINE | 12% - 15% | DSL,TSCA,CA_Prop65 - California Proposition 65,EU_EC_Inventory |

SECTION 16) OTHER INFORMATION

Glossary

ACGIH- American Conference of Governmental Industrial Hygienists; ANSI- American National Standards Institute; Canadian TDG- Canadian Transportation of Dangerous Goods; CANsmg or CANspmm - Canadian Short Term Exposure Level in mg/L or in ppm; CANtmg or CANtpmm - Canadian Time Weighted Average in mg/L or in ppm; CAS- Chemical Abstract Service; Chemtrec- Chemical Transportation Emergency Center(US); CHIP- Chemical Hazard Information and Packaging; DSL- Domestic Substances List; EC- Equivalent Concentration; EH40 (UK)- HSE Guidance Note EH40 Occupational Exposure Limits; EPCRA- Emergency Planning and Community Right-To-Know Act; ESL Effects screening levels; HMIS- Hazardous Material Information Service; LC- Lethal Concentration; LD- Lethal Dose; NFPA- National Fire Protection Association; OEL- Occupational Exposure Limits; OSHA- Occupational Safety and Health Administration, US Department of Labor; PEL- Permissible Exposure Limit; SARA (Title III)- Superfund Amendments and Reauthorization Act; SARA 313- Superfund Amendments and Reauthorization Act, Section 313; SCBA- Self Contained Breathing Apparatus; STEL-Short Term Exposure Limit; TCEQ Texas Commission on Environmental Quality; TLV- Threshold Limit Value; TSCA- Toxic Substances Control Act Public Law 94-469; TWA Time Weighted Value; US DOT- US Department of Transportation; WHMIS- Workplace Hazardous Materials Information System.

Version 3.0:

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