



MATERIAL SAFETY DATA SHEET

TRIETHYLENETETRAMINE (TETA)

1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

Chemical Name: Triethylenetetramine; TETA

Manufacturer Information:

Delamine B.V.

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PO Box 473

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FOR EMERGENCIES, CONTACT CHEMTREC 1-800-424-9300 OR 1-703-527-3887

2. COMPOSITION/INGREDIENT DESCRIPTION

<u>Chemical Name</u>	<u>CAS #</u>	OSHA	<u>Concentration (%)</u>
		<u>Hazardous(Y/N)</u>	
Triethylenetetramine	112-24-3	Y	approx. 100

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: CORROSIVE TO EYES, SKIN, AND RESPIRATORY TRACT. HARMFUL IF SWALLOWED OR ABSORBED THROUGH SKIN. CHEMICALS OF THIS TYPE MAY CAUSE SENSITIZATION BY INHALATION OR SKIN CONTACT.

Physical Appearance and Odor: Pale yellow liquid, ammonia-like odor

POTENTIAL HEALTH EFFECTS:

Acute Eye: Corrosive to eyes. May cause permanent damage and blindness. Vapors can cause a non-permanent vision problem of seeing "halos" or a "blue haze".

Acute Skin: Corrosive. Chemicals of this type may cause sensitization upon prolonged or repeated exposure. Material may be absorbed through the skin.

Acute Inhalation: May cause severe irritation to respiratory tract, with coughing, nausea and sore throat. Chemicals of this type may cause sensitization upon prolonged or repeated exposure.

Acute Ingestion: Corrosive to gastrointestinal tract.

Chronic Effects: None known.

4. FIRST AID MEASURES

Eye Contact: Hold eyelids open and flush with a steady, gentle stream of water for at least 15 minutes. Seek immediate medical attention.



4. FIRST AID MEASURES (continued)

Skin Exposure: Remove contaminated clothing and shoes. Wash with plenty of soap and water, for at least 15 minutes. Seek immediate medical attention. Launder contaminated clothing and shoes before re-use.

Inhalation: If respiratory irritation or distress occurs, remove victim to fresh air. Seek medical attention if respiratory irritation or distress continues.

Ingestion: Do not induce vomiting. If victim is conscious and alert, give 1-2 glasses of water to drink. Do not give anything by mouth to an unconscious person. Seek immediate medical attention. Do not leave victim unattended.

Medical Conditions Possibly Aggravated by Exposure: Skin contact may aggravate existing skin disease.

Notes to Physician: All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred. Treat symptomatically. No specific antidote available.

5. FIRE FIGHTING MEASURES

Flash point: 252F (122C)

Autoignition Temperature: approx. 640F (337C)

Flammability limits (vol/vol%): Lower: Not determined Upper: Not determined

Extinguishing Media: water spray, fog, dry chemical, foam, CO₂

Special Fire Fighting Procedures: Firefighters should wear NIOSH/MSHA-approved self-contained breathing apparatus and full protective clothing. Cool containers exposed to fire with water.

Unusual Fire and Explosion Hazards: Closed containers may rupture due to buildup of pressure when exposed to extreme heat. Vapor may travel considerable distance to source of ignition and flash back.

Hazardous Decomposition Materials Under Fire Conditions: Oxides of carbon, oxides of nitrogen, ammonia

6. ACCIDENTAL RELEASE MEASURES

Evacuation Procedures and Safety: Wear appropriate protective gear for the situation. (See Personal Protection information in Section 8).

Cleanup and Disposal of Spill: Absorb with an inert absorbent. Sweep up, and place in an appropriate closed container for disposal and/or incineration, avoiding contact with spilled material. Clean up residual material by washing area with water. Collect washings for disposal.

Environmental and Regulatory Reporting: Do not flush to drain. Spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

7. HANDLING AND STORAGE

Maximum Storage Temperatures: Store at <40C (<104F)

Handling: Persons with a history of dermal or respiratory sensitization should not work with, or near, this material. Avoid breathing vapors. Avoid direct or prolonged contact with skin and eyes.



7. HANDLING AND STORAGE (continued)

Storage: Store in tightly-closed, original container. Store in an area that is cool, dry, dark and well-ventilated. Do not re-use container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Introductory Remarks: These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application.

Exposure Guidelines: The following limits apply to components of this material.

Chemical

None

Engineering Controls: General area dilution/exhaust ventilation.

Respiratory Protection: When respirators are required, select NIOSH/MSHA approved equipment based on actual or potential airborne concentrations and in accordance with regulatory standards and/or industrial recommendations. Self-contained or supplied-air respiratory equipment is recommended.

Eye/Face Protection: Safety glasses with side shields, goggles or face shield are recommended.

Skin Protection: Skin contact should be minimized through the use of chemical-resistant gloves and boots, and suitable protective clothing.

Work Practice Controls: The following general measures should be taken when working or handling this material: 1) Do not store, use, and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored. 2) Wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics, or using the toilet. 3) Wash exposed skin promptly to remove accidental splashes of contact with this material.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical properties here represent typical properties of this product. Contact the manufacturer for exact specifications.

Physical Appearance: Pale yellow liquid

Odor: Ammonia-like odor

pH: 12 (@ 10% aq, 68F (20C))

Specific Gravity: 0.981

Water Solubility: Soluble

Melting Point Range: -31F (-35C)

Boiling Point Range: 531F (277C)

Freezing Point Range: Not determined

Vapor Pressure: <0.01 mm Hg at 68F (20C)

Vapor Density: 5.04 (air = 1)

Viscosity: 30 mPas (@ 68F, 20C)



10. STABILITY AND REACTIVITY

Chemical Stability: This material is stable under normal handling and storage conditions described in Section 7.

Conditions to be Avoided: Heat, open flame, sparks.

Materials/Chemicals to be Avoided: Strong oxidizing agents, acids, halogenated organic compounds, aldehydes, carbon disulfide, vinyl acetate, copper and its alloys, nickel and cobalt.

Hazardous Decomposition Products: Oxides of carbon, oxides of nitrogen, ammonia.

Hazardous Polymerization: Not applicable

11. TOXICOLOGICAL INFORMATION

Acute Eye Irritation: Severely irritating, rabbit.

Acute Skin Irritation: Severely irritating, rabbit. Positive sensitization (guinea pig).

Acute Dermal Toxicity: LD₅₀ = 805 mg/kg, rabbit.

Acute Respiratory Irritation: No data available

Acute Inhalation Toxicity: No data available. However, this material, like many corrosive substances, when present in an aerosol form, may present a risk of pulmonary edema, which may be fatal.

Acute Oral Toxicity: LD₅₀ = 2500 mg/kg, rat.

Chronic Toxicity: This product does not contain any substances that are considered by OSHA, NTP, IARC or ACGIH to be "probable" or "suspected" human carcinogens. When TETA was administered via drinking water, the NOEL = 276 mg/kg/day (male rat) and 352 mg/kg/day (female rat), 487 mg/kg/day (male mouse) and 551 mg/kg/day (female mouse). No effects on the reproductive organs were noted in these studies. Positive mutagenic activity in the Ames test, the Chinese hamster ovary (CHO) and the sister chromatid exchange (SCE) studies. When triethylenetetramine was administered to pregnant rats and mice, an increase in birth defects was observed in the exposed offspring at maternally-toxic doses in rats of >830 mg/kg/day. However, it is not clear if this effect was due to abnormally low tissue levels of copper in the mother. Reproductive studies in rabbits via dermal administration at maternally-toxic doses of up to 125 mg/kg/day did not produce statistically-significant levels of developmental toxicity. When triethylenetetramine, at a concentration of 35%, was administered to the skin of male mice for their lifetime to determine the carcinogenic potential of the material, no treatment-related tumors were reported. No additional test data found for product.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information: LC50 = 570 mg/L (guppy). 48hr EC50 = 31.1 mg/L, NOEC = 18 mg/L (daphnia) 72hr IC50 = 20 mg/L, NOEC <2.5 mg/L (algae).

Chemical Fate Information: Not readily biodegradable. 20% removal in SCAS test. Activated sludge respiration inhibition test EC50 = 800 mg/L. Nitrifying bacteria respiration inhibition test EC50 = 15.7 mg/L EC50 = 137 mg/L (*Pseudomonas putida*)



13. DISPOSAL CONSIDERATIONS

Waste disposal Method: Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate. Please be advised that state and local requirements for waste disposal may be more restrictive or otherwise different from Federal laws and regulations. Consult state and local regulations regarding the proper disposal of this material.

Container Handling and Disposal: Rinse containers before disposal. Do not allow rinsate to enter the water systems. **EPA Hazardous Waste = YES EPA RCRA Hazardous Waste Codes:** "C" = Corrosive

14. TRANSPORTATION INFORMATION

Note: The listed transportation classification does not address regulatory variations due to changes in package size, mode of shipment or other regulatory descriptors.

US Department of Transportation:

Shipping name: Triethylenetetramine

Hazard Class: 8

ID#: UN2259

Packing Group: II

Labels: Corrosive

Emergency Guide#: 153

15. REGULATORY INFORMATION

Inventory Status:

US (TSCA): Yes

Canada (DSL): Yes

Europe (EINECS/ELINCS): Yes

Australia (AICS): Yes

Japan (MITI): Yes

Korea (KECL): Yes

Philippines (PICCS): Yes

Where: Yes = all ingredients are listed on the inventory, Exempt = All ingredients are either on the inventory or exempt from the requirements of listing, No = Not determined, or one or more ingredients are not on the inventory and are not exempt from listing.

SARA Title III Hazard Classes:

Fire Hazard: No

Reactive Hazard: No

Release of Pressure: No

Acute Health Hazard: Yes

Chronic Health Hazard: Yes

SARA Extremely Hazardous Substances/CERCLA Hazardous Substances: None

California Proposition 65: This product does not contain any components that are regulated under Proposition 65.



16. OTHER INFORMATION

National Fire Protection Association (“NFPA”) Hazard Ratings:

Health: 3 (Severe)

Flammability: 1 (Slight)

Instability: 0 (Minimal)

National Paint and Coatings Hazardous Materials Identification System (“HMIS”) Hazard Ratings:

Health: 3 (Severe)

Flammability: 1 (Slight)

Physical Hazard: 0 (Minimal)

Reason for Revision(s): New MSDS

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END OF MATERIAL SAFETY DATA SHEET