

SAFETY DATA SHEET



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TRIETHYLAMINE

SDS No. M0199

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Triethylamine

Synonyms: Diethylaminoethane; N,N-Diethylethanamine; TEN

Recommended Use: This product is recommended for laboratory and manufacturing use only. It is not recommended for drug, food or household use.

2. HAZARDS IDENTIFICATION



Classification:

Flammable Liquids: GHS Category 2

Acute Toxicity, Oral: GHS Category 4

Acute Toxicity, Inhalation: GHS Category 3

Acute Toxicity, Dermal: GHS Category 3

Skin Corrosion: GHS Category 1A

Serious Eye Damage: GHS Category 1

Specific Target organ Toxicity, Single Dose: GHS Category 3, respiratory system

Acute Aquatic Toxicity: GHS Category 2

Label Elements

Signal Word: DANGER!

Hazard Statements:

H225 – Highly flammable liquid and vapor.

H302 – Harmful if swallowed.

H311 – Toxic in contact with skin.

H314 – Causes severe skin burns and eye damage.

H331 – Toxic if inhaled.

H335 – May cause respiratory irritation.

H401 – Toxic to aquatic life.

Precautionary Statements:

P210 – Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

P243 – Take precautionary measures against static discharge.

Clear focus. Consistent results. Complete confidence.

P271 – Use only outdoors or in a well-ventilated area.

P273 – Avoid release to the environment.

P280 – Wear protective gloves/protective clothing/eye protection/face protection.

P284 – Wear respiratory protection.

P301+P310 – If SWALLOWED: Immediately call or POISON CENTER or a doctor/physician.

P303+P361+P353 – IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower

P304+P340+P310 – IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.

P305+P351+P338+P310 – 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/doctor.

P403+P233 – Store in a well-ventilated place. Keep container tightly closed.

P501 – Dispose of contents/ container to an approved waste disposal plant.

Emergency Overview

Causes burns by all exposure routes. Harmful if swallowed, inhaled, or absorbed through the skin. May cause lung damage. Highly flammable liquid and vapor. Vapor may cause flash fire. Target Organs: Lungs, cardiovascular system, Eyes, skin, mucous membranes.

HMIS Rating:

Health – 3* Flammability – 3 Physical Hazard – 0 PPE – User supplied

NOTE: HMIS ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. These ratings are based on the inherent properties of this chemical under expected conditions of normal use and are not intended to be used in emergency situations. PPE is determined by the user based on their needs and conditions.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No</u>	<u>Percent</u>	<u>Hazardous</u>
Triethylamine	121-44-8	>99%	Yes

4. FIRST-AID MEASURES

Inhalation: If inhaled, remove to fresh air. If breathing is labored or with coughing, give 100% supplemental oxygen. If not breathing, begin artificial respiration. Get medical aid.

Ingestion: Get medical aid. Do not induce vomiting unless directed by medical personnel. If vomiting begins naturally, have victim lean forward. If conscious, give a cupful of water. Never give anything by mouth to an unconscious person. If not breathing, begin artificial respiration.

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover irritated skin with an emollient or anti-bacterial cream. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Notes to Physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Flammability: Highly flammable liquid and vapor (GHS Category 2)

Auto-ignition Temperature: 215° C (419° F)

Flash Point: -11° C (12° F)

Flammable Limits: Lower Limit – 1.2 vol %, Upper Limit – 8.0 vol %

Products of Combustion: Will decompose into highly toxic and irritating gases (nitrogen oxides, carbon monoxide, carbon dioxide, amines) under fire conditions.

Specific Fire Hazards: As in any fire, always wear self-contained breathing apparatus in pressure-demand (MSA/NIOSH approved or equivalent), and full protective gear. Use water spray to keep fire exposed containers cool. Approach fire from

upwind to avoid hazardous vapors and toxic decomposition products. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas.

Specific Explosion Hazards: None

Fire Fighting Media: Use water spray, dry chemical, or "alcohol resistant" foam. Do not use carbon dioxide because carbon dioxide reacts with amines to form thermally unstable carbamate salts.

National Fire Protective Association: Health - 3, Flammability - 3, Reactivity - 0

NOTE: NFPA ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. They are for use by emergency personnel to address the hazards that are presented by short term, acute exposure to this product under fire, spill, or similar emergencies. Ratings involve data and interpretations that may vary from company to company.

6. ACCIDENTAL RELEASE MEASURES

Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Provide ventilation to the affected area and remove all ignition sources. Avoid run-off into storm sewers and ditches that lead to waterways. Approach the spill from upwind and pick up absorbed material and place it in a suitable container. Use only non-sparking tools and equipment. A vapor suppressing foam may be used. Use water spray to cool and disperse vapors and protect personnel. Always use proper personal protective equipment as described in section 8.

7. HANDLING AND STORAGE

Precautions: Always use proper personal protective equipment as described in section 8. Wash thoroughly after handling. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Empty containers contain product residue (liquid and vapor) and can be dangerous. Keep container tightly closed and away from heat, spark, and flame. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks, or open flames. Use with adequate ventilation. Avoid breathing vapor.

Storage: Keep in a flammables area away from all sources of ignition and oxidizing materials. Keep in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from strong acids and organic halogens.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or using the material should be equipped with eyewash station and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal Protection: Wear protective chemical goggles or appropriate eye protection. Use appropriate chemical protective gloves and clothing to prevent skin exposure. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Exposure Limits:

- ACGIH – 1 ppm TWA; 3 ppm STEL; Skin – potential significant contribution to overall exposure by cutaneous route
- NIOSH – 200 ppm IDLH
- OSHA Final PELs – 25 ppm TWA; 100 mg/m³ TWA
- OSHA Vacated PELs – 10 ppm TWA; 40 mg/m³ TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Clear, colorless liquid.

Odor: Strong fishy, ammonia-like odor

Molecular Formula: (C₂H₅)₃N

Molecular Weight: 101.19

Auto-ignition Temperature: 215° C (419° F)

Flash Point: -11° C (12° F)

Flammable Limits: Lower Limit – 1.2 vol %, Upper Limit – 8.0 vol %

pH: 12.4 (10% aqueous solution)
Boiling Point: 89° C @ 760 mm Hg
Freezing/Melting Point: -115° C
Decomposition Temperature: Not available
Specific Gravity: 0.73 g/cm³ @ 20°C
Evaporation Rate: 5.6 (n-Butyl acetate = 1)
Vapor Density (Air=1): 3.5
Vapor Pressure: 57.1 mm Hg @ 25° C
Viscosity: Not available.
Solubility: 73.7 g/L

10. STABILITY AND REACTIVITY

Stability: Stable under normal temperatures and pressures. Oxidizes when exposed to air. Amines absorb carbon dioxide from the air to form carbamate salts.

Conditions to Avoid: Ignition sources, prolonged exposure to air, and confined spaces.

Incompatibility with Various Substances: Strong oxidizing agents.

Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, carbon, dioxide, amines.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Acute Exposure Hazards:

INHALATION HAZARD: Harmful if inhaled. Causes chemical burns to the respiratory tract. Effects of inhalation may be delayed. Vapors may cause lung injury. May cause central nervous system effects. Extreme exposures could result in a build-up of fluid in the lungs (pulmonary edema) that might be fatal in severe cases.

INGESTION HAZARD: Harmful if swallowed. Causes gastrointestinal tract burns.

SKIN CONTACT HAZARD: Harmful if absorbed through the skin. Causes skin burns. The severity of injury depends on the concentration of the solution and the duration of exposure.

EYE CONTACT HAZARD: Causes eye burns. Lachrymator (substance which increases the flow of tears). Low vapor concentrations may cause a temporary visual disturbance known as 'blue haze' or 'halo vision.'

Chronic Exposure Hazards: Prolonged inhalation may cause respiratory tract inflammation and lung damage. Prolonged or repeated skin contact may cause defatting and dermatitis.

Animal Toxicity:

Inhalation, rat: LC50 = 7.1 gm/m³, 4 hr;

Oral, rat: LD50 = 730 mg/kg;

Skin, rabbit: LD50 = 580 mg/kg;

Carcinogenicity: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

Epidemiology: Ocular injuries consisting of corneal opacities with clouding and swelling have been reported in workers exposed to TEN. Exposure to TEN at 5 ppm for 8 hours can induce transient corneal edema which resolves within hours after termination of exposure.

Teratogenicity: Fetotoxicity occurred at triethylamine doses less than those associated with maternal intoxication when injected into pregnant rabbits. No studies concerning the potential developmental toxicity of TEN by relevant routes of exposure have been found.

Reproductive Effects: No effects on reproductive parameters could be detected when rats consumed up to 500 ppm TEN in drinking water for 3 generations.

Mutagenicity: No information found.

Neurotoxicity: No information found.

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Fish: Orange-red killifish: LC50 = 24 mg/l, 96 hr.

Invertebrate: Water flea: LC50 = 17 mg/l, 48 hr.

Algae: Green: NOEC = 1.1 mg/l, 72 hr.

Algae: Green: EC50 = 8 mg/l, 72 hr.

Bacteria: LC50 = 95 mg/l, 17 hr.

Environmental Fate: Readily biodegradable (80%). Does not bioaccumulate.

13. DISPOSAL CONSIDERATIONS

Material that cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing use or contamination of this product may change the waste management options. Waste generators must decide if discarded material is a hazardous waste. State and local disposal regulations may differ from federal disposal definitions found in 40 CFR 261.3. Dispose of container and unused contents in accordance with federal, state and local requirements. This material is listed as U404 under 40 CFR 261.33.

14. TRANSPORT INFORMATION

US DOT

Proper Shipping Name: Triethylamine

Hazard Class: 3 (8)

UN Number: UN1296

Packing Group: II

IMDG

Proper Shipping Name: Triethylamine

Hazard Class: 3(8)

UN Number: UN1296

Packing Group: II

IATA

Proper Shipping Name: Triethylamine

Hazard Class: 3(8)

UN Number: UN1296

Packing Group: II

15. REGULATORY INFORMATION

US Federal Regulations:

CERCLA Hazardous Substances: CAS# 121-44-8 – 5000 lb final RQ; 2270 kg final RQ

SARA Section 302: Does not have a TPQ

SARA Codes: CAS# 121-44-8– immediate, delayed, fire

Section 313: Triethylamine (CAS# 121-44-8) is subject to SARA Title III Section 313 and 40 CFR 373 reporting requirements.

Clean Air Act: CAS# 121-44-8 is listed as a hazardous air pollutant (HAP).

Clean Water Act: CAS# 121-44-8 is listed as a Hazardous Substance.

OSHA: Not considered highly hazardous by OSHA.

US State Regulations:

CAS# 121-44-8 is on the following state right-to-know lists: New Jersey, Pennsylvania, and Massachusetts.

California Prop 65: This product contains no chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Originally Prepared: 10/24/2006

Last Revised: 9/16/2019 – Updated pictograms, hazard statements, and precautionary statements in Section 2.

The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.

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