

# **MSDS – MATERIAL SAFETY DATA SHEET**

From: Ashonuj Chem Pvt. Ltd.

Fact. Tel: +91-22-27781956

43, Princess Street, 3 Devkaran Mansion, Off Tel: +91-22-22084293

1<sup>st</sup> Floor, Mumbai – 400 002. INDIA.

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## **TRIETHYLAMINE**

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### **1. Product Identification**

**Synonyms:** Diethylaminoethane; N,N-diethylethanamine; TEA

**CAS No.:** 121-44-8

**Molecular Weight:** 101

**Chemical Formula:** (CH<sub>3</sub>CH<sub>2</sub>)<sub>3</sub>N

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### **2. Composition/Information on Ingredients**

Ingredient	CAS No	Percent	Hazardous
Triethylamine	121-44-8	100%	Yes

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### **3. Hazards Identification**

#### **Emergency Overview**

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**DANGER! EXTREMELY FLAMMABLE LIQUID AND VAPOR. HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CORROSIVE. CAUSES BURNS TO SKIN, EYES, AND RESPIRATORY TRACT. AFFECTS THE CARDIOVASCULAR SYSTEM, LIVER, AND KIDNEYS.**

**SAFETY DATA** Ratings (Provided here for your convenience)

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Health Rating: 3 - Severe (Poison)

Flammability Rating: 3 - Severe (Flammable)

Reactivity Rating: 1 - Slight

Contact Rating: 4 - Extreme (Corrosive)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD;  
PROPER GLOVES; CLASS B EXTINGUISHER

Storage Color Code: Red (Flammable)

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### **Potential Health Effects**

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#### **Inhalation:**

Corrosive. Toxic by inhalation. Vapors cause irritation to the respiratory tract; symptoms may include sneezing, coughing, nausea, difficulty in breathing, and pulmonary edema.

#### **Ingestion:**

Corrosive. Toxic! May cause burns of the mouth, throat, and stomach with severe abdominal pain and collapse. Aspiration into the lungs may occur during swallowing or vomiting, resulting in lung damage.

#### **Skin Contact:**

Corrosive. Contact can cause redness, pain, and skin burns. Can be absorbed through the skin causing systemic poisoning.

#### **Eye Contact:**

Corrosive. Liquid contact will produce severe eye injury. Vapors are irritating, causing redness, pain, blurred vision, lacrimation, conjunctivitis, and corneal edema. Corneal injury may be severe and extensive, and if not treated promptly, could result in permanent impairment of vision.

#### **Chronic Exposure:**

May cause secondary burns to skin from long exposure. Animal studies have shown target organ effects on heart, liver and kidneys.

#### **Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin disorders, eye problems, impaired liver, kidney, respiratory or cardiovascular function may be more susceptible to the effects of this substance.

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## **4. First Aid Measures**

#### **Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician immediately.

#### **Ingestion:**

DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician immediately.

#### **Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician, immediately. Wash clothing before reuse.

**Eye Contact:**

Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately.

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## 5. Fire Fighting Measures

**Fire:**

Flash point: -9C (16F) CC

Autoignition temperature: 249C (480F)

Flammable limits in air % by volume: lel: 1.2; uel: 8.0

Extremely Flammable.

**Explosion:**

Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Vapors can flow along surfaces to distant ignition source and flash back. Closed containers exposed to heat may explode. Contact with strong oxidizers may cause fire. Sensitive to static discharge.

**Fire Extinguishing Media:**

Water spray, dry chemical, alcohol foam, or carbon dioxide. Use water to cool fire-exposed containers, to dilute spills, to flush spills, and to disperse vapors.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. This highly flammable liquid must be kept from sparks, open flame, hot surfaces, and all sources of heat and ignition. Fight fire from protected location

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## 6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! Sprinkle over small spills and residues with sodium bisulfate to neutralize. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities.

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## 7. Handling and Storage

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to

avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Protect from direct sunlight. Do not add nitrites or other nitrosating agents; a nitrosamine, which may cause cancer, may be formed. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

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## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL):

25 ppm(100 mg/m<sup>3</sup>) (TWA)

-ACGIH Threshold Limit Value (TLV):

1 ppm (TWA)skin, 3 ppm (STEL) skin

A4, Not classifiable as a human carcinogen.

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece respirator with organic vapor cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

### **Eye Protection:**

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

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## 9. Physical and Chemical Properties

### **Appearance:**

Clear, colorless liquid.

### **Odor:**

Strong ammonia-like odor.

**Solubility:**

5.5 g./100 g. water at 20C.

**Specific Gravity:**

0.73 @ 25/40C.

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

100

**Boiling Point:**

90C (194F)

**Melting Point:**

-115C (-175F)

**Vapor Density (Air=1):**

3.5

**Vapor Pressure (mm Hg):**

57.1 @ 25C (77F)

**Evaporation Rate (BuAc=1):**

5.60

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## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Strongly alkaline; will undergo strong exothermic reaction with acids to form amine salts.

**Hazardous Decomposition Products:**

Burning may produce carbon monoxide, carbon dioxide, nitrogen oxides.

**Hazardous Polymerization:**

Will not occur. May catalyze polymerization of epoxides or aldehydes (especially acrolein).

**Incompatibilities:**

Acids, oxidizers, chlorine, hypochlorite, halogenated compounds and nitrogen tetroxide. N-nitrosamines, many of which are known to be potent carcinogens, may be formed when this product comes in contact with nitrous acid, nitrates or atmospheres with high nitrous oxide concentrations.

**Conditions to Avoid:**

Heat, flame, sources of ignition, light and incompatibles. Incompatibles.

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## 11. Toxicological Information

Oral rat LD50: 460 mg/kg; skin rabbit LD50: 570 ul/kg; inhalation mouse LC50: 6 gm/m<sup>3</sup>; eye irritation, rabbit, standard Draize: 250 mg open, severe; investigated as a mutagen.

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Triethylamine (121-44-8)	No	No	None

## 12. Ecological Information

### Environmental Fate:

When released into the soil, this material may leach into groundwater. When released into the soil, this material may evaporate to a moderate extent. When released into water, this material may evaporate to a moderate extent. This material has an estimated bioconcentration factor (BCF) of less than 100. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to be readily removed from the atmosphere by wet deposition.

### Environmental Toxicity:

Microtox Data: 17 Hr EC50 *Pseudomonas putida*: 95 mg/L; 2 Hr EC50 *Nitrosomonas*: 127 mg/L

Water Flea Data: 48 Hr EC50 *Daphnia magna*: 200 mg/L

Freshwater Fish Species Data: 96 Hr LC50 *Pimephales promelas*: 44 mg/L

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

### Domestic (Land, D.O.T.)

**Proper Shipping Name:** TRIETHYLAMINE

**Hazard Class:** 3, 8

**UN/NA:** UN1296

**Packing Group:** II

**Information reported for product/size:** 2.5L

**International (Water, I.M.O.)**

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**Proper Shipping Name:** TRIETHYLAMINE

**Hazard Class:** 3, 8

**UN/NA:** UN1296

**Packing Group:** II

**Information reported for product/size:** 2.5L

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## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Triethylamine (121-44-8)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----Canada--				
Ingredient	Korea	DSL	NDSL	Phil.
Triethylamine (121-44-8)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Triethylamine (121-44-8)	No	No	Yes	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	-RCRA-		-TSCA-
	CERCLA	261.33	8(d)
Triethylamine (121-44-8)	5000	U404	No

Chemical Weapons Convention: Yes    TSCA 12(b): No    CDTA: No  
 SARA 311/312: Acute: Yes    Chronic: Yes    Fire: Yes    Pressure: No  
 Reactivity: No    (Pure / Liquid)

**Australian Hazchem Code:** 3WE

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

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## 16. Other Information

**NFPA Ratings:** Health: 3 Flammability: 3 Reactivity: 0

**Label Hazard Warning:**

DANGER! EXTREMELY FLAMMABLE LIQUID AND VAPOR. HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CORROSIVE. CAUSES BURNS TO SKIN, EYES, AND RESPIRATORY TRACT. AFFECTS THE CARDIOVASCULAR SYSTEM, LIVER, AND KIDNEYS.

**Label Precautions:**

- Keep away from heat, sparks and flame.
- Do not get in eyes, on skin, or on clothing.
- Do not breathe vapor.
- Keep container closed.
- Use only with adequate ventilation.
- Wash thoroughly after handling.

**Label First Aid:**

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. In all cases call a physician immediately.

**Product Use:**

Laboratory Reagent.

**Revision Information:** No Changes.

**Disclaimer:**

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