

# TETRAETHYLENEPENTAMINE

TPP

CAUTIONARY RESPONSE INFORMATION			
Common Synonyms 1,11-Diamino-3,6,9-triazaundecane	Liquid	Yellow	Ammonia odor
May float or sink in water.			
Keep people away. Avoid contact with liquid. Notify local health and pollution control agencies. Protect water intakes.			
Fire	Combustible. POISONOUS GASES MAY BE PRODUCED IN FIRE. Wear goggles and self-contained breathing apparatus. Extinguish with dry chemicals, foam, or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.		
Exposure	CALL FOR MEDICAL AID.  LIQUID Will burn skin and eyes. If swallowed will cause nausea. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm. DO NOT INDUCE VOMITING.		
Water Pollution	Effect of low concentrations on aquatic life is unknown. May be fouling to shoreline. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.		

1. CORRECTIVE RESPONSE ACTIONS	2. CHEMICAL DESIGNATIONS
Dilute and disperse Stop discharge	2.1 CG Compatibility Group: 7; Aliphatic amine 2.2 Formula: $\text{H}_2\text{N}(\text{C}_2\text{H}_4\text{NH})_4\text{H}$ 2.3 IMO/UN Designation: Not listed 2.4 DOT ID No.: 2320 2.5 CAS Registry No.: 112-57-2 2.6 NAERG Guide No.: 153 2.7 Standard Industrial Trade Classification: 51452
3. HEALTH HAZARDS	
3.1 Personal Protective Equipment: Air-supplied respirator; rubber gloves; complete eye protection; impervious apron	
3.2 Symptoms Following Exposure: Inhalation may cause nausea and slight irritation; compound is a sensitizer, and prolonged contact may cause asthma. Ingestion can cause burns of mouth, esophagus, and possibly stomach. Contact with eyes or skin may cause burns. Repeated skin contact may cause dermatitis.	
3.3 Treatment of Exposure: INHALATION: remove victim to fresh air; give oxygen if breathing is difficult; treat allergic manifestations by usual methods. INGESTION: do NOT induce vomiting; give large quantities of water; give at least one ounce of vinegar in an equal amount of water; get medical attention. EYES: immediately flush with plenty of water; get medical care. SKIN: flush with plenty of water.	
3.4 TLV-TWA: Not listed. 3.5 TLV-STEL: Not listed. 3.6 TLV-Ceiling: Not listed.	
3.7 Toxicity by Ingestion: Grade 2; oral LD <sub>50</sub> = 3,990 mg/kg (rat)	
3.8 Toxicity by Inhalation: Currently not available.	
3.9 Chronic Toxicity: Currently not available	
3.10 Vapor (Gas) Irritant Characteristics: Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.	
3.11 Liquid or Solid Characteristics: Causes smarting of the skin and first-degree burns on short exposure; may cause second-degree burns on long exposure.	
3.12 Odor Threshold: Currently not available	
3.13 IDLH Value: Not listed.	
3.14 OSHA PEL-TWA: Not listed.	
3.15 OSHA PEL-STEL: Not listed.	
3.16 OSHA PEL-Ceiling: Not listed.	
3.17 EPA AERGL: Not listed	

4. FIRE HAZARDS	7. SHIPPING INFORMATION								
4.1 Flash Point: 325°F O.C. 4.2 Flammable Limits in Air: 0.8%-4.6% 4.3 Fire Extinguishing Agents: Alcohol foam, dry chemical, or carbon dioxide 4.4 Fire Extinguishing Agents Not to Be Used: Water or foam may cause frothing.	7.1 Grades of Purity: Commercial 7.2 Storage Temperature: Ambient 7.3 Inert Atmosphere: No requirement 7.4 Venting: Open (flame arrester) 7.5 IMO Pollution Category: D 7.6 Ship Type: 3 7.7 Barge Hull Type: 3								
4.5 Special Hazards of Combustion Products: Ammonia and toxic oxides of nitrogen may form in fires.	8. HAZARD CLASSIFICATIONS								
4.6 Behavior in Fire: Currently not available 4.7 Auto Ignition Temperature: 610°F 4.8 Electrical Hazards: Currently not available 4.9 Burning Rate: Currently not available 4.10 Adiabatic Flame Temperature: Currently not available 4.11 Stoichiometric Air to Fuel Ratio: 89.3 (calc.) 4.12 Flame Temperature: Currently not available 4.13 Combustion Molar Ratio (Reactant to Product): 24.5 (calc.) 4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed	8.1 49 CFR Category: Corrosive material 8.2 49 CFR Class: 8 8.3 49 CFR Package Group: III 8.4 Marine Pollutant: No 8.5 NFPA Hazard Classification: <table><tr><td>Category</td><td>Classification</td></tr><tr><td>Health Hazard (Blue).....</td><td>2</td></tr><tr><td>Flammability (Red).....</td><td>1</td></tr><tr><td>Instability (Yellow).....</td><td>0</td></tr></table>	Category	Classification	Health Hazard (Blue).....	2	Flammability (Red).....	1	Instability (Yellow).....	0
Category	Classification								
Health Hazard (Blue).....	2								
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5. CHEMICAL REACTIVITY	8.6 EPA Reportable Quantities: Not listed. 8.7 EPA Pollution Category: Not listed. 8.8 RCRA Waste Number: Not listed 8.9 EPA FWCNA List: Not listed								
5.1 Reactivity with Water: No reaction 5.2 Reactivity with Common Materials: May attack some forms of plastics 5.3 Stability During Transport: Stable 5.4 Neutralizing Agents for Acids and Caustics: Not pertinent 5.5 Polymerization: Not pertinent 5.6 Inhibitor of Polymerization: Not pertinent	9. PHYSICAL & CHEMICAL PROPERTIES								
6. WATER POLLUTION	9.1 Physical State at 15°C and 1 atm: Liquid 9.2 Molecular Weight: 189 9.3 Boiling Point at 1 atm: 644°F = 340°C = 613°K 9.4 Freezing Point: -22°F = -30°C = 243°K 9.5 Critical Temperature: Not pertinent 9.6 Critical Pressure: Not pertinent 9.7 Specific Gravity: 0.998 at 20°C (liquid) 9.8 Liquid Surface Tension: Currently not available 9.9 Liquid Water Interfacial Tension: Not pertinent 9.10 Vapor (Gas) Specific Gravity: Not pertinent 9.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent 9.12 Latent Heat of Vaporization: Currently not available 9.13 Heat of Combustion: Currently not available 9.14 Heat of Decomposition: Not pertinent 9.15 Heat of Solution: Currently not available 9.16 Heat of Polymerization: Not pertinent 9.17 Heat of Fusion: Currently not available 9.18 Limiting Value: Currently not available 9.19 Reid Vapor Pressure: Low								

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
68	62.300		NOT PERTINENT		NOT PERTINENT		NOT PERTINENT

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	MISCELLANEOUS		NOT PERTINENT		NOT PERTINENT		NOT PERTINENT