

# TRIETHYLAMINE

TEN

CAUTIONARY RESPONSE INFORMATION			
Common Synonyms TEN	Watery liquid	Colorless	Fishy odor  Floats on water. Flammable, irritating vapor is produced.
<p>Keep people away. Avoid contact with liquid and vapor. Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves). Shut off ignition sources and call fire department. Stay upwind and use water spray to "knock down" vapor. Notify local health and pollution control agencies. Protect water intakes.</p>			
<p><b>Fire</b> FLAMMABLE. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves). Extinguish with dry chemical, alcohol foam, or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.</p>			
<p><b>Exposure</b> CALL FOR MEDICAL AID.  VAPOR Irritating to eyes, nose and throat. If inhaled, will cause coughing, difficult breathing, or loss of consciousness. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.</p>		<p>LIQUID Will burn skin and eyes. Harmful if swallowed. 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 and have victim induce vomiting. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.</p>	
<p><b>Water Pollution</b> HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. Fouling to shoreline. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.</p>			

1. CORRECTIVE RESPONSE ACTIONS	2. CHEMICAL DESIGNATIONS
Dilute and disperse Stop discharge	2.1 CG Compatibility Group: 7; Aliphatic amine 2.2 Formula: $(C_2H_5)_3N$ 2.3 IMO/UN Designation: 3.2/1296 2.4 DOT ID No.: 1296 2.5 CAS Registry No.: 121-44-8 2.6 NAERG Guide No.: 132 2.7 Standard Industrial Trade Classification: 51451
<b>3. HEALTH HAZARDS</b>	
3.1 Personal Protective Equipment: Air-supplied mask; goggles or face shield; rubber gloves. 3.2 Symptoms Following Exposure: Vapors irritate nose, throat, and lungs, causing coughing, choking, and difficult breathing. Contact with eyes causes severe burns. Clothing wet with chemical causes skin burns. 3.3 Treatment of Exposure: INHALATION: remove victim to fresh air; give artificial respiration if needed; call a doctor. INGESTION: induce vomiting if patient is conscious. EYES: flush with water for at least 30 min.; call a doctor. SKIN: flush with water for at least 30 min. 3.4 TLV-TWA: 1 ppm (skin) 3.5 TLV-STEL: Not listed. 3.6 TLV-Ceiling: 3 ppm (skin) 3.7 Toxicity by Ingestion: Grade 3; LD <sub>50</sub> = 50 to 500 mg/kg (rat-LD <sub>50</sub> = 460 mg/kg) 3.8 Toxicity by Inhalation: Currently not available. 3.9 Chronic Toxicity: Currently not available. 3.10 Vapor (Gas) Irritant Characteristics: Vapors cause moderate irritation, such that personnel will find high concentrations unpleasant. The effect is temporary. 3.11 Liquid or Solid Characteristics: Causes smarting of the skin and first-degree burns on short exposure; may cause secondary burns on long exposure. 3.12 Odor Threshold: Currently not available. 3.13 IDLH Value: 200 ppm 3.14 OSHA PEL-TWA: 25 ppm 3.15 OSHA PEL-STEL: Not listed. 3.16 OSHA PEL-Ceiling: Not listed. 3.17 EPA A EGL: Not listed	

4. FIRE HAZARDS	7. SHIPPING INFORMATION								
4.1 Flash Point: 10°F O.C. 4.2 Flammable Limits in Air: 1.2%-8.0% 4.3 Fire Extinguishing Agents: Carbon dioxide or dry chemical for small fires; alcohol foam for large fires. 4.4 Fire Extinguishing Agents Not to Be Used: Water may be ineffective. 4.5 Special Hazards of Combustion Products: Not pertinent 4.6 Behavior in Fire: Not pertinent 4.7 Auto Ignition Temperature: 842°F 4.8 Electrical Hazards: Not pertinent 4.9 Burning Rate: 6.2 mm/min. 4.10 Adiabatic Flame Temperature: Currently not available 4.11 Stoichiometric Air to Fuel Ratio: 51.2 (calc.) 4.12 Flame Temperature: Currently not available 4.13 Combustion Molar Ratio (Reactant to Product): 14.5 (calc.) 4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed	7.1 Grades of Purity: 98.5+%								
<p><b>8. HAZARD CLASSIFICATIONS</b></p>									
<p>8.1 49 CFR Category: Flammable liquid 8.2 49 CFR Class: 3 8.3 49 CFR Package Group: II 8.4 Marine Pollutant: No 8.5 NFPA Hazard Classification:</p> <table border="0"> <tr> <td>Category</td> <td>Classification</td> </tr> <tr> <td>Health Hazard (Blue).....</td> <td>2</td> </tr> <tr> <td>Flammability (Red).....</td> <td>3</td> </tr> <tr> <td>Instability (Yellow).....</td> <td>0</td> </tr> </table>		Category	Classification	Health Hazard (Blue).....	2	Flammability (Red).....	3	Instability (Yellow).....	0
Category	Classification								
Health Hazard (Blue).....	2								
Flammability (Red).....	3								
Instability (Yellow).....	0								
<p>8.6 EPA Reportable Quantity: 5000 pounds 8.7 EPA Pollution Category: D 8.8 RCRA Waste Number: Not listed 8.9 EPA FWCNA List: Yes</p>									
9. PHYSICAL & CHEMICAL PROPERTIES									
<p>9.1 Physical State at 15° C and 1 atm: Liquid 9.2 Molecular Weight: 101.19 9.3 Boiling Point at 1 atm: 193.1°F = 89.5°C = 362.7°K 9.4 Freezing Point: -174.5°F = -114.7°C = 158.5°K 9.5 Critical Temperature: 503.6°F = 262°C = 535.2°K 9.6 Critical Pressure: 440 psia = 30 atm = 3.0 MN/m<sup>2</sup> 9.7 Specific Gravity: 0.729 at 20°C (liquid) 9.8 Liquid Surface Tension: 20.7 dynes/cm = 0.0207 N/m at 20°C 9.9 Liquid Water Interfacial Tension: Not pertinent 9.10 Vapor (Gas) Specific Gravity: 3.5 9.11 Ratio of Specific Heats of Vapor (Gas): 1.055 9.12 Latent Heat of Vaporization: 140 Btu/lb = 80 cal/g = 3.3 X 10<sup>5</sup> J/kg 9.13 Heat of Combustion: -17,040 Btu/lb = -9,466 cal/g = -396.3 X 10<sup>5</sup> J/kg 9.14 Heat of Decomposition: Not pertinent 9.15 Heat of Solution: -180 Btu/lb = -99 cal/g = -4.1 X 10<sup>5</sup> J/kg 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: 2.3 psia</p>									

## NOTES

# TRIETHYLAMINE

TEN

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
35	46.990	0	0.527		N		N
40	46.770	10	0.531		O		O
45	46.540	20	0.535		T		T
50	46.320	30	0.539		P		P
55	46.090	40	0.543		R		R
60	45.870	50	0.547		I		I
65	45.640	60	0.552		N		N
70	45.420	70	0.556		E		E
75	45.190	80	0.560		N		N
80	44.970	90	0.564		E		E
85	44.740	100	0.568		N		N
90	44.510	110	0.572		E		E
95	44.290	120	0.577		N		N
100	44.060	130	0.581		E		E
		140	0.585		N		N
		150	0.589		T		T
		160	0.593		P		P
		170	0.597		R		R
		180	0.602		I		I
		190	0.606		N		N
					E		E
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		E
					N		N
					T		T
					P		P
					R		R
					I		I
					N		N
					E		