

TRIETHANOLAMINE

TEA

CAUTIONARY RESPONSE INFORMATION				4. FIRE HAZARDS	7. SHIPPING INFORMATION
Common Synonyms Tris(Hydroxyethyl)amine Triethylamine Trihydroxytriethylamine	Oily liquid Sinks and mixes with water. Freezing point is 71°F.	Colorless	Mild ammonia odor	<p>4.1 Flash Point: 375°F O.C. 355°F C.C.</p> <p>4.2 Flammable Limits in Air: Currently not available</p> <p>4.3 Fire Extinguishing Agents: Alcohol foam, dry chemical, or carbon dioxide</p> <p>4.4 Fire Extinguishing Agents Not to Be Used: Water or foam may cause frothing.</p> <p>4.5 Special Hazards of Combustion Products: Poisonous gases, such as NO_x, may be produced</p> <p>4.6 Behavior in Fire: Not pertinent</p> <p>4.7 Auto Ignition Temperature: Currently not available</p> <p>4.8 Electrical Hazards: Not pertinent</p> <p>4.9 Burning Rate: Currently not available</p> <p>4.10 Adiabatic Flame Temperature: Currently not available</p> <p>4.11 Stoichiometric Air to Fuel Ratio: 44.0 (calc.)</p> <p>4.12 Flame Temperature: Currently not available</p> <p>4.13 Combustion Molar Ratio (Reactant to Product): 14.5 (calc.)</p> <p>4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed</p>	<p>7.1 Grades of Purity: 85-99%</p> <p>7.2 Storage Temperature: Ambient</p> <p>7.3 Inert Atmosphere: No requirement</p> <p>7.4 Venting: Open</p> <p>7.5 IMO Pollution Category: D</p> <p>7.6 Ship Type: 3</p> <p>7.7 Barge Hull Type: 3</p>
Fire	Combustible. POISONOUS GASES MAY BE PRODUCED IN FIRE. Wear goggles and self-contained breathing apparatus. Extinguish with dry chemical, alcohol foam, or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.				
Exposure	CALL FOR MEDICAL AID. LIQUID Irritating to 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.				
Water Pollution	Effect of low concentrations on aquatic life is unknown. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.				
1. CORRECTIVE RESPONSE ACTIONS Dilute and disperse Stop discharge	2. CHEMICAL DESIGNATIONS 2.1 CG Compatibility Group: 8; Alkanolamine 2.2 Formula: (HOCH ₂ CH ₂) ₃ N 2.3 IMO/UN Designation: Not listed 2.4 DOT ID No.: Not listed 2.5 CAS Registry No.: 102-71-6 2.6 NAERG Guide No.: Not listed 2.7 Standard Industrial Trade Classification: 51451	<p>4. CHEMICAL REACTIVITY</p> <p>5.1 Reactivity with Water: No reaction</p> <p>5.2 Reactivity with Common Materials: No reaction</p> <p>5.3 Stability During Transport: Stable</p> <p>5.4 Neutralizing Agents for Acids and Caustics: Dilute with water</p> <p>5.5 Polymerization: Not pertinent</p> <p>5.6 Inhibitor of Polymerization: Not pertinent</p> <p>6. WATER POLLUTION</p> <p>6.1 Aquatic Toxicity: >100 ppm/48 hr/shrimp/LC₅₀/salt water</p> <p>6.2 Waterfowl Toxicity: Currently not available</p> <p>6.3 Biological Oxygen Demand (BOD): 1%, 5 days: 0%; 5 days: 6.2% (theor.), 20 days</p> <p>6.4 Food Chain Concentration Potential: None</p> <p>6.5 GESAMP Hazard Profile: Bioaccumulation: 0 Damage to living resources: 1 Human Oral hazard: 0 Human Contact hazard: I Reduction of amenities: 0</p>			
<p>3. HEALTH HAZARDS</p> <p>3.1 Personal Protective Equipment: Goggles or face shield; rubber gloves and boots.</p> <p>3.2 Symptoms Following Exposure: Liquid may irritate eyes and skin.</p> <p>3.3 Treatment of Exposure: EYES: flush with water for at least 15 min.; call a doctor. SKIN: wipe off, wash with soap and water.</p> <p>3.4 TLV-TWA: 5 mg/m³</p> <p>3.5 TLV-STEL: Not listed.</p> <p>3.6 TLV-Ceiling: Not listed.</p> <p>3.7 Toxicity by Ingestion: Grade 2; LD₅₀ = 0.5 to 5 g/kg (guinea pig).</p> <p>3.8 Toxicity by Inhalation: Currently not available.</p> <p>3.9 Chronic Toxicity: Currently not available</p> <p>3.10 Vapor (Gas) Irritant Characteristics: Non-volatile</p> <p>3.11 Liquid or Solid Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.</p> <p>3.12 Odor Threshold: Currently not available</p> <p>3.13IDLH Value: Not listed.</p> <p>3.14 OSHA PEL-TWA: Not listed.</p> <p>3.15 OSHA PEL-STEL: Not listed.</p> <p>3.16 OSHA PEL-Ceiling: Not listed.</p> <p>3.17 EPA A EGL: Not listed</p>					<p>9. PHYSICAL & CHEMICAL PROPERTIES</p> <p>9.1 Physical State at 15° C and 1 atm: Liquid</p> <p>9.2 Molecular Weight: 149.19</p> <p>9.3 Boiling Point at 1 atm: Decomposes</p> <p>9.4 Freezing Point: 70.9°F = 21.6°C = 294.8°K</p> <p>9.5 Critical Temperature: Not pertinent</p> <p>9.6 Critical Pressure: Not pertinent</p> <p>9.7 Specific Gravity: 1.13 at 20°C (liquid)</p> <p>9.8 Liquid Surface Tension: Not pertinent</p> <p>9.9 Liquid Water Interfacial Tension: Not pertinent</p> <p>9.10 Vapor (Gas) Specific Gravity: Not pertinent</p> <p>9.11 Ratio of Specific Heats of Vapor (Gas): 1.036</p> <p>9.12 Latent Heat of Vaporization: 176 Btu/lb = 97.8 cal/g = 4.10 X 10⁵ J/kg</p> <p>9.13 Heat of Combustion: -11,050 Btu/lb = -6140 cal/g = -257 X 10⁵ J/kg</p> <p>9.14 Heat of Decomposition: Not pertinent</p> <p>9.15 Heat of Solution: (est.) -20 Btu/lb = -12 cal/g = -0.5 X 10⁵ J/kg</p> <p>9.16 Heat of Polymerization: Not pertinent</p> <p>9.17 Heat of Fusion: Currently not available</p> <p>9.18 Limiting Value: Currently not available</p> <p>9.19 Reid Vapor Pressure: Low</p>
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
72	70.400	72	0.489		N		N
74	70.330	74	0.490		O		O
76	70.259	76	0.491		T		T
78	70.190	78	0.492				
80	70.120	80	0.494		P		P
82	70.049	82	0.495		E		E
84	69.980	84	0.496		R		R
86	69.910	86	0.497		T		T
88	69.839				I		I
90	69.770				N		N
92	69.709				E		E
94	69.639				N		N
96	69.570				E		E
98	69.500				N		N
100	69.429				E		E
102	69.360				N		N
104	69.290				E		E

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
M	320	0.020	320	0.00035	0	0.352	
I	340	0.037	340	0.00063	25	0.362	
S	360	0.065	360	0.00110	50	0.372	
C	380	0.111	380	0.00184	75	0.382	
I	400	0.185	400	0.00300	100	0.392	
B	420	0.300	420	0.00474	125	0.402	
L	440	0.473	440	0.00731	150	0.412	
E	460	0.729	460	0.01101	175	0.421	
	480	1.098	480	0.01623	200	0.430	
	500	1.620	500	0.02346	225	0.439	
	520	2.347	520	0.03330	250	0.448	
	540	3.340	540	0.04644	275	0.457	
	560	4.677	560	0.06375	300	0.466	
	580	6.451	580	0.08623	325	0.474	
	600	8.770	600	0.11500	350	0.482	
	620	11.770	620	0.15150	375	0.490	
	640	15.590	640	0.19710	400	0.498	
	660	20.420	660	0.25350	425	0.506	
					450	0.514	
					475	0.521	
					500	0.528	
					525	0.535	
					550	0.542	
					575	0.549	
					600	0.556	