

# MONOETHANOLAMINE

MEA

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> 2-Aminoethanol beta-Aminoethyl alcohol Ethanolamine 2-Hydroxyethylamine	Oily liquid  Colorless  Slight ammonia odor	Sinks and mixes with water. Freezing point is 51°F.
<p>Avoid contact with liquid. Wear goggles and self-contained breathing apparatus. Call fire department. Notify local health and pollution control agencies.</p>		
<b>Fire</b>	<p>Combustible. Wear goggles and self-contained breathing apparatus. Extinguish with dry chemical, alcohol foam, or carbon dioxide. Cool exposed containers with water.</p>	
<b>Exposure</b>	<p>CALL FOR MEDICAL AID.  LIQUID OR SOLID 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.</p>	
<b>Water Pollution</b>	<p>Dangerous to aquatic life in high concentrations. 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

Dilute and disperse  
Stop discharge

### 2. CHEMICAL DESIGNATIONS

- 2.1 CG Compatibility Group: 8; Alkanolamine
- 2.2 Formula: HOCH<sub>2</sub>CH<sub>2</sub>NH<sub>2</sub>
- 2.3 IMO/UN Designation: Not listed
- 2.4 DOT ID No.: 2491
- 2.5 CAS Registry No.: 141-43-5
- 2.6 NAERG Guide No.: 153
- 2.7 Standard Industrial Trade Classification: 51451

### 3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Full face shield; goggles; eye wash facility.
- 3.2 **Symptoms Following Exposure:** Vapor irritates eyes and nose. Liquid causes local injury to mouth, throat, digestive tract, skin, and eyes.
- 3.3 **Treatment of Exposure:** INGESTION: induce vomiting by giving large volumes of warm salt water (2 tablespoons per glass); call a doctor. EYES: flush with water for at least 15 min.; call a doctor. SKIN: flush with water.
- 3.4 TLV-TWA: 3 ppm
- 3.5 TLV-STEL: 6 ppm
- 3.6 TLV-Ceiling: Not listed.
- 3.7 **Toxicity by Ingestion:** Grade 2; LD<sub>50</sub> = 0.5 to 5 g/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 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:** 30 ppm
- 3.14 **OSHA PEL-TWA:** 3 ppm
- 3.15 **OSHA PEL-STEL:** Not listed.
- 3.16 **OSHA PEL-Ceiling:** Not listed.
- 3.17 **EPA AEGL:** Not listed

### 4. FIRE HAZARDS

- 4.1 **Flash Point:** 200°F O.C. 185°F C.C.
- 4.2 **Flammable Limits in Air:** Currently not available
- 4.3 **Fire Extinguishing Agents:** Water spray, alcohol foam, dry chemical or carbon dioxide
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Not pertinent
- 4.5 **Special Hazards of Combustion Products:** Irritating vapors generated when heated.
- 4.6 **Behavior in Fire:** Not pertinent
- 4.7 **Auto Ignition Temperature:** Currently not available
- 4.8 **Electrical Hazards:** Not pertinent
- 4.9 **Burning Rate:** Currently not available
- 4.10 **Adiabatic Flame Temperature:** Currently not available
- 4.11 **Stoichiometric Air to Fuel Ratio:** 20.2 (calc.)
- 4.12 **Flame Temperature:** Currently not available
- 4.13 **Combustion Molar Ratio (Reactant to Product):** 6.5 (calc.)
- 4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

### 5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** No reaction
- 5.2 **Reactivity with Common Materials:** No reaction
- 5.3 **Stability During Transport:** Stable
- 5.4 **Neutralizing Agents for Acids and Caustics:** Flush with water
- 5.5 **Polymerization:** Not pertinent
- 5.6 **Inhibitor of Polymerization:** Not pertinent

### 6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:** 7100 ppm/48 hr/shrimp/LC<sub>50</sub>/salt water
- 6.2 **Waterfowl Toxicity:** Currently not available
- 6.3 **Biological Oxygen Demand (BOD):** 78%, 5 days; (theor.) 0%, 5 days; 64%, 20 days
- 6.4 **Food Chain Concentration Potential:** None
- 6.5 **GESAMP Hazard Profile:**  
Bioaccumulation: 0  
Damage to living resources: 1  
Human Oral hazard: 1  
Human Contact hazard: 0  
Reduction of amenities: 0

### 7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** NF: 85% (15% water); commercial: 99+%
- 7.2 **Storage Temperature:** Ambient
- 7.3 **Inert Atmosphere:** No requirement
- 7.4 **Venting:** Open
- 7.5 **IMO Pollution Category:** D
- 7.6 **Ship Type:** 3
- 7.7 **Barge Hull Type:** 3

### 8. HAZARD CLASSIFICATIONS

- 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:**  

Category	Classification
Health Hazard (Blue).....	2
Flammability (Red).....	2
Instability (Yellow).....	0
- 8.6 **EPA Reportable Quantity:** Not listed.
- 8.7 **EPA Pollution Category:** Not listed.
- 8.8 **RCRA Waste Number:** Not listed
- 8.9 **EPA FWPCA List:** Not listed

### 9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Liquid
- 9.2 **Molecular Weight:** 61.08
- 9.3 **Boiling Point at 1 atm:** 338°F = 170°C = 443°K
- 9.4 **Freezing Point:** 50.5°F = 10.3°C = 283.5°K
- 9.5 **Critical Temperature:** 645.8°F = 341°C = 614.2°K
- 9.6 **Critical Pressure:** 647 psia = 44 atm = 4.45 MN/m<sup>2</sup>
- 9.7 **Specific Gravity:** 1.016 at 20°C (liquid)
- 9.8 **Liquid Surface Tension:** Not pertinent
- 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:** 360 Btu/lb = 200 cal/g = 8.37 X 10<sup>5</sup> J/kg
- 9.13 **Heat of Combustion:** -10,710 Btu/lb = -5950 cal/g = -249 X 10<sup>5</sup> J/kg
- 9.14 **Heat of Decomposition:** Not pertinent
- 9.15 **Heat of Solution:** (est.) -17 Btu/lb = -10 cal/g = -0.4 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:** 0.01 psia

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
55	63.750	52	0.541		N		C
60	63.600	54	0.542		O		U
65	63.460	56	0.543		T		R
70	63.310	58	0.544				E
75	63.170	60	0.545		P		N
80	63.020	62	0.547		E		T
85	62.880	64	0.548		R		L
90	62.730	66	0.549		T		L
95	62.580	68	0.550		I		Y
100	62.440	70	0.551		N		
105	62.290	72	0.552		E		N
110	62.150	74	0.553		N		O
115	62.000	76	0.554		T		T
120	61.860	78	0.555				
125	61.710	80	0.557				A
130	61.570	82	0.558				V
135	61.420	84	0.559				A
140	61.270	86	0.560				I
145	61.130						L
150	60.980						A
155	60.840						B
160	60.690						L
165	60.550						A
170	60.400						B
175	60.250						L

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	60	0.004	60	0.00004		N
	I	70	0.006	70	0.00007		O
	S	80	0.010	80	0.00010		T
	C	90	0.015	90	0.00015		
	I	100	0.022	100	0.00022		P
	B	110	0.032	110	0.00032		E
	L	120	0.046	120	0.00045		R
	E	130	0.066	130	0.00064		T
		140	0.094	140	0.00089		I
		150	0.131	150	0.00122		N
		160	0.181	160	0.00166		E
		170	0.248	170	0.00224		T
		180	0.337	180	0.00300		I
		190	0.452	190	0.00396		N
		200	0.602	200	0.00520		E
		210	0.795	210	0.00676		T
		220	1.042	220	0.00872		
		230	1.354	230	0.01117		P
		240	1.746	240	0.01420		E
		250	2.235	250	0.01792		R
		260	2.842	260	0.02247		T
		270	3.591	270	0.02800		I
		280	4.508	280	0.03468		N
		290	5.625	290	0.04269		E
		300	6.977	300	0.05226		T