

# N,N-DIETHYLETHANOLAMINE

DAE

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b>		Liquid	Colorless	Amine
DEAE Diethylaminoethanol 2-N-Diethylaminoethanol 2-Hydroxytriethylamine		Floats and mixes with water.		
<p><b>Keep people away. AVOID CONTACT WITH LIQUID.</b>  <b>Avoid inhalation.</b>  <b>Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves).</b>  <b>Shut off ignition sources and call fire department.</b>  <b>Notify local health and pollution control agencies.</b></p>				
<b>Fire</b>	Combustible. Wear goggles, self-contained breathing apparatus and rubber overclothing (including gloves). Extinguish with water, dry chemical, carbon dioxide, or alcohol foam.			
<b>Exposure</b>	CALL FOR MEDICAL AID.  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.			
<b>Water Pollution</b>	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.			

### 1. CORRECTIVE RESPONSE ACTIONS

Dilute and disperse  
Stop discharge

### 2. CHEMICAL DESIGNATIONS

- 2.1 CG Compatibility Group: 8; Alkanolamine
- 2.2 Formula: (C<sub>2</sub>H<sub>5</sub>)<sub>2</sub>NC<sub>2</sub>H<sub>4</sub>OH
- 2.3 IMO/UN Designation: Not listed
- 2.4 DOT ID No.: 2686
- 2.5 CAS Registry No.: 100-27-8
- 2.6 NAERG Guide No.: 132
- 2.7 Standard Industrial Trade Classification: 51461

### 3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Rubber gloves, all purpose canister respirator, overalls, face shield or goggles.
- 3.2 **Symptoms Following Exposure:** INHALATION: Irritation of mucous membranes. EYES: Corrosive, causes intense pain. SKIN: Severe irritation. May cause allergic skin reaction. INGESTION: Gastrointestinal irritation.
- 3.3 **Treatment of Exposure:** Call a doctor. INHALATION: Remove from exposure. If breathing has stopped, give artificial respiration. EYES: Flush with copious amounts of water for at least 15 min. SKIN: Wash with soap and water. Remove contaminated clothing. INGESTION: Drink large amounts of water, milk, lemon juice or demulcents.
- 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; LD<sub>50</sub> = .5 to 5 g/kg
- 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 concentration. The effect is temporary.
- 3.11 **Liquid or Solid Characteristics:** Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
- 3.12 **Odor Threshold:** abs. perception limit in air = 0.011 ppm. 100% recognition in air = 0.04 ppm.
- 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 AEGL:** Not listed

### 4. FIRE HAZARDS

- 4.1 **Flash Point:** 135°F O.C. 125°F C.C.
- 4.2 **Flammable Limits in Air:** Currently not available
- 4.3 **Fire Extinguishing Agents:** Alcohol foam, CO<sub>2</sub>, dry chemical foam or water fog.
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Not listed
- 4.5 **Special Hazards of Combustion Products:** Toxic and irritating gases may be generated.
- 4.6 **Behavior in Fire:** Can react with oxidizing materials.
- 4.7 **Auto Ignition Temperature:** Currently not available
- 4.8 **Electrical Hazards:** Not listed
- 4.9 **Burning Rate:** Currently not available
- 4.10 **Adiabatic Flame Temperature:** Currently not available
- 4.11 **Stoichiometric Air to Fuel Ratio:** 46.4 (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. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** 99.5%
- 7.2 **Storage Temperature:** Currently not available
- 7.3 **Inert Atmosphere:** Currently not available
- 7.4 **Venting:** Currently not available
- 7.5 **IMO Pollution Category:** C
- 7.6 **Ship Type:** 3
- 7.7 **Barge Hull Type:** Currently not available

### 8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Flammable liquid
- 8.2 **49 CFR Class:** 3
- 8.3 **49 CFR Package Group:** III
- 8.4 **Marine Pollutant:** No
- 8.5 **NFPA Hazard Classification:**

Category	Classification
Health Hazard (Blue).....	3
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 FWPC List:** 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:** Dilute with water.
- 5.5 **Polymerization:** Not pertinent
- 5.6 **Inhibitor of Polymerization:** Not pertinent

### 9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Liquid
- 9.2 **Molecular Weight:** 117.19
- 9.3 **Boiling Point at 1 atm:** 315.5–327.2°F = 157.5–164°C = 430.7–437.2°K
- 9.4 **Freezing Point:** –36.4°F = –38°C = 235.2°K
- 9.5 **Critical Temperature:** 709.9°F = 376.6°C = 649.8°K
- 9.6 **Critical Pressure:** 457.3 psia = 31.11 atm = 3.15 MN/m<sup>2</sup>
- 9.7 **Specific Gravity:** 0.8921 at 25°C
- 9.8 **Liquid Surface Tension:** (est.) 34.3 dynes/cm = 0.0343 N/m at 20°C
- 9.9 **Liquid Water Interfacial Tension:** Not pertinent
- 9.10 **Vapor (Gas) Specific Gravity:** 4.03
- 9.11 **Ratio of Specific Heats of Vapor (Gas):** (est.) > 1
- 9.12 **Latent Heat of Vaporization:** 140.2 Btu/lb = 77.9 cal/g = 3.26 X 10<sup>5</sup> J/kg
- 9.13 **Heat of Combustion:** 964 Kcal/mole
- 9.14 **Heat of Decomposition:** Not pertinent
- 9.15 **Heat of Solution:** Not pertinent
- 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:** Currently not available

### 6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:** 80-120 ppm/24 hr/creek chub/critical range. (range below which all fish lived and above which all died).
- 6.2 **Waterfowl Toxicity:** Currently not available
- 6.3 **Biological Oxygen Demand (BOD):** Currently not available
- 6.4 **Food Chain Concentration Potential:** Currently not available
- 6.5 **GESAMP Hazard Profile:** Not listed

### 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	55.690	68	0.813		C		C
69	55.606				U		U
70	55.522				R		R
71	55.438				R		R
72	55.354				E		E
73	55.271				N		N
74	55.188				T		T
75	55.105				L		L
76	55.022				L		L
77	54.940				Y		Y
					N		N
					O		O
					T		T
					A		A
					V		V
					A		A
					I		I
					L		L
					A		A
					B		B
					L		L
					A		A
					B		B
					L		L
					L		L
					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	80	0.037	80	0.00110		C
	I	100	0.094	100	0.00172		U
	S	120	0.200	120	0.00268		R
	C	140	0.379	140	0.00417		R
	I	160	0.660	160	0.00650		E
	B	180	1.074	180	0.01013		N
	L	200	1.661	200	0.01579		T
	E	220	2.465	220	0.02460		L
		240	3.534	240	0.03834		Y
		260	4.922	260	0.05974		
		280	6.689	280	0.09310		N
		300	8.901	300	0.14508		O
		320	11.627	320	0.22609		T
							A
							V
							A
							I
							L
							A
							B
							L
							A
							B
							L
							E