

ETHYLAMINE

EAM

CAUTIONARY RESPONSE INFORMATION

Common Synonyms Aminoethane Monoethylamine		Liquid	Colorless	Strong ammonia-like odor
Mixes with water. Boiling point is 62°F. Flammable, irritating vapor is produced.				
<p>Keep people away. Avoid inhalation. Shut off ignition sources. Call fire department. Evacuate area in case of large discharge. Stay upwind. Use water spray to "knock down" vapor. Notify local health and pollution control agencies. Protect water intakes.</p>				
Fire	<p>FLAMMABLE. Irritating gases are produced when heated. Containers may explode in fire. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Extinguish with dry chemicals, alcohol foam, or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.</p>			
Exposure	<p>Call for medical aid.</p> <p>VAPOR Irritating to eyes, nose and throat. Harmful if inhaled. Move victim to fresh air. If breathing is difficult, give oxygen.</p> <p>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.</p>			
Water Pollution	<p>HARMFUL TO AQUATIC LIFE IN VERY LOW 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
Do not burn

2. CHEMICAL DESIGNATIONS

- 2.1 **CG Compatibility Group:** 7; Aliphatic amines
2.2 **Formula:** C₂H₅NH₂
2.3 **IMO/UN Designation:** 2/1036 (Gas) 2/2270 (50-70% Solution)
2.4 **DOT ID No.:** 1036 (Gas) 2270 (50-70% Solution)
2.5 **CAS Registry No.:** 75-04-7
2.6 **NAERG Guide No.:** 118 (gas); 132 (solution)
2.7 **Standard Industrial Trade Classification:** 51451

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Amine-type or ammonia-type mask; plastic gloves; face shield and goggles.
- 3.2 **Symptoms Following Exposure:** Inhalation causes irritation of respiratory tract and lungs; pulmonary edema may result. Liquid causes severe irritation and burns of eyes and skin, and can permanently injure eyes after 15 seconds' contact. Ingestion causes severe burns of mouth and stomach; can be fatal.
- 3.3 **Treatment of Exposure:** Get prompt medical attention for anyone overcome or injured by exposure to this compound. **INHALATION:** remove victim to fresh air, keep him warm, and administer oxygen until medical help arrives. **EYES:** wash for 15 min. with water; avoid pressure on eyelids. **SKIN:** wash with soap and water; do not use ointments for at least 24 hrs.; do not cover burned area with dry clothing; keep moist with physiological saline solution. **INGESTION:** if victim is conscious, give large amount of water, then induce vomiting.
- 3.4 **TLV-TWA:** 5 ppm
3.5 **TLV-STEL:** Not listed.
3.6 **TLV-Ceiling:** 15 ppm
3.7 **Toxicity by Ingestion:** Grade 3; oral LD₅₀ = 400 mg/kg (rat)
3.8 **Toxicity by Inhalation:** Currently not available.
3.9 **Chronic Toxicity:** None
3.10 **Vapor (Gas) Irritant Characteristics:** Vapors are moderately irritating such that personnel will not usually tolerate moderate or high concentrations.
3.11 **Liquid or Solid Characteristics:** Causes smarting of the skin and first-degree burns on short exposure and may cause second-degree burns on long exposure.
3.12 **Odor Threshold:** Currently not available
3.13 **IDLH Value:** 600 ppm
3.14 **OSHA PEL-TWA:** 10 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:** 0°F O.C.
4.2 **Flammable Limits in Air:** 3.5%-14%
4.3 **Fire Extinguishing Agents:** Dry chemical, alcohol foam, carbon dioxide
4.4 **Fire Extinguishing Agents Not to Be Used:** Water may be ineffective.
4.5 **Special Hazards of Combustion Products:** Irritating and toxic oxides of nitrogen may be formed.
4.6 **Behavior in Fire:** Vapor is heavier than air and may travel a considerable distance to a source of ignition and flash back. Containers may explode when heated.
4.7 **Auto Ignition Temperature:** 724°F
4.8 **Electrical Hazards:** Currently not available
4.9 **Burning Rate:** 5.0 mm/min.
4.10 **Adiabatic Flame Temperature:** Currently not available
4.11 **Stoichiometric Air to Fuel Ratio:** 22.6 (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:** Will strip and dissolve paint; dissolves most plastic materials; can cause swelling of rubber by absorption. The reactions are not hazardous.
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:** 40 ppm/24 hr/chub/TL₅₀/fresh water
6.2 **Waterfowl Toxicity:** Currently not available
6.3 **Biological Oxygen Demand (BOD):** Currently not available
6.4 **Food Chain Concentration Potential:** None
6.5 **GESAMP Hazard Profile:**
Bioaccumulation: 0
Damage to living resources: 2
Human Oral hazard: 2
Human Contact hazard: II
Reduction of amenities: XXX

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Anhydrous (98.5+%); 70-72% in water
7.2 **Storage Temperature:** Ambient
7.3 **Inert Atmosphere:** No requirement
7.4 **Venting:** Pressure-vacuum
7.5 **IMO Pollution Category:** (C)
7.6 **Ship Type:** 2
7.7 **Barge Hull Type:** Currently not available

8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Flammable liquid or Flammable gas
8.2 **49 CFR Class:** 3 or 2.1
8.3 **49 CFR Package Group:** II or not pertinent
8.4 **Marine Pollutant:** No
8.5 **NFPA Hazard Classification:**
- | Category | Classification |
|---------------------------|----------------|
| Health Hazard (Blue)..... | 3 |
| Flammability (Red)..... | 4 |
| Instability (Yellow)..... | 0 |
- 8.6 **EPA Reportable Quantity:** 100 pounds
8.7 **EPA Pollution Category:** B
8.8 **RCRA Waste Number:** Not listed
8.9 **EPA FWPCA List:** Yes

9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Liquid
9.2 **Molecular Weight:** 45.1
9.3 **Boiling Point at 1 atm:** 61.7°F = 16.5°C = 289.7°K
9.4 **Freezing Point:** -114°F = -81°C = 192°K
9.5 **Critical Temperature:** 361.4°F = 183°C = 456.2°K
9.6 **Critical Pressure:** 827 psia = 56.2 atm = 5.70 MN/m²
9.7 **Specific Gravity:** 0.687 at 15°C (liquid)
9.8 **Liquid Surface Tension:** 20.5 dynes/cm = 0.0205 N/m at 15°C
9.9 **Liquid Water Interfacial Tension:** Not pertinent
9.10 **Vapor (Gas) Specific Gravity:** 1.5
9.11 **Ratio of Specific Heats of Vapor (Gas):** 1.181
9.12 **Latent Heat of Vaporization:** 253 Btu/lb = 146 cal/g = 6.11 X 10⁵ J/kg
9.13 **Heat of Combustion:** -16,180 Btu/lb = -8,990 cal/g = -376 X 10⁶ J/kg
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:** 29.8 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
0	45.340	0	0.645	0	1.295	0	0.364
10	44.920	5	0.648	5	1.282	5	0.351
20	44.510	10	0.652	10	1.268	10	0.339
30	44.090	15	0.655	15	1.255	15	0.328
40	43.670	20	0.658	20	1.242	20	0.317
50	43.260	25	0.661	25	1.228	25	0.307
60	42.840	30	0.664	30	1.215	30	0.298
		35	0.667	35	1.201	35	0.289
		40	0.670	40	1.188	40	0.280
		45	0.673	45	1.174	45	0.272
		50	0.676	50	1.161	50	0.264
		55	0.679	55	1.148	55	0.257
		60	0.682	60	1.134	60	0.250

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	-20	0.080	-20	0.00076	0	0.385
	I	-15	0.116	-15	0.00109	25	0.397
	S	-10	0.166	-10	0.00156	50	0.409
	C	-5	0.238	-5	0.00220	75	0.420
	I	0	0.337	0	0.00308	100	0.432
	B	5	0.474	5	0.00429	125	0.443
	L	10	0.662	10	0.00592	150	0.455
	E	15	0.919	15	0.00813	175	0.466
		20	1.265	20	0.01108	200	0.478
		25	1.731	25	0.01501	225	0.490
		30	2.354	30	0.02020	250	0.501
		35	3.180	35	0.02701	275	0.513
		40	4.271	40	0.03592	300	0.524
		45	5.703	45	0.04748	325	0.536
		50	7.572	50	0.06242	350	0.547
		55	9.998	55	0.08161	375	0.559
		60	13.130	60	0.10620	400	0.571
		65	17.160	65	0.13740	425	0.582
		70	22.300	70	0.17690	450	0.594
		75	28.850	75	0.22670	475	0.605
		80	37.140	80	0.28910	500	0.617
		85	47.590	85	0.36710	525	0.629
						550	0.640
						575	0.652
						600	0.663