

N-AMINOETHYL PIPERAZINE

AEP

CAUTIONARY RESPONSE INFORMATION

Common Synonyms 1-(2-Aminoethyl) piperazine N-(2-Aminoethyl) piperazine 1-Piperazine ethanamine USAF DO-46		Liquid	Colorless to light colored
Avoid contact with liquid and vapors. Keep people away. Wear self-contained positive pressure breathing apparatus and full protective clothing. Stay upwind; keep out of low areas. Isolate and remove discharged material. Call Fire department. Notify local health and pollution control agencies. Protect water intakes.			
Fire	Combustible. Fire may produce irritating or poisonous gases. Flammable/poisonous gases may accumulate in tanks and hopper cars. May ignite combustibles (wood, paper, oil, etc.). Extinguish with dry chemical, CO ₂ , water spray or alcohol foam. Move container from fire area if you can do it without risk. Cool containers that are exposed to flames with water from the side until well after fire is out.		
Exposure	CALL FOR MEDICAL AID. VAPOR Irritating to eyes, nose, and throat. Move victim to fresh air. If breathing is stopped, give artificial respiration. If breathing is difficult, give oxygen. LIQUID Contact causes burns to skin and eyes. Remove and isolate contaminated clothing and shoes at the site. In case of contact with material, immediately flush skin or eyes with running water for at least 15 minutes. IF SWALLOWED, DO NOT INDUCE VOMITING. Keep victim quiet and maintain normal body temperature.		
Water Pollution	Effects of low concentrations on aquatic life are not known. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of local water intakes.		

1. CORRECTIVE RESPONSE ACTIONS

Stop discharge
 Contain
 Collection Systems: Skim

2. CHEMICAL DESIGNATIONS

- 2.1 **CG Compatibility Group:** 7; Aliphatic amines
 2.2 **Formula:** C₈H₁₄N₂
 2.3 **IMO/UN Designation:** 8/2815
 2.4 **DOT ID No.:** 2815
 2.5 **CAS Registry No.:** 140-31-8
 2.6 **NAERG Guide No.:** 153
 2.7 **Standard Industrial Trade Classification:** 51453

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Wear approved respirator, chemical resistant gloves, safety goggles rubber boots, and protective clothing.
 3.2 **Symptoms Following Exposure:** INHALATION: Burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. EYES AND SKIN: Extremely destructive to mucous membranes, upper respiratory tract, eyes and skin. Causes burns on short contact.
 3.3 **Treatment of Exposure:** INHALATION: Remove to fresh air; if not breathing, give artificial respiration; if breathing difficult, give oxygen. SKIN: Remove contaminated clothing and shoes; flush affected areas with plenty of water. EYES: Hold eyelids open and flush with water for at least 15 minutes.
 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; LD₅₀ = 2.14 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 severe irritation of eyes and throat and can cause lung injury. They cannot be tolerated even at low concentrations.
 3.11 **Liquid or Solid Characteristics:** Causes second and third degree burns on short contact, and is very injurious to the eyes.
 3.12 **Odor Threshold:** Currently not available
 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:** 200°F C.C.
 4.2 **Flammable Limits in Air:** Currently not available
 4.3 **Fire Extinguishing Agents:** Dry chemical, alcohol foam, water spray
 4.4 **Fire Extinguishing Agents Not to Be Used:** Not pertinent
 4.5 **Special Hazards of Combustion Products:** Toxic fumes of NO_x
 4.6 **Behavior in Fire:** Currently not available
 4.7 **Auto Ignition Temperature:** Currently not available
 4.8 **Electrical Hazards:** Currently not available
 4.9 **Burning Rate:** Currently not available
 4.10 **Adiabatic Flame Temperature:** Currently not available
 4.11 **Stoichiometric Air to Fuel Ratio:** Currently not available
 4.12 **Flame Temperature:** Currently not available
 4.13 **Combustion Molar Ratio (Reactant to Product):** Currently not available
 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:** Dry lime, soda ash
 5.5 **Polymerization:** Not pertinent
 5.6 **Inhibitor of Polymerization:** Not pertinent

6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:** Currently not available
 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:**
 Bioaccumulation: 0
 Damage to living resources: 0
 Human Oral hazard: 1
 Human Contact hazard: II
 Reduction of amenities: XX

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** 97%
 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:** D
 7.6 **Ship Type:** 3
 7.7 **Barge Hull Type:** Currently not available

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:** 129.24
 9.3 **Boiling Point at 1 atm:** 428°F = 220°C = 493°K
 9.4 **Freezing Point:** -2°F = -19°C = 254°K
 9.5 **Critical Temperature:** Currently not available
 9.6 **Critical Pressure:** Currently not available
 9.7 **Specific Gravity:** 0.9852 at 20°C
 9.8 **Liquid Surface Tension:** Currently not available
 9.9 **Liquid Water Interfacial Tension:** Currently not available
 9.10 **Vapor (Gas) Specific Gravity:** 4.4
 9.11 **Ratio of Specific Heats of Vapor (Gas):** Currently not available
 9.12 **Latent Heat of Vaporization:** Currently not available
 9.13 **Heat of Combustion:** Currently not available
 9.14 **Heat of Decomposition:** Currently not available
 9.15 **Heat of Solution:** Currently not available
 9.16 **Heat of Polymerization:** Currently not available
 9.17 **Heat of Fusion:** Currently not available
 9.18 **Limiting Value:** Currently not available
 9.19 **Reid Vapor Pressure:** Currently not available

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
	C U R R E N T L Y N O T A V A I L A B L E		C U R R E N T L Y N O T A V A I L A B L E		C U R R E N T L Y N O T A V A I L A B L E		C U R R E N T L Y N O T A V A I L A B L 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
	C U R R E N T L Y N O T A V A I L A B L E		C U R R E N T L Y N O T A V A I L A B L E		C U R R E N T L Y N O T A V A I L A B L E	0 25 50 75 100 125 150 175 200 225 250 275 300 325 350 375 400 425 450 475 500 525 550 575 600	0.343 0.355 0.366 0.378 0.389 0.401 0.412 0.424 0.435 0.447 0.458 0.470 0.481 0.493 0.504 0.516 0.527 0.539 0.550 0.562 0.574 0.585 0.597 0.608 0.620