

N-PROPYLAMINE

PRA

CAUTIONARY RESPONSE INFORMATION

Common Synonyms 1-Aminopropane Mono-n-propylamine 1-Propylamine	Watery liquid Colorless Ammonia odor
Floats and mixes with water. Flammable, irritating vapor is produced.	
<p>Keep people away. Avoid contact with liquid and vapor. Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves). Shut off ignition sources and call fire department. Stay upwind and use water spray to "knock down" vapor. Notify local health and pollution control agencies. Protect water intakes.</p>	
Fire	<p>FLAMMABLE. Flashback along vapor trail may occur. Irritating vapors are produced when heated. Vapor may explode if ignited in an enclosed area. Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves). Extinguish with dry chemical, alcohol foam, or carbon dioxide. 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 to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.</p> <p>LIQUID Will burn 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>

<p>1. CORRECTIVE RESPONSE ACTIONS Dilute and disperse Stop discharge Contain Chemical and Physical Treatment: Absorb</p>	<p>2. CHEMICAL DESIGNATIONS 2.1 CG Compatibility Group: 7; Aliphatic amine 2.2 Formula: CH₃(CH₂)₂NH₂ 2.3 IMO/UN Designation: 3.1/1277 2.4 DOT ID No.: 1277 2.5 CAS Registry No.: 107-10-8 2.6 NAERG Guide No.: 132 2.7 Standard Industrial Trade Classification: 51451</p>
<p>3. HEALTH HAZARDS</p> <p>3.1 Personal Protective Equipment: Self-contained breathing apparatus, rubber or plastic gloves, splash-proof goggles or face shield. Protective equipment that will prevent contact of liquid or vapor with eyes, skin, and respiratory tract.</p> <p>3.2 Symptoms Following Exposure: INHALATION: Mucous membrane and respiratory tract irritation. Tracheitis, bronchitis, pneumonitis, and pulmonary edema. EYES: Severe corneal damage or complete eye destruction. SKIN: Single drop-deep necrosis. INGESTION: Corrosive to G.I. tract.</p> <p>3.3 Treatment of Exposure: Call a physician. INHALATION: Remove to fresh air. If not breathing, give artificial respiration. Give oxygen if breathing is difficult. EYES: 15-Minute emergency eye washing. See physician as soon as possible. SKIN: Wash with soap and water. Flush for at least 15 minutes. Remove contaminated clothing. INGESTION: Wash mouth, drink water, get medical aid.</p> <p>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 = 0.5 to 5 g/kg. 3.8 Toxicity by Inhalation: Currently not available. 3.9 Chronic Toxicity: Weight loss, corneal opacities, and deaths occurred in laboratory animals exposed repeatedly to 800 ppm. A weak allergen. 3.10 Vapor (Gas) Irritant Characteristics: Vapors cause severe irritation of eyes and throat and can cause eye and lung injury. They cannot be tolerated even at low concentrations. 3.11 Liquid or Solid Characteristics: Severe skin irritant. 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</p>	

<p>4. FIRE HAZARDS</p> <p>4.1 Flash Point: -35°F C.C.</p> <p>4.2 Flammable Limits in Air: 2% to 10.4%</p> <p>4.3 Fire Extinguishing Agents: Use dry chemical, alcohol foam, or CO₂. Dilution with water will reduce intensity of flame.</p> <p>4.4 Fire Extinguishing Agents Not to Be Used: Water may be ineffective</p> <p>4.5 Special Hazards of Combustion Products: Extreme danger, enter with great care. Thermal decomposition may produce nitrogen oxides, CO and/or CO₂.</p> <p>4.6 Behavior in Fire: Keep away from heat and open flame; can react vigorously.</p> <p>4.7 Auto Ignition Temperature: 604°F</p> <p>4.8 Electrical Hazards: Class I, Group D</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: 29.8 (calc.)</p> <p>4.12 Flame Temperature: Currently not available</p> <p>4.13 Combustion Molar Ratio (Reactant to Product): 8.5 (calc.)</p> <p>4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed</p>	<p>7. SHIPPING INFORMATION</p> <p>7.1 Grades of Purity: 99% (minimum)</p> <p>7.2 Storage Temperature: Cool</p> <p>7.3 Inert Atmosphere: Inert</p> <p>7.4 Venting: PV</p> <p>7.5 IMO Pollution Category: C</p> <p>7.6 Ship Type: 2</p> <p>7.7 Barge Hull Type: Currently not available</p> <p>8. HAZARD CLASSIFICATIONS</p> <p>8.1 49 CFR Category: Flammable liquid</p> <p>8.2 49 CFR Class: 3</p> <p>8.3 49 CFR Package Group: II</p> <p>8.4 Marine Pollutant: No</p> <p>8.5 NFPA Hazard Classification:</p> <table border="1"> <tr> <td>Category</td> <td>Classification</td> </tr> <tr> <td>Health Hazard (Blue).....</td> <td>3</td> </tr> <tr> <td>Flammability (Red).....</td> <td>3</td> </tr> <tr> <td>Instability (Yellow).....</td> <td>0</td> </tr> </table> <p>8.6 EPA Reportable Quantity: 5000 pounds</p> <p>8.7 EPA Pollution Category: D</p> <p>8.8 RCRA Waste Number: U194</p> <p>8.9 EPA FWPCA List: Not listed</p>	Category	Classification	Health Hazard (Blue).....	3	Flammability (Red).....	3	Instability (Yellow).....	0
Category	Classification								
Health Hazard (Blue).....	3								
Flammability (Red).....	3								
Instability (Yellow).....	0								
<p>5. 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: Currently not available</p> <p>5.5 Polymerization: Will not occur.</p> <p>5.6 Inhibitor of Polymerization: Not pertinent</p>	<p>9. PHYSICAL & CHEMICAL PROPERTIES</p> <p>9.1 Physical State at 15° C and 1 atm: Solid</p> <p>9.2 Molecular Weight: 59.11</p> <p>9.3 Boiling Point at 1 atm: 119.5°F = 48.6°C = 321.8°K</p> <p>9.4 Freezing Point: -117.4°F = -83°C = 190.2°K</p> <p>9.5 Critical Temperature: 434.8°F = 223.8°C = 497°K</p> <p>9.6 Critical Pressure: 687.8 psia = 46.8 atm = 4.74 MN/m²</p> <p>9.7 Specific Gravity: 0.7182 at 20°C</p> <p>9.8 Liquid Surface Tension: 57.72 dynes/cm = 0.05772 N/m at 20°C</p> <p>9.9 Liquid Water Interfacial Tension: Not pertinent</p> <p>9.10 Vapor (Gas) Specific Gravity: 2.04</p> <p>9.11 Ratio of Specific Heats of Vapor (Gas): Currently not available</p> <p>9.12 Latent Heat of Vaporization: 219.4 Btu/lb = 121.9 cal/g = 5.1 X 10⁵ J/kg</p> <p>9.13 Heat of Combustion: -15,773 Btu/lb = -8763 cal/g = -366.6 X 10³ J/kg</p> <p>9.14 Heat of Decomposition: Currently not available</p> <p>9.15 Heat of Solution: Currently not available</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: 10.4</p>								
<p>6. WATER POLLUTION</p> <p>6.1 Aquatic Toxicity: Finfish toxicity critical concentration = 20 mg/l</p> <p>6.2 Waterfowl Toxicity: Currently not available</p> <p>6.3 Biological Oxygen Demand (BOD): Currently not available</p> <p>6.4 Food Chain Concentration Potential: Currently not available</p> <p>6.5 GESAMP Hazard Profile: Not listed</p>									
<p>NOTES</p>									

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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
50	45.430		C		C		C
55	45.263		U		U		U
60	45.097		R		R		R
65	44.930		R		R		R
70	44.763		E		E		E
75	44.597		N		N		N
80	44.430		T		T		T
85	44.263		L		L		L
90	44.097		L		L		L
95	43.930		Y		Y		Y
100	43.763		N		N		N
			O		O		O
			T		T		T
			A		A		A
			V		V		V
			A		A		A
			I		I		I
			L		L		L
			A		A		A
			B		B		B
			L		L		L
			A		A		A
			B		B		B
			L		L		L
			L		L		L
			E		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	-4.289	5	0.01063	80	0.389
	I	-70	-3.277	10	0.01195	100	0.399
	S	-60	-2.264	15	0.01344	120	0.409
	C	-50	-1.252	20	0.01511	140	0.419
	I	-40	-0.239	25	0.01699	160	0.429
	B	-30	0.773	30	0.01910	180	0.439
	L	-20	0.215	35	0.02148	200	0.449
	E	-10	1.202	40	0.02415	220	0.459
		0	2.190	45	0.02716	240	0.469
		10	3.178	50	0.03053	260	0.479
		20	4.165	55	0.03433	280	0.489
		30	5.153	60	0.03861	300	0.499
		40	6.140	65	0.04341	320	0.509
		50	7.128	70	0.04881	340	0.519
		60	8.116	75	0.05488	360	0.529
		70	9.103	80	0.06171	380	0.539
		80	10.091	85	0.06939	400	0.549
		90	11.079	90	0.07803	420	0.559
		100	12.066	95	0.08773	440	0.569
		110	13.054	100	0.09865		
		120	14.041	105	0.11093		
		130	15.029	110	0.12473		
		140	16.017	115	0.14025		
		150	17.004				