

# HYDROXYLAMINE

HDA

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> Oxammonium	Solid crystals White colorless Odorless
Sinks and mixes with water.	
<p>Keep people away. Avoid contact with solid or liquid.                  Wear goggles, self-contained breathing apparatus and rubber overclothing (including gloves).                  Call fire department.                  Notify local health and pollution control agencies.                  Protect water intakes.</p>	
<b>Fire</b>	Combustible. May explode if exposed to heat or open flame. POISONOUS GASES MAY BE PRODUCED WHEN HEATED. Wear goggles, self-contained breathing apparatus and rubber overclothing (including gloves). Combat fires from safe distance or protected location.
<b>Exposure</b>	CALL FOR MEDICAL AID. SOLID OR LIQUID Irritating to skin and eyes. If inhaled or swallowed may cause headache, dizziness, ringing in ears, labored breathing, nausea and vomiting. 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 and have victim induce vomiting. If breathing has stopped, give artificial respiration.
<b>Water Pollution</b>	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.

### 1. CORRECTIVE RESPONSE ACTIONS

Dilute and disperse  
 Stop discharge  
 Do not burn

### 2. CHEMICAL DESIGNATIONS

- 2.1 **CG Compatibility Group:** Not listed.  
 2.2 **Formula:** NH<sub>2</sub>OH  
 2.3 **IMO/UN Designation:** Not listed  
 2.4 **DOT ID No.:** Not listed  
 2.5 **CAS Registry No.:** Currently not available  
 2.6 **NAERG Guide No.:** Not listed  
 2.7 **Standard Industrial Trade Classification:** 51451

### 3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Wear protective clothing, cap, gloves, goggles - canister type mask recommended.
- 3.2 **Symptoms Following Exposure:** INHALATION: Moderately toxic by inhalation and oral routes with the following symptoms possible: headache, vertigo, tinnitus, dyspnea, nausea and vomiting, cyanosis, proteinuria and hematuria, jaundice, restlessness, and convulsion. Methemoglobinemia has been reported. EYES: Corrosive - highly irritating. SKIN: Irritating or corrosive to skin. INGESTION: Moderately toxic by inhalation and oral routes with the following symptoms possible: headache, vertigo, tinnitus, dyspnea, nausea and vomiting, cyanosis, proteinuria and hematuria, jaundice, restlessness, and convulsion. Methemoglobinemia has been reported.
- 3.3 **Treatment of Exposure:** Call a physician. EYES: Flush with water. SKIN: Wash with soap and water immediately. INGESTION: Remove by gastric lavage or emesis (vomiting) and catharsis.
- 3.4 **TLV-TWA:** Currently not available
- 3.5 **TLV-STEL:** Not listed.
- 3.6 **TLV-Ceiling:** Not listed.
- 3.7 **Toxicity by Ingestion:** Grade 3; LD<sub>50</sub> = 50 to 500 mg/kg.
- 3.8 **Toxicity by Inhalation:** Currently not available.
- 3.9 **Chronic Toxicity:** Potential mutagenic and teratogenic effects. Repeated exposure may enhance allergic reaction of the back of hands and forearms. Eczema following prolonged contact.
- 3.10 **Vapor (Gas) Irritant Characteristics:** Currently not available
- 3.11 **Liquid or Solid Characteristics:** Causes smarting of the skin and first-degree burns on short exposure; may cause second-degree burns on long exposure.
- 3.12 **Odor Threshold:** Odorless
- 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:** 265°F O.C. explodes
- 4.2 **Flammable Limits in Air:** Currently not available
- 4.3 **Fire Extinguishing Agents:** Use extreme caution - material may explode. Use remote extinguishing equipment or unmanned fixed turret and hose nozzles - evacuate area.
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Currently not available
- 4.5 **Special Hazards of Combustion Products:** Nitrogen oxides - toxic fumes - react with water or steam to produce heat and corrosive liquids - can react violently with reducing materials.
- 4.6 **Behavior in Fire:** May explode when exposed to heat or flame. Explodes at 265°F.
- 4.7 **Auto Ignition Temperature:** 265°F
- 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:** 5.9 (calc.)
- 4.12 **Flame Temperature:** Currently not available
- 4.13 **Combustion Molar Ratio (Reactant to Product):** 2.5 (calc.)
- 4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

### 5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** Forms alkaline solution - at high pH decomposes to NH<sub>2</sub>OH, N<sub>2</sub>, and H<sub>2</sub>O.
- 5.2 **Reactivity with Common Materials:** Currently not available
- 5.3 **Stability During Transport:** Unstable - hygroscopic. Decomposes even at room temperature, especially in presence of atmospheric moisture and carbon dioxide.
- 5.4 **Neutralizing Agents for Acids and Caustics:** Sodium bisulfate
- 5.5 **Polymerization:** Currently not available
- 5.6 **Inhibitor of Polymerization:** Currently not available

### 6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:**  
 7.2 ppm/96-hour/Fathead minnow/LC<sub>50</sub>/H<sub>2</sub>SO<sub>4</sub> salt  
 1.2 ppm/96-hour/Daphnia magna/LC<sub>50</sub>/H<sub>2</sub>SO<sub>4</sub> salt
- 6.2 **Waterfowl Toxicity:** Currently not available
- 6.3 **Biological Oxygen Demand (BOD):** 0.231 lb/lb, 5 days
- 6.4 **Food Chain Concentration Potential:** None
- 6.5 **GESAMP Hazard Profile:** Not listed

### 7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** 100% pure
- 7.2 **Storage Temperature:** Cool - noncombustible building
- 7.3 **Inert Atmosphere:** Currently not available
- 7.4 **Venting:** Open occasionally to relieve decomposition products.
- 7.5 **IMO Pollution Category:** Currently not available
- 7.6 **Ship Type:** Currently not available
- 7.7 **Barge Hull Type:** Currently not available

### 8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Not listed
- 8.2 **49 CFR Class:** Not pertinent
- 8.3 **49 CFR Package Group:** Not listed.
- 8.4 **Marine Pollutant:** No
- 8.5 **NFPA Hazard Classification:**
- | Category                  | Classification |
|---------------------------|----------------|
| Health Hazard (Blue)..... | 1              |
| Flammability (Red).....   | 3              |
| Instability (Yellow)..... | 3              |
- 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:** Solid
- 9.2 **Molecular Weight:** 33.03
- 9.3 **Boiling Point at 1 atm:** 133.7°F = 56.5°C = 329.7°K 22 mm 158°F = 70°C = 343.2°K 60 mm
- 9.4 **Freezing Point:** 91.49°F = 33.05°C = 306.2°K
- 9.5 **Critical Temperature:** Currently not available
- 9.6 **Critical Pressure:** Currently not available
- 9.7 **Specific Gravity:** 1.227 at room temperature
- 9.8 **Liquid Surface Tension:** Currently not available
- 9.9 **Liquid Water Interfacial Tension:** Currently not available
- 9.10 **Vapor (Gas) Specific Gravity:** 1.14 (calculated)
- 9.11 **Ratio of Specific Heats of Vapor (Gas):** Currently not available
- 9.12 **Latent Heat of Vaporization:** 880 Btu/lb = 488.9 cal/g = 2.04 X 10<sup>5</sup> J/kg
- 9.13 **Heat of Combustion:** Not pertinent
- 9.14 **Heat of Decomposition:** Currently not available
- 9.15 **Heat of Solution:** 207 Btu/lb = 115 cal/g = 4.81 X 10<sup>5</sup> J/kg
- 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
64	82.436		C		C		C
65	81.625		U		U		U
66	80.853		R		R		R
67	80.117		R		R		R
68	79.417		E		E		E
69	78.747		N		N		N
70	78.108		T		T		T
71	77.497		L		L		L
72	76.912		L		L		L
73	76.351		Y		Y		Y
74	75.813						
75	75.297		N		N		N
76	74.801		O		O		O
77	74.325		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
			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
	S	120	0.215	120	0.00115		C
	O	125	0.280	125	0.00147		U
	L	130	0.360	130	0.00188		R
	U	135	0.459	135	0.00237		R
	B	140	0.580	140	0.00297		E
	L	145	0.727	145	0.00368		N
	E	150	0.904	150	0.00454		T
		155	1.116	155	0.00555		L
		160	1.369	160	0.00675		Y
		165	1.668	165	0.00816		
		170	2.021	170	0.00981		N
		175	2.435	175	0.01173		O
		180	2.919	180	0.01396		T
		185	3.481	185	0.01652		
		190	4.132	190	0.01947		A
		195	4.883	195	0.02285		V
		200	5.747	200	0.02671		A
		205	6.735	205	0.03110		I
		210	7.864	210	0.03608		L
		215	9.149	215	0.04172		A
		220	10.606	220	0.04807		B
		225	12.255	225	0.05521		L
		230	14.115	230	0.06321		E