

ETHYLENE CYANOHYDRIN

ETC

CAUTIONARY RESPONSE INFORMATION				4. FIRE HAZARDS	7. SHIPPING INFORMATION								
Common Synonyms 2-Cyanoethanol Glycol cyanohydrin Hydrcyronitrile 1-Hydroxy-2-cyanoethane 3-Hydroxypropanenitrile	Liquid	Colorless to yellow-brown	Weak odor to odorless	<p>4.1 Flash Point: 265°F O.C.</p> <p>4.2 Flammable Limits in Air: 2.3% (calc.)- 12.1% (est.)</p> <p>4.3 Fire Extinguishing Agents: Carbon dioxide or dry chemical for small fires; alcohol-type foam for large fires.</p> <p>4.4 Fire Extinguishing Agents Not to Be Used: Water or foam may cause frothing.</p> <p>4.5 Special Hazards of Combustion Products: Toxic gases are generated when heated.</p> <p>4.6 Behavior in Fire: Decomposes, generating toxic gases</p> <p>4.7 Auto Ignition Temperature: 922°F</p> <p>4.8 Electrical Hazards: Not pertinent</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: 22.6 (calc.)</p> <p>4.12 Flame Temperature: Currently not available</p> <p>4.13 Combustion Molar Ratio (Reactant to Product): 6.5 (calc.)</p> <p>4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed</p>	<p>7.1 Grades of Purity: Currently not available</p> <p>7.2 Storage Temperature: Ambient</p> <p>7.3 Inert Atmosphere: No requirement</p> <p>7.4 Venting: Open (flame arrester)</p> <p>7.5 IMO Pollution Category: (D)</p> <p>7.6 Ship Type: 3</p> <p>7.7 Barge Hull Type: 3</p>								
<p>Call fire department. Avoid contact with liquid. Notify local health and pollution control agencies. Protect water intakes.</p>				8. HAZARD CLASSIFICATIONS									
<p>Fire Combustible. POISONOUS GASES MAY BE PRODUCED WHEN HEATED. Wear self-contained breathing apparatus. Extinguish with dry chemical, alcohol foam, or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.</p>				<p>8.1 49 CFR Category: Not listed</p> <p>8.2 49 CFR Class: Not pertinent</p> <p>8.3 49 CFR Package Group: Not listed</p> <p>8.4 Marine Pollutant: No</p> <p>8.5 NFPA Hazard Classification:</p> <table> <thead> <tr> <th>Category</th> <th>Classification</th> </tr> </thead> <tbody> <tr> <td>Health Hazard (Blue).....</td> <td>2</td> </tr> <tr> <td>Flammability (Red).....</td> <td>1</td> </tr> <tr> <td>Instability (Yellow).....</td> <td>1</td> </tr> </tbody> </table>		Category	Classification	Health Hazard (Blue).....	2	Flammability (Red).....	1	Instability (Yellow).....	1
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Health Hazard (Blue).....	2												
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<p>Exposure CALL FOR MEDICAL AID. 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. Have victim induce vomiting. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.</p>				9. PHYSICAL & CHEMICAL PROPERTIES									
<p>Water Pollution Effect of low concentrations on aquatic life is unknown. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.</p>				<p>9.1 Physical State at 15°C and 1 atm: Liquid</p> <p>9.2 Molecular Weight: 71.08</p> <p>9.3 Boiling Point at 1 atm: 445.5°F = 229.7°C = 502.9°K</p> <p>9.4 Freezing Point: -51.2°F = -46.2°C = 227.0°K</p> <p>9.5 Critical Temperature: 804.2°F = 429°C = 702.2°K</p> <p>9.6 Critical Pressure: 720 psia = 4.9 MN/m²</p> <p>9.7 Specific Gravity: 1.047 at 20°C (liquid)</p> <p>9.8 Liquid Surface Tension: Not pertinent</p> <p>9.9 Liquid Water Interfacial Tension: Not pertinent</p> <p>9.10 Vapor (Gas) Specific Gravity: Not pertinent</p> <p>9.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent</p> <p>9.12 Latent Heat of Vaporization: Not pertinent</p> <p>9.13 Heat of Combustion: Currently not available</p> <p>9.14 Heat of Decomposition: Not pertinent</p> <p>9.15 Heat of Solution: Not pertinent</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: Very low</p>									
<p>1. CORRECTIVE RESPONSE ACTIONS Dilute and disperse Stop discharge Do not burn</p> <p>2. CHEMICAL DESIGNATIONS</p> <p>2.1 CG Compatibility Group: 20; Alcohol, glycol</p> <p>2.2 Formula: HOCH₂CH₂CN</p> <p>2.3 IMO/UN Designation: Not listed</p> <p>2.4 DOT ID No.: Not listed</p> <p>2.5 CAS Registry No.: 109-78-4</p> <p>2.6 NAERG Guide No.: Not listed</p> <p>2.7 Standard Industrial Trade Classification: 51484</p>				6. WATER POLLUTION									
<p>3. HEALTH HAZARDS</p> <p>3.1 Personal Protective Equipment: Air-supplied mask; plastic gloves; rubber clothing; vapor-proof goggles.</p> <p>3.2 Symptoms Following Exposure: Liquid causes eye irritation. If swallowed, may cause severe kidney injury.</p> <p>3.3 Treatment of Exposure: INGESTION: induce vomiting at once and call a physician. EYES: wash with flowing water for at least 15 min. SKIN: flush exposed areas with plenty of water.</p> <p>3.4 TLV-TWA: Not listed.</p> <p>3.5 TLV-STEL: Not listed.</p> <p>3.6 TLV-Ceiling: Not listed.</p> <p>3.7 Toxicity by Ingestion: Grade 2; LD₅₀ = 0.5 to 5 g/kg</p> <p>3.8 Toxicity by Inhalation: Currently not available.</p> <p>3.9 Chronic Toxicity: Ingestion of liquid may cause severe kidney damage.</p> <p>3.10 Vapor (Gas) Irritancy Characteristics: Vapors are nonirritating to the eyes and throat.</p> <p>3.11 Liquid or Solid Characteristics: No appreciable hazard. Practically harmless to the skin.</p> <p>3.12 Odor Threshold: Currently not available.</p> <p>3.13 IDLH Value: Not listed.</p> <p>3.14 OSHA PEL-TWA: Not listed.</p> <p>3.15 OSHA PEL-STEL: Not listed.</p> <p>3.16 OSHA PEL-Ceiling: Not listed.</p> <p>3.17 EPA AEGL: Not listed</p>				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: None									
				6.5 GESAMP Hazard Profile: Bioaccumulation: 0 Damage to living resources: 1 Human Oral hazard: 1 Human Contact hazard: I Reduction of amenities: X									
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
40	66.280	50	0.573		N		N
50	65.959	55	0.573		O		O
60	65.629	60	0.573		T		T
70	65.299	65	0.573				
80	64.980	70	0.573		P		P
90	64.650	75	0.573		E		E
100	64.330	80	0.573		R		R
110	64.000	85	0.573		T		T
120	63.670	90	0.573		I		I
130	63.350	95	0.573		N		N
140	63.020	100	0.573		E		E
150	62.700	105	0.573		N		N
160	62.370	110	0.573		E		E
170	62.040	115	0.573		T		T
180	61.720	120	0.573		N		N
190	61.390				E		E
200	61.070				T		T
210	60.740				N		N

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	100	0.003	100	0.00004			N
I	120	0.007	120	0.00007			O
S	140	0.013	140	0.00015			T
C	160	0.026	160	0.00028			
I	180	0.049	180	0.00051			
B	200	0.088	200	0.00089			
L	220	0.154	220	0.00150			
E	240	0.259	240	0.00245			
	260	0.425	260	0.00391			
	280	0.677	280	0.00606			
	300	1.055	300	0.00919			
	320	1.605	320	0.01363			
	340	2.391	340	0.01980			
	360	3.495	360	0.02823			
	380	5.016	380	0.03955			
	400	7.079	400	0.05452			
	420	9.835	420	0.07403			
	440	13.470	440	0.09911			