

ACRYLIC ACID

ACR

CAUTIONARY RESPONSE INFORMATION			
Common Synonyms Ethylene carboxylic acid Propenoic acid Vinyl formic acid	Watery liquid Colorless Irritating odor	Sinks and mixes with water. Irritating vapor is produced. Freezing point is 54°F.	
<p>Avoid contact with liquid and vapor. Keep people away. Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves). Stop discharge if possible. Call fire department. Isolate and remove discharged material. Notify local health and pollution control agencies. Protect water intakes.</p>			
Fire Combustible. POISONOUS GAS MAY BE PRODUCED IN FIRE. Containers may explode when heated. Vapor may explode if ignited in an enclosed area. Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves). Combat fires from safe distance or protected location. Extinguish with dry chemicals, alcohol foam, or carbon dioxide. Cool exposed containers with water.			
Exposure	CALL FOR MEDICAL AID. VAPOR Irritating to eyes, nose and throat. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. LIQUID OR SOLID Will burn 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. DO NOT INDUCE VOMITING.		
Water Pollution	Effect of low concentrations on aquatic life is unknown. May be dangerous if it enters water intakes. Notify local health and pollution control officials. Notify operators of nearby water intakes.		

1. CORRECTIVE RESPONSE ACTIONS	2. CHEMICAL DESIGNATIONS
Dilute and disperse Stop discharge Do not burn	2.1 CG Compatibility Group: 4; Organic acid 2.2 Formula: <chem>CH=CHCOOH</chem> 2.3 IMO/UN Designation: Not listed 2.4 DOT ID No.: 2218 2.5 CAS Registry No.: 79-10-7 2.6 NAERG Guide No.: 132P 2.7 Standard Industrial Trade Classification: 51379
3. HEALTH HAZARDS	
3.1 Personal Protective Equipment: Chemical respirator at ambient temperatures to avoid inhalation of noxious fumes; rubber gloves if exposed to wet material; acid goggles or face shield for splash exposure; safety shower and/or eye fountain may be required. 3.2 Symptoms Following Exposure: May burn skin or eyes upon short contact. INHALATION: eye and nasal irritation and lacrimation. INGESTION: may cause severe damage to the gastrointestinal tract. 3.3 Treatment of Exposure: Get medical attention promptly for all exposures. INHALATION: remove victim to fresh air. INGESTION: do NOT induce vomiting. SKIN OR EYES: flush with water for at least 15 min. 3.4 TLV-TWA: 2 ppm 3.5 TLV-STEL: Not listed. 3.6 TLV-Ceiling: Not listed. 3.7 Toxicity by Ingestion: Grade 2; LD ₅₀ = 0.5 to 5 g/kg (rat) 3.8 Toxicity by Inhalation: Currently not available. 3.9 Chronic Toxicity: Not pertinent 3.10 Vapor (Gas) Irritant Characteristics: Vapor is moderately irritating such that personnel will not usually tolerate moderate or high vapor concentrations. 3.11 Liquid or Solid Characteristics: Fairly severe skin irritant; may cause pain and second-degree burns after a few minutes of contact. 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	2.1 CG Compatibility Group: 4; Organic acid 2.2 Formula: <chem>CH=CHCOOH</chem> 2.3 IMO/UN Designation: Not listed 2.4 DOT ID No.: 2218 2.5 CAS Registry No.: 79-10-7 2.6 NAERG Guide No.: 132P 2.7 Standard Industrial Trade Classification: 51379

4. FIRE HAZARDS	7. SHIPPING INFORMATION
4.1 Flash Point: (Glacial) 118°F O.C. 4.2 Flammable Limits in Air: (Tech.) 2.4% LEL; (Glacial) 2.0% LEL; 8.0% UEL 4.3 Fire Extinguishing Agents: Water spray, alcohol foam, dry chemical, or carbon dioxide 4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent 4.5 Special Hazards of Combustion Products: Toxic vapors are generated when heated 4.6 Behavior in Fire: May polymerize and explode 4.7 Auto Ignition Temperature: 820°F 4.8 Electrical Hazards: I, D 4.9 Burning Rate: 1.6 mm/min. 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	7.1 Grades of Purity: Technical: 94.0%; glacial: 98.0-99.5% 7.2 Storage Temperature: 60°-75°F 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: 3
8. HAZARD CLASSIFICATIONS	
8.1 49 CFR Category: Corrosive material 8.2 49 CFR Class: 8 8.3 49 CFR Package Group: II 8.4 Marine Pollutant: No 8.5 NFPA Hazard Classification:	Category Classification Health Hazard (Blue)..... 3 Flammability (Red)..... 2 Instability (Yellow)..... 2
8.6 EPA Reportable Quantity: 5000 8.7 EPA Pollution Category: D 8.8 RCRA Waste Number: U008 8.9 EPA FWPCA List: Not listed	9. PHYSICAL & CHEMICAL PROPERTIES
5. CHEMICAL REACTIVITY	
5.1 Reactivity with Water: No reaction 5.2 Reactivity with Common Materials: No reaction 5.3 Stability During Transport: Normally unstable but will not detonate. 5.4 Neutralizing Agents for Acids and Caustics: Wash with water, rinse with sodium bicarbonate solution. 5.5 Polymerization: May occur on contact with acids, iron salts, or at elevated temperatures and release high energy rapidly; may cause explosion under confinement. 5.6 Inhibitor of Polymerization: Monomethyl ether of hydroquinone 180-200 ppm; phenothiazine (for tech. grades) 1000 ppm; hydroquinone (0.1%); methylene blue (0.5-1%); N, N-diphenyl-p-phenylenediamine (0.05%)	9.1 Physical State at 15° C and 1 atm: Liquid 9.2 Molecular Weight: 72.06 9.3 Boiling Point at 1 atm: 286.3°F = 141.3°C = 414.5°K 9.4 Freezing Point: 54.1°F = 12.3°C = 285.5°K 9.5 Critical Temperature: 647.6°F = 342°C = 615.2°K 9.6 Critical Pressure: 840 psia = 57 atm = 5.8 MN/m ² 9.7 Specific Gravity: 1.0497 at 20°C (liquid) 9.8 Liquid Surface Tension: Not pertinent 9.9 Liquid Water Interfacial Tension: Not pertinent 9.10 Vapor (Gas) Specific Gravity: 2.5 9.11 Ratio of Specific Heats of Vapor (Gas): 1.121 9.12 Latent Heat of Vaporization: 272.7 Btu/lb = 151.5 cal/g = 6.343 X 10 ⁵ J/kg 9.13 Heat of Combustion: -8100 Btu/lb = -4500 cal/g = -188.4 X 10 ⁵ J/kg 9.14 Heat of Decomposition: Not pertinent 9.15 Heat of Solution: Not pertinent 9.16 Heat of Polymerization: -463 Btu/lb = -257 cal/g = -10.8 X 10 ⁵ J/kg 9.17 Heat of Fusion: 30.03 cal/g 9.18 Limiting Value: Currently not available 9.19 Reid Vapor Pressure: 0.2 psia
6. WATER POLLUTION	
6.1 Aquatic Toxicity: Currently not available 6.2 Waterfowl Toxicity: Currently not available 6.3 Biological Oxygen Demand (BOD): 35%, 10 days 6.4 Food Chain Concentration Potential: None listed 6.5 GESAMP Hazard Profile: Bioaccumulation: 0 Damage to living resources: 2 Human Oral hazard: 2 Human Contact hazard: II Reduction of amenities: XX	NOTES

ACRYLIC ACID

ACR

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
55	65.980	106	0.460		N		N
60	65.790	108	0.460		O		O
65	65.599	110	0.460		T		T
70	65.400	112	0.460		P		P
75	65.209	114	0.460		E		E
80	65.020	116	0.460		R		R
85	64.830	118	0.460		T		T
90	64.639	120	0.460		I		I
95	64.450	122	0.460		N		N
100	64.259	124	0.460		E		E
105	64.070	126	0.460		N		N
110	63.880	128	0.460		E		E
115	63.690	130	0.460		N		N
120	63.500	132	0.460		E		E
125	63.310	134	0.460		T		T
130	63.120	136	0.460		P		P
135	62.930	138	0.460		E		E
140	62.730	140	0.460		R		R

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	60	0.059	60	0.00077	0	0.229	
I	65	0.071	65	0.00090	25	0.238	
S	70	0.084	70	0.00106	50	0.248	
C	75	0.099	75	0.00124	75	0.257	
I	80	0.116	80	0.00145	100	0.266	
B	85	0.136	85	0.00168	125	0.275	
L	90	0.160	90	0.00195	150	0.283	
E	95	0.186	95	0.00226	175	0.292	
	100	0.217	100	0.00260	200	0.300	
	105	0.252	105	0.00299	225	0.308	
	110	0.291	110	0.00343	250	0.316	
	115	0.336	115	0.00393	275	0.323	
	120	0.387	120	0.00448	300	0.331	
	125	0.445	125	0.00511	325	0.338	
	130	0.510	130	0.00581	350	0.345	
	135	0.583	135	0.00658	375	0.351	
	140	0.665	140	0.00745	400	0.358	
	145	0.758	145	0.00841	425	0.365	
	150	0.861	150	0.00948	450	0.371	
	155	0.976	155	0.01066	475	0.377	
					500	0.383	
					525	0.389	
					550	0.394	
					575	0.400	
					600	0.405	