

PROPIONIC ACID

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CAUTIONARY RESPONSE INFORMATION				4. FIRE HAZARDS	7. SHIPPING INFORMATION
Common Synonyms Ethane carboxylic acid Methylacetic acid Propanoic acid	Liquid	Colorless	Sharp rancid odor	4.1 Flash Point: 134°F O.C. 126°F C.C. 4.2 Flammable Limits in Air: 2.9% (calc.)-12.1% 4.3 Fire Extinguishing Agents: Water, carbon dioxide, dry chemical, or alcohol foam. 4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent 4.5 Special Hazards of Combustion Products: Not pertinent 4.6 Behavior in Fire: Not pertinent 4.7 Auto Ignition Temperature: 870°F 4.8 Electrical Hazards: I, D 4.9 Burning Rate: 2.2 mm/min. 4.10 Adiabatic Flame Temperature: Currently not available 4.11 Stoichiometric Air to Fuel Ratio: 16.7 (calc.) 4.12 Flame Temperature: Currently not available 4.13 Combustion Molar Ratio (Reactant to Product): 6.0 (calc.) 4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed	7.1 Grades of Purity: 99+%
Keep people away. AVOID CONTACT WITH LIQUID AND VAPOR. Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves). Call fire department. Notify local health and pollution control agencies. Protect water intakes.				7.2 Storage Temperature: Ambient 7.3 Inert Atmosphere: No requirement 7.4 Venting: Open (flame arrester) 7.5 IMO Pollution Category: D 7.6 Ship Type: 3 7.7 Barge Hull Type: 3	7.8 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)..... 3 Flammability (Red)..... 2 Instability (Yellow)..... 0
Fire Combustible. Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves). Extinguish with water, dry chemical, alcohol foam, or carbon dioxide. Cool exposed containers with water.				8.6 EPA Reportable Quantity: 5000 pounds 8.7 EPA Pollution Category: D 8.8 RCRA Waste Number: Not listed 8.9 EPA FWCNA List: Yes	8.9 EPA FWCNA List: Yes
Exposure CALL FOR MEDICAL AID. VAPOR Irritating to eyes, nose and throat. Move to fresh air. LIQUID 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.				5. CHEMICAL REACTIVITY 5.1 Reactivity with Water: No reaction 5.2 Reactivity with Common Materials: Corrodes ordinary steel and many other metals, but reaction is not hazardous. 5.3 Stability During Transport: Stable 5.4 Neutralizing Agents for Acids and Caustics: Dilute with water, then neutralize with lime or soda ash. 5.5 Polymerization: Not pertinent 5.6 Inhibitor of Polymerization: Not pertinent	9. PHYSICAL & CHEMICAL PROPERTIES 9.1 Physical State at 15°C and 1 atm: Liquid 9.2 Molecular Weight: 74.08 9.3 Boiling Point at 1 atm: 285.4°F = 140.8°C = 414.0°K 9.4 Freezing Point: -5.3°F = -20.7°C = 252.5°K 9.5 Critical Temperature: 642.2°F = 339°C = 612.2°K 9.6 Critical Pressure: 779 psia = 53 atm = 5.37 MN/m² 9.7 Specific Gravity: 0.995 at 20°C (liquid) 9.8 Liquid Surface Tension: 26.2 dynes/cm = 0.0262 N/m at 25°C 9.9 Liquid Water Interfacial Tension: Not pertinent 9.10 Vapor (Gas) Specific Gravity: Not pertinent 9.11 Ratio of Specific Heats of Vapor (Gas): 1.103 9.12 Latent Heat of Vaporization: 248 Btu/lb = 138 cal/g = 5.78 X 10⁵ J/kg 9.13 Heat of Combustion: -8,883 Btu/lb = -4,935 cal/g = 206.6 X 10⁵ J/kg 9.14 Heat of Decomposition: Not pertinent 9.15 Heat of Solution: Not pertinent 9.16 Heat of Polymerization: Not pertinent 9.17 Heat of Fusion: Currently not available 9.18 Limiting Value: Currently not available 9.19 Reid Vapor Pressure: 0.2 psia
Water Pollution Dangerous to aquatic life in high concentrations. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.				6. WATER POLLUTION 6.1 Aquatic Toxicity: >1000 mg/l/48 hr/culex sp. larvae/TL/fresh water 6.2 Waterfowl Toxicity: Currently not available 6.3 Biological Oxygen Demand (BOD): 78%, 5 days 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: II Reduction of amenities: XX	NOTES
1. CORRECTIVE RESPONSE ACTIONS Dilute and disperse Stop discharge				7.1 49 CFR Category: Corrosive material 7.2 49 CFR Class: 8 7.3 49 CFR Package Group: III 7.4 Marine Pollutant: No 7.5 NFPA Hazard Classification: Category Classification Health Hazard (Blue)..... 3 Flammability (Red)..... 2 Instability (Yellow)..... 0	
2. CHEMICAL DESIGNATIONS 2.1 CG Compatibility Group: 4; Organic acid 2.2 Formula: CH ₃ CH ₂ COOH 2.3 IMO/UN Designation: 8.0/1848 2.4 DOT ID No.: 1848 2.5 CAS Registry No.: 79-09-4 2.6 NAERG Guide No.: 132 2.7 Standard Industrial Trade Classification: 51377				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)..... 3 Flammability (Red)..... 2 Instability (Yellow)..... 0	
3. HEALTH HAZARDS 3.1 Personal Protective Equipment: Air-supplied mask for high vapor concentrations; plastic gloves; goggles or face shield. 3.2 Symptoms Following Exposure: Liquid causes skin and eye burns. Vapors may irritate eyes, nose, and throat, but should not cause systemic illness. 3.3 Treatment of Exposure: INHALATION: remove victim to fresh air. INGESTION: have victim drink water or milk; do NOT induce vomiting. SKIN OR EYE CONTACT: immediately flush with plenty of water for at least 15 min.; get medical care for eyes; remove contaminated clothing. 3.4 TLV-TWA: 10 ppm 3.5 TLV-STEL: Not listed. 3.6 TLV-Ceiling: Not listed. 3.7 Toxicity by Ingestion: Grade 2; oral rat LD ₅₀ = 2.6 g/kg 3.8 Toxicity by Inhalation: Currently not available. 3.9 Chronic Toxicity: None 3.10 Vapor (Gas) Irritant Characteristics: Vapors cause moderate irritation such that personnel will find high concentrations unpleasant. The effect is temporary. 3.11 Liquid or Solid Characteristics: Fairly severe skin irritant; may cause pain and second-degree burns after a few minutes 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				9.1 49 CFR Category: Corrosive material 9.2 49 CFR Class: 8 9.3 49 CFR Package Group: III 9.4 Marine Pollutant: No 9.5 NFPA Hazard Classification: Category Classification Health Hazard (Blue)..... 3 Flammability (Red)..... 2 Instability (Yellow)..... 0	

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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
35	63.560	0	0.533		N		N
40	63.370	10	0.537		O		O
45	63.170	20	0.540		T		T
50	62.980	30	0.544		P		P
55	62.790	40	0.548		E		E
60	62.600	50	0.552		R		R
65	62.410	60	0.556		I		I
70	62.220	70	0.559		N		N
75	62.030	80	0.563		E		E
80	61.840	90	0.567		N		N
85	61.650	100	0.571		E		E
90	61.460	110	0.574		N		N
95	61.270	120	0.578		E		E
100	61.080	130	0.582		N		N
105	60.890	140	0.586		E		E
110	60.700	150	0.590		N		N
115	60.500	160	0.593		E		E
120	60.310	170	0.597		N		N
125	60.120	180	0.601		E		E
130	59.930	190	0.605		N		N
135	59.740	200	0.608		E		E
140	59.550	210	0.612		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	40	0.021	40	0.00029	0	0.254
	I	50	0.031	50	0.00042	25	0.267
	S	60	0.045	60	0.00060	50	0.279
	C	70	0.065	70	0.00085	75	0.290
	I	80	0.092	80	0.00118	100	0.302
	B	90	0.129	90	0.00162	125	0.313
	L	100	0.178	100	0.00220	150	0.323
	E	110	0.244	110	0.00296	175	0.333
		120	0.330	120	0.00393	200	0.343
		130	0.442	130	0.00517	225	0.352
		140	0.586	140	0.00675	250	0.361
		150	0.771	150	0.00872	275	0.370
		160	1.004	160	0.01118	300	0.378
		170	1.297	170	0.01421	325	0.386
		180	1.661	180	0.01792	350	0.393
		190	2.113	190	0.02244	375	0.400
		200	2.667	200	0.02790	400	0.407
		210	3.344	210	0.03446	425	0.413
		220	4.164	220	0.04228	450	0.419
		230	5.153	230	0.05156	475	0.425
		240	6.337	240	0.06251	500	0.430
		250	7.749	250	0.07536	525	0.434
		260	9.423	260	0.09036	550	0.439
		270	11.400	270	0.10780	575	0.443
		280	13.710	280	0.12790	600	0.446