

METHYL ACRYLATE

MAM

CAUTIONARY RESPONSE INFORMATION				4. FIRE HAZARDS	7. SHIPPING INFORMATION								
Common Synonyms Acrylic acid, methyl ester Methyl 2-propenoate	Watery liquid Floats and mixes slowly with water. Flammable, irritating vapor is produced.	Colorless	Sweet sharp odor	<p>4.1 Flash Point: 44°F O.C. 27°F C.C.</p> <p>4.2 Flammable Limits in Air: 2.8%-25%</p> <p>4.3 Fire Extinguishing Agents: Foam, dry chemical, or carbon dioxide</p> <p>4.4 Fire Extinguishing Agents Not to Be Used: Water may be ineffective</p> <p>4.5 Special Hazards of Combustion Products: Irritating vapors are generated in fires.</p> <p>4.6 Behavior in Fire: May polymerize. Vapor is heavier than air and may travel considerable distance to a source of ignition and flash back.</p> <p>4.7 Auto Ignition Temperature: Currently not available</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: 21.4 (calc.)</p> <p>4.12 Flame Temperature: Currently not available</p> <p>4.13 Combustion Molar Ratio (Reactant to Product): 7.0 (calc.)</p> <p>4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed</p>	<p>7.1 Grades of Purity: 99.9%</p> <p>7.2 Storage Temperature: Ambient if material is inhibited; under 40°F if no inhibitor.</p> <p>7.3 Inert Atmosphere: Air MUST be present.</p> <p>7.4 Venting: Open (flame arrester)</p> <p>7.5 IMO Pollution Category: B</p> <p>7.6 Ship Type: 2</p> <p>7.7 Barge Hull Type: 3</p>								
Fire	FLAMMABLE. Flashback along vapor trail may occur. Containers may explode when heated. Vapor may explode if ignited in an enclosed area. Wear chemical protective suit with self-contained breathing apparatus. Combat fires from safe distance or protected location. Extinguish with dry chemical, foam, or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.	<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> <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>3</td> </tr> <tr> <td>Instability (Yellow)</td> <td>2</td> </tr> </tbody> </table> <p>8.6 EPA Reportable Quantity: Not listed.</p> <p>8.7 EPA Pollution Category: Not listed.</p> <p>8.8 RCRA Waste Number: Not listed</p> <p>8.9 EPA FWPCA List: Not listed</p>				Category	Classification	Health Hazard (Blue)	2	Flammability (Red)	3	Instability (Yellow)	2
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Exposure	CALL FOR MEDICAL AID. VAPOR Irritating to eyes, nose and throat. If inhaled, will cause dizziness or difficult breathing. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. LIQUID Will burn skin and eyes. Harmful if swallowed. Remove contaminated clothing. 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>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: Not pertinent</p> <p>5.5 Polymerization: Heat may cause an explosive polymerization. Strong ultraviolet light can also initiate polymerization.</p> <p>5.6 Inhibitor of Polymerization: Hydroquinone and its methyl ether, in presence of air.</p>											
Water Pollution	Effect of low concentrations on aquatic life is unknown. Fouling to shoreline. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.	<p>9. PHYSICAL & CHEMICAL PROPERTIES</p> <p>9.1 Physical State at 15° C and 1 atm: Liquid</p> <p>9.2 Molecular Weight: 86.09</p> <p>9.3 Boiling Point at 1 atm: 177°F = 80.6°C = 353.8°K</p> <p>9.4 Freezing Point: -105.7°F = -76.5°C = 196.7°K</p> <p>9.5 Critical Temperature: 505.4°F = 263°C = 536.2°K</p> <p>9.6 Critical Pressure: 630 psia = 43 atm = 4.3 MN/m²</p> <p>9.7 Specific Gravity: 0.956 at 20°C (liquid)</p> <p>9.8 Liquid Surface Tension: 24.2 dynes/cm = 0.0242 N/m at 20°C</p> <p>9.9 Liquid Water Interfacial Tension: (est.) 30 dynes/cm = 0.03 N/m at 20°C</p> <p>9.10 Vapor (Gas) Specific Gravity: 3.0</p> <p>9.11 Ratio of Specific Heats of Vapor (Gas): 1.102</p> <p>9.12 Latent Heat of Vaporization: 160 Btu/lb = 90 cal/g = 3.8 X 10⁵ J/kg</p> <p>9.13 Heat of Combustion: (est.) -9900 Btu/lb = -5500 cal/g = -230 X 10⁵ J/kg</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: -392 Btu/lb = -218 cal/g = -9.13 X 10⁵ J/kg</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: 3.1 psia</p>											
<p>1. CORRECTIVE RESPONSE ACTIONS</p> <p>Dilute and disperse Stop discharge Collection Systems: Skim Clean shore line Salvage waterfowl</p>		<p>2. CHEMICAL DESIGNATIONS</p> <p>2.1 CG Compatibility Group: 14: Acrylate</p> <p>2.2 Formula: CH₂=CHCOOCH₃</p> <p>2.3 IMO/UN Designation: 3.2/1919</p> <p>2.4 DOT ID No.: 1919</p> <p>2.5 CAS Registry No.: 96-33-3</p> <p>2.6 NAERG Guide No.: 129P</p> <p>2.7 Standard Industrial Trade Classification: 51379</p>											
<p>3. HEALTH HAZARDS</p> <p>3.1 Personal Protective Equipment: Organic canister for high vapor concentrations; rubber gloves; chemical goggles or face shield.</p> <p>3.2 Symptoms Following Exposure: May irritate skin, eyes, respiratory system, and gastro-intestinal tract. Fumes cause tears.</p> <p>3.3 Treatment of Exposure: INHALATION: remove to fresh air; lay patient down; keep him warm; administer artificial respiration if breathing has stopped; administer oxygen. SKIN OR EYES: flush with plenty of water for 15 min.; consult physician for eye exposure.</p> <p>3.4 TLV-TWA: 2 ppm</p> <p>3.5 TLV-STEL: Not listed.</p> <p>3.6 TLV-Ceiling: Not listed.</p> <p>3.7 Toxicity by Ingestion: Grade 3; LD₅₀ = 50 to 500 mg/kg (rabbit)</p> <p>3.8 Toxicity by Inhalation: Currently not available.</p> <p>3.9 Chronic Toxicity: Currently not available</p> <p>3.10 Vapor (Gas) Irritant Characteristics: Vapor is moderately irritating such that personnel will not usually tolerate moderate or high vapor concentrations.</p> <p>3.11 Liquid or Solid Characteristics: Causes smarting of the skin and first-degree burns on short exposure; may cause secondary burns on long exposure.</p> <p>3.12 Odor Threshold: Currently not available</p> <p>3.13 IDLH Value: 250 ppm</p> <p>3.14 OSHA PEL-TWA: 10 ppm</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>													
<p>6. WATER POLLUTION</p> <p>6.1 Aquatic Toxicity: Currently not available</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: None</p> <p>6.5 GESAMP Hazard Profile:</p> <p>Bioaccumulation: 0 Damage to living resources: 3 Human Oral hazard: 2 Human Contact hazard: II Reduction of amenities: XXX</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
34	61.090	0	0.427	0	1.258	20	0.708
36	61.010	10	0.430	10	1.238	30	0.651
38	60.920	20	0.433	20	1.217	40	0.601
40	60.840	30	0.436	30	1.197	50	0.557
42	60.760	40	0.439	40	1.177	60	0.517
44	60.670	50	0.443	50	1.157	70	0.482
46	60.590	60	0.446	60	1.137	80	0.450
48	60.510	70	0.449	70	1.117	90	0.421
50	60.430	80	0.452	80	1.097	100	0.395
52	60.340	90	0.455	90	1.076	110	0.372
54	60.260	100	0.458	100	1.056	120	0.350
56	60.180	110	0.462	110	1.036	130	0.331
58	60.090	120	0.465	120	1.016	140	0.313
60	60.010	130	0.468	130	0.996	150	0.297
62	59.930	140	0.471	140	0.976	160	0.282
64	59.840	150	0.474	150	0.955	170	0.268
66	59.760	160	0.477	160	0.935		
68	59.680	170	0.481	170	0.915		
70	59.590						
72	59.510						
74	59.430						
76	59.340						
78	59.260						
80	59.180						
82	59.090						
84	59.010						

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
68	5.500	40	0.547	40	0.00879	0	0.224
		50	0.751	50	0.01182	25	0.233
		60	1.015	60	0.01567	50	0.242
		70	1.353	70	0.02049	75	0.251
		80	1.779	80	0.02644	100	0.259
		90	2.311	90	0.03372	125	0.268
		100	2.967	100	0.04252	150	0.276
		110	3.769	110	0.05305	175	0.285
		120	4.738	120	0.06556	200	0.293
		130	5.902	130	0.08027	225	0.301
		140	7.285	140	0.09743	250	0.310
		150	8.919	150	0.11730	275	0.318
		160	10.830	160	0.14020	300	0.326
		170	13.060	170	0.16630	325	0.333
		180	15.630	180	0.19600	350	0.341
		190	18.590	190	0.22950	375	0.349
		200	21.970	200	0.26710	400	0.356
		210	25.810	210	0.30910	425	0.364
		220	30.150	220	0.35580	450	0.371
		230	35.040	230	0.40750	475	0.379
		240	40.510	240	0.46440	500	0.386
						525	0.393
						550	0.400
						575	0.407
						600	0.414