

ETHYL ACRYLATE

EAC

CAUTIONARY RESPONSE INFORMATION

Common Synonyms Acrylic acid, ethyl ester Ethyl 2-propenoate	Liquid Colorless Fruity odor Floats on water. Flammable, irritating vapor is produced.
<p>Keep people away. Avoid contact with liquid and vapor. Avoid inhalation. Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves). Shut off ignition sources and call fire department. Stay upwind and use water spray to "knock down" vapor. Notify local health and pollution control agencies. Protect water intakes.</p>	
Fire	<p>FLAMMABLE. Containers may explode in fire. Flashback along vapor trail may occur. 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 chemical, foam, or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.</p>
Exposure	<p>CALL FOR MEDICAL AID.</p> <p>VAPOR Irritating to eyes, nose and throat. If inhaled, will cause headache or nausea. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.</p> <p>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.</p>
Water Pollution	<p>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>

1. CORRECTIVE RESPONSE ACTIONS

Dilute and disperse
Stop discharge
Contain
Collection Systems: Skim
Salvage waterfowl

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: 14; Acrylate
2.2 Formula: $CH_2 = CHCOOCH_2CH_3$
2.3 IMO/UN Designation: 3.2/1917
2.4 DOT ID No.: 1917
2.5 CAS Registry No.: 140-88-5
2.6 NAERG Guide No.: 129P
2.7 Standard Industrial Trade Classification: 51379

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Organic canister or air-supplied mask; acid goggles; impervious gloves.
- 3.2 **Symptoms Following Exposure:** May cause irritation and burns of eyes and skin. Exposure to excessive vapor concentrations can also cause drowsiness accompanied by nausea, headache, or extreme irritation of the respiratory tract.
- 3.3 **Treatment of Exposure:** INHALATION: remove victim to fresh air and administer artificial respiration if necessary. SKIN AND EYES: wash for 15 min. with copious quantities of water. Call a physician.
- 3.4 **TLV-TWA:** 5 ppm
3.5 **TLV-STEL:** Not listed.
3.6 **TLV-Ceiling:** 15 ppm.
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:** Repeated exposure may develop sensitivity.
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:** Causes smarting of the skin and first-degree burns on short exposure and may cause secondary burns on long exposure.
3.12 **Odor Threshold:** 0.00024 ppm
3.13 **IDLH Value:** 300 ppm
3.14 **OSHA PEL-TWA:** 25 ppm
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:** 44°F O.C.
4.2 **Flammable Limits in Air:** 1.8%-9.5% (calc.)
4.3 **Fire Extinguishing Agents:** Dry chemical, foam or carbon dioxide.
4.4 **Fire Extinguishing Agents Not to Be Used:** Not pertinent
4.5 **Special Hazards of Combustion Products:** Toxic and irritating vapors generated when heated.
4.6 **Behavior in Fire:** Vapor is heavier than air and may travel considerable distance to a source of ignition and flash back. May polymerize and cause container to explode.
4.7 **Auto Ignition Temperature:** 721°F
4.8 **Electrical Hazards:** Currently not available
4.9 **Burning Rate:** 4.3 mm/min.
4.10 **Adiabatic Flame Temperature:** Currently not available
4.11 **Stoichiometric Air to Fuel Ratio:** 28.6 (calc.)
4.12 **Flame Temperature:** Currently not available
4.13 **Combustion Molar Ratio (Reactant to Product):** 9.0 (calc.)
4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** No reaction
5.2 **Reactivity with Common Materials:** No reaction
5.3 **Stability During Transport:** Stable
5.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
5.5 **Polymerization:** May occur; exclude moisture, light; avoid exposure to high temperatures; store in presence of air.
5.6 **Inhibitor of Polymerization:** 13-17 ppm monomethyl ether of hydroquinone

6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:** 12 ppm/24 hrs/brine shrimp/TL_m.
6.2 **Waterfowl Toxicity:** Currently not available
6.3 **Biological Oxygen Demand (BOD):** 66% of theoretical in 5 days, freshwater, acclimated seed
6.4 **Food Chain Concentration Potential:** None
6.5 **GESAMP Hazard Profile:**
Bioaccumulation: T
Damage to living resources: 3
Human Oral hazard: 2
Human Contact hazard: 1
Reduction of amenities: X

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Currently not available
7.2 **Storage Temperature:** Currently not available
7.3 **Inert Atmosphere:** Currently not available
7.4 **Venting:** Currently not available
7.5 **IMO Pollution Category:** A
7.6 **Ship Type:** 2
7.7 **Barge Hull Type:** 3

8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Flammable liquid
8.2 **49 CFR Class:** 3
8.3 **49 CFR Package Group:** II
8.4 **Marine Pollutant:** Yes
8.5 **NFPA Hazard Classification:**
- | Category | Classification |
|---------------------------|----------------|
| Health Hazard (Blue)..... | 2 |
| Flammability (Red)..... | 3 |
| Instability (Yellow)..... | 2 |
- 8.6 **EPA Reportable Quantity:** 1000 pounds
8.7 **EPA Pollution Category:** C
8.8 **RCRA Waste Number:** U113
8.9 **EPA FWPCA List:** Not listed

9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Liquid
9.2 **Molecular Weight:** 100.12
9.3 **Boiling Point at 1 atm:** 211.3°F = 99.6°C = 372.8°K
9.4 **Freezing Point:** -98°F = -72°C = 201°K
9.5 **Critical Temperature:** 534.2°F = 279°C = 552.2°K
9.6 **Critical Pressure:** 544 psia = 37 atm = 3.7 MN/m²
9.7 **Specific Gravity:** 0.923 at 20°C (liquid)
9.8 **Liquid Surface Tension:** 25 dynes/cm = 0.025 N/m at 20°C
9.9 **Liquid Water Interfacial Tension:** (est.) 40 dynes/cm = 0.04 N/m at 20°C
9.10 **Vapor (Gas) Specific Gravity:** Not pertinent
9.11 **Ratio of Specific Heats of Vapor (Gas):** 1.080
9.12 **Latent Heat of Vaporization:** 149 Btu/lb = 82.9 cal/g = 3.47 X 10⁵ J/kg
9.13 **Heat of Combustion:** -11,880 Btu/lb = -6800 cal/g = -276.3 X 10⁵ J/kg
9.14 **Heat of Decomposition:** Not pertinent
9.15 **Heat of Solution:** Not pertinent
9.16 **Heat of Polymerization:** -335 Btu/lb = -186 cal/g = -7.79 X 10⁵ J/kg
9.17 **Heat of Fusion:** Currently not available
9.18 **Limiting Value:** Currently not available
9.19 **Reid Vapor Pressure:** 1.4 psia

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
35	58.940	35	0.441	0	1.275	35	0.742
40	58.750	40	0.443	10	1.257	40	0.712
45	58.560	45	0.444	20	1.239	45	0.684
50	58.370	50	0.446	30	1.221	50	0.658
55	58.170	55	0.448	40	1.203	55	0.633
60	57.980	60	0.449	50	1.185	60	0.609
65	57.790	65	0.451	60	1.167	65	0.587
70	57.600	70	0.453	70	1.149	70	0.566
75	57.410	75	0.454	80	1.131	75	0.547
80	57.220	80	0.456	90	1.114	80	0.528
85	57.030	85	0.458	100	1.096	85	0.510
90	56.840	90	0.459	110	1.078	90	0.493
95	56.650	95	0.461	120	1.060	95	0.477
100	56.460	100	0.463	130	1.042	100	0.462
		105	0.464	140	1.024		
		110	0.466	150	1.006		
		115	0.468	160	0.988		
		120	0.469	170	0.970		
		125	0.471	180	0.952		
		130	0.473	190	0.934		
		135	0.474	200	0.916		
		140	0.476	210	0.899		

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	2.000	40	0.221	40	0.00412	0	0.243
		50	0.308	50	0.00563	25	0.253
		60	0.423	60	0.00759	50	0.262
		70	0.574	70	0.01011	75	0.272
		80	0.770	80	0.01332	100	0.281
		90	1.023	90	0.01736	125	0.290
		100	1.346	100	0.02242	150	0.299
		110	1.752	110	0.02869	175	0.308
		120	2.261	120	0.03638	200	0.317
		130	2.893	130	0.04575	225	0.326
		140	3.670	140	0.05709	250	0.335
		150	4.621	150	0.07069	275	0.343
		160	5.775	160	0.08692	300	0.351
		170	7.165	170	0.10610	325	0.359
		180	8.831	180	0.12880	350	0.368
		190	10.810	190	0.15530	375	0.375
		200	13.160	200	0.18610	400	0.383
		210	15.930	210	0.22180	425	0.391
						450	0.398
						475	0.406
						500	0.413
						525	0.420
						550	0.427
						575	0.434
						600	0.440