

ETHYL CHLOROACETATE

ECA

CAUTIONARY RESPONSE INFORMATION

Common Synonyms Chloroacetic acid, ethyl ester Ethyl chloroacetate Ethyl chloroethanoate Monochloroethanoic acid, ethyl ester		Liquid Colorless to light brown Irritating or fruity odor
Sinks in water. 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. Call fire department. Notify local health and pollution control agencies. Protect water intakes.</p>		
Fire	Combustible. POISONOUS GASES MAY BE PRODUCED IN FIRE. Extinguish with water, dry chemicals, foam, or carbon dioxide.	
Exposure	CALL FOR MEDICAL AID. VAPOR Irritating to eyes, nose and throat. If inhaled will cause headache, or nausea. Move victim to fresh air. If breathing is difficult, give oxygen. LIQUID POISONOUS IF SWALLOWED. Irritating to skin and eyes. 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 and have victim induce vomiting. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.	
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.	

1. CORRECTIVE RESPONSE ACTIONS

Stop discharge
 Collection Systems: Pump; Dredge
 Do not burn

2. CHEMICAL DESIGNATIONS

2.1 **CG Compatibility Group:** Not listed.
 2.2 **Formula:** C₄H₇ClO₂
 2.3 **IMO/UN Designation:** 3.3/1181
 2.4 **DOT ID No.:** 1181
 2.5 **CAS Registry No.:** Currently not available
 2.6 **NAERG Guide No.:** 155
 2.7 **Standard Industrial Trade Classification:** 51372

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Organic canister mask; rubber gloves; chemical goggles.
 3.2 **Symptoms Following Exposure:** Inhalation causes irritation of mucous membrane, headache, and nausea. Contact with liquid causes extreme eye irritation and conjunctivitis; irritates skin if not removed at once. Ingestion causes irritation of mouth and stomach.
 3.3 **Treatment of Exposure:** INHALATION: remove patient to fresh air; get medical attention. EYES: flush with copious quantities of water for at least 15 min.; get medical attention if irritation persists. SKIN: wash with soap and water. INGESTION: give large amount of water and induce vomiting; get medical attention.
 3.4 **TLV-TWA:** Not listed.
 3.5 **TLV-STEL:** Not listed.
 3.6 **TLV-Ceiling:** Not listed.
 3.7 **Toxicity by Ingestion:** Grade 4; LD₅₀ <50 mg/kg
 3.8 **Toxicity by Inhalation:** Currently not available.
 3.9 **Chronic Toxicity:** Currently not available
 3.10 **Vapor (Gas) Irritant Characteristics:** Currently not available
 3.11 **Liquid or Solid Characteristics:** Currently not available
 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

4. FIRE HAZARDS

- 4.1 **Flash Point:** 129°F O.C. 100°F C.C.
 4.2 **Flammable Limits in Air:** Currently not available
 4.3 **Fire Extinguishing Agents:** Water fog, foam, dry chemical, carbon dioxide
 4.4 **Fire Extinguishing Agents Not to Be Used:** Not pertinent
 4.5 **Special Hazards of Combustion Products:** Irritating, toxic hydrogen chloride and phosgene may be generated in fires.
 4.6 **Behavior in Fire:** Not pertinent
 4.7 **Auto Ignition Temperature:** Currently not available
 4.8 **Electrical Hazards:** Currently not available
 4.9 **Burning Rate:** 2.3 mm/min.
 4.10 **Adiabatic Flame Temperature:** Currently not available
 4.11 **Stoichiometric Air to Fuel Ratio:** 21.4 (calc.)
 4.12 **Flame Temperature:** Currently not available
 4.13 **Combustion Molar Ratio (Reactant to Product):** 8.0 (calc.)
 4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** Very slow, not hazardous.
 5.2 **Reactivity with Common Materials:** Slow hydrolysis to acidic products will cause slow corrosion of common metals. No hazard involved.
 5.3 **Stability During Transport:** Stable
 5.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
 5.5 **Polymerization:** Not pertinent
 5.6 **Inhibitor of Polymerization:** Not pertinent

6. WATER POLLUTION

- 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:** Not listed

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** 99+1%
 7.2 **Storage Temperature:** Ambient
 7.3 **Inert Atmosphere:** No requirement
 7.4 **Venting:** Open (flame arrester)
 7.5 **IMO Pollution Category:** Currently not available
 7.6 **Ship Type:** Currently not available
 7.7 **Barge Hull Type:** Currently not available

8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Poison
 8.2 **49 CFR Class:** 6.1
 8.3 **49 CFR Package Group:** II
 8.4 **Marine Pollutant:** No
8.5 NFPA Hazard Classification:
- | Category | Classification |
|---------------------------|----------------|
| Health Hazard (Blue)..... | - |
| Flammability (Red)..... | 3 |
| Instability (Yellow)..... | 0 |
- 8.6 **EPA Reportable Quantity:** Not listed.
 8.7 **EPA Pollution Category:** Not listed.
 8.8 **RCRA Waste Number:** Not listed
 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:** 122.6
 9.3 **Boiling Point at 1 atm:** 289°F = 143°C = 416°K
 9.4 **Freezing Point:** -15°F = -26°C = 247°K
 9.5 **Critical Temperature:** Not pertinent
 9.6 **Critical Pressure:** Not pertinent
 9.7 **Specific Gravity:** 1.15 at 20°C (liquid)
 9.8 **Liquid Surface Tension:** (est.) 26 dynes/cm = 0.026 N/m at 20°C
 9.9 **Liquid Water Interfacial Tension:** (est.) 24 dynes/cm = 0.024 N/m at 20°C
 9.10 **Vapor (Gas) Specific Gravity:** 4.3
 9.11 **Ratio of Specific Heats of Vapor (Gas):** Currently not available
 9.12 **Latent Heat of Vaporization:** 155 Btu/lb = 86 cal/g = 3.6 X 10⁵ J/kg
 9.13 **Heat of Combustion:** -7,250 Btu/lb = -4,028 cal/g = -168 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:** Currently not available

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
34	77.089	35	0.392	52	1.048	51	4.064
36	76.780	40	0.394	54	1.048	52	4.005
38	76.469	45	0.397	56	1.048	53	3.948
40	76.160	50	0.400	58	1.048	54	3.892
42	75.839	55	0.403	60	1.048	55	3.836
44	75.530	60	0.406	62	1.048	56	3.782
46	75.219	65	0.408	64	1.048	57	3.729
48	74.910	70	0.411	66	1.048	58	3.677
50	74.599	75	0.414	68	1.048	59	3.625
52	74.280	80	0.417	70	1.048	60	3.575
54	73.969	85	0.419	72	1.048	61	3.525
56	73.660	90	0.422	74	1.048	62	3.476
58	73.349	95	0.425	76	1.048	63	3.428
60	73.030	100	0.428	78	1.048	64	3.381
62	72.719			80	1.048	65	3.335
64	72.410			82	1.048	66	3.290
66	72.099			84	1.048	67	3.245
68	71.790			86	1.048	68	3.201
70	71.469					69	3.158
72	71.160					70	3.116
74	70.849					71	3.074
76	70.540					72	3.033
78	70.230					73	2.993
80	69.910					74	2.954
82	69.599					75	2.915
84	69.290					76	2.877

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
	I	100	0.196	100	0.00401		N
	N	110	0.265	110	0.00531		O
	S	120	0.354	120	0.00697		T
	O	130	0.468	130	0.00906		
	L	140	0.613	140	0.01167		P
	U	150	0.795	150	0.01490		E
	B	160	1.024	160	0.01887		R
	L	170	1.308	170	0.02372		T
	E	180	1.657	180	0.02959		I
		190	2.085	190	0.03665		N
		200	2.605	200	0.04510		E
		210	3.233	210	0.05514		R
		220	3.987	220	0.06699		T
		230	4.887	230	0.08092		I
		240	5.955	240	0.09720		N
		250	7.216	250	0.11610		E
		260	8.698	260	0.13800		N
		270	10.430	270	0.16330		T
		280	12.450	280	0.19220		
		290	14.780	290	0.22520		
		300	17.480	300	0.26280		