

ETHYL MERCAPTAN

EMC

CAUTIONARY RESPONSE INFORMATION

Common Synonyms Ethaneethiol Ethyl sulphydrate Mercaptoethane Thioethyl alcohol	Liquid Colorless to yellow Strong skunk-like odor
Floats and mixes slowly with water. Poisonous, flammable vapor is produced. Boiling point is 95°F.	
<p>Evacuate. KEEP PEOPLE AWAY. AVOID CONTACT WITH LIQUID AND VAPOR. Avoid inhalation. Wear goggles and self-contained breathing apparatus. Shut off ignition sources. Call fire department. Stay upwind. Use water spray to "knock down" vapor. Notify local health and pollution control agencies. Protect water intakes.</p>	
Fire	<p>FLAMMABLE. POISONOUS GASES ARE PRODUCED IN FIRE. Containers may explode in fire. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Extinguish with dry chemicals, 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 POISONOUS IF INHALED. Move victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.</p> <p>LIQUID POISONOUS IF SWALLOWED. 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.</p>
Water Pollution	<p>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.</p>

1. CORRECTIVE RESPONSE ACTIONS

Dilute and disperse
 Stop discharge
 Contain
 Collection Systems: Skim
 Do not burn

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: Not listed.
 2.2 Formula: C₂H₅SH
 2.3 IMO/UN Designation: 3.1/1228
 2.4 DOT ID No.: 2363
 2.5 CAS Registry No.: 75-08-1
 2.6 NAERG Guide No.: 130
 2.7 Standard Industrial Trade Classification: 51549

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Plastic gloves; goggles or face shield.
 3.2 **Symptoms Following Exposure:** Inhalation of vapor causes muscular weakness, convulsions, respiratory paralysis. High concentrations may cause pulmonary irritation. Liquid irritates eyes and skin. Ingestion causes nausea and irritation of mouth and stomach.
 3.3 **Treatment of Exposure:** INHALATION: move victim to fresh air; if he is unconscious, give artificial respiration and oxygen; get medical attention. EYES: flush with water for at least 15 min. following contact with liquid; get medical attention if irritation persists. SKIN: wash well with water. INGESTION: induce vomiting and follow with gastric lavage; get medical attention.
 3.4 TLV-TWA: 0.5 ppm
 3.5 TLV-STEL: Not listed.
 3.6 TLV-Ceiling: Not listed.
 3.7 **Toxicity by Ingestion:** Grade 2; oral LD₅₀ = 682 mg/kg (rat)
 3.8 **Toxicity by Inhalation:** Currently not available.
 3.9 **Chronic Toxicity:** May impair respiratory muscle function in warm-blooded experimental animals
 3.10 **Vapor (Gas) Irritant Characteristics:** Currently not available
 3.11 **Liquid or Solid Characteristics:** Currently not available
 3.12 **Odor Threshold:** 0.001 ppm
 3.13 **IDLH Value:** 500 ppm
 3.14 **OSHA PEL-TWA:** Not listed.
 3.15 **OSHA PEL-STEL:** Not listed.
 3.16 **OSHA PEL-Ceiling:** 10 ppm
 3.17 **EPA AEGL:** Not listed

4. FIRE HAZARDS

- 4.1 **Flash Point:** <0°F O.C.
 4.2 **Flammable Limits in Air:** 2.8%-18%
 4.3 **Fire Extinguishing Agents:** Dry chemical, foam, carbon dioxide
 4.4 **Fire Extinguishing Agents Not to Be Used:** Water may be ineffective.
 4.5 **Special Hazards of Combustion Products:** Irritating fumes of sulfur dioxide are generated.
 4.6 **Behavior in Fire:** Vapor is heavier than air and may travel long distance to a source of ignition and flash back; containers may explode in a fire; offensive fumes are released when heated.
 4.7 **Auto Ignition Temperature:** 572°F
 4.8 **Electrical Hazards:** Currently not available
 4.9 **Burning Rate:** 5.7 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):** 6.0 (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:** 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:**
 Bioaccumulation: (T)
 Damage to living resources: 4
 Human Oral hazard: 1
 Human Contact hazard: II
 Reduction of amenities: XXX

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** 98.5+%
 7.2 **Storage Temperature:** Below 30°C
 7.3 **Inert Atmosphere:** No requirement
 7.4 **Venting:** Pressure-vacuum
 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:** Flammable liquid
 8.2 **49 CFR Class:** 3
 8.3 **49 CFR Package Group:** I
 8.4 **Marine Pollutant:** No
 8.5 **NFPA Hazard Classification:**
- | Category | Classification |
|----------------------|----------------|
| Health Hazard (Blue) | 2 |
| Flammability (Red) | 4 |
| 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:** 62.1
 9.3 **Boiling Point at 1 atm:** 93.9°F = 34.4°C = 307.6°K
 9.4 **Freezing Point:** -234°F = -147°C = 126°K
 9.5 **Critical Temperature:** 438.8°F = 226°C = 499.2°K
 9.6 **Critical Pressure:** 798 psia = 54.2 atm = 5.50 MN/m²
 9.7 **Specific Gravity:** 0.826 at 20°C (liquid)
 9.8 **Liquid Surface Tension:** 23.5 dynes/cm = 0.0235 N/m at 20°C
 9.9 **Liquid Water Interfacial Tension:** 25 dynes/cm = 0.025 N/m at 20°C
 9.10 **Vapor (Gas) Specific Gravity:** 2.1
 9.11 **Ratio of Specific Heats of Vapor (Gas):** 1.1308 at 16°C
 9.12 **Latent Heat of Vaporization:** 189 Btu/lb = 105 cal/g = 4.39 X 10⁵ J/kg
 9.13 **Heat of Combustion:** -15,000 Btu/lb = -8,300 cal/g = -350 X 10⁶ 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:** 19.14 cal/g
 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
0	54.390	0	0.439	15	1.037	-35	0.340
10	53.970	10	0.441	20	1.026	-30	0.332
20	53.560	20	0.443	25	1.015	-25	0.324
30	53.140	30	0.446	30	1.004	-20	0.316
40	52.730	40	0.448	35	0.993	-15	0.309
50	52.310	50	0.450	40	0.982	-10	0.302
60	51.890	60	0.452	45	0.971	-5	0.295
70	51.480	70	0.454	50	0.960	0	0.288
80	51.061	80	0.456	55	0.949	5	0.282
90	50.650	90	0.458	60	0.938	10	0.276
				65	0.927	15	0.271
				70	0.916	20	0.265
				75	0.905	25	0.260
				80	0.894	30	0.255
				85	0.883	35	0.250
				90	0.872	40	0.246
						45	0.241
						50	0.237
						55	0.233
						60	0.229
						65	0.225
						70	0.222
						75	0.218
						80	0.215
						85	0.211
						90	0.208

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	1.500	15	2.360	15	0.02876	0	0.261
		20	2.696	20	0.03251	25	0.268
		25	3.071	25	0.03665	50	0.275
		30	3.489	30	0.04122	75	0.282
		35	3.954	35	0.04625	100	0.290
		40	4.470	40	0.05176	125	0.297
		45	5.041	45	0.05779	150	0.304
		50	5.672	50	0.06438	175	0.311
		55	6.366	55	0.07156	200	0.318
		60	7.130	60	0.07938	225	0.326
		65	7.969	65	0.08786	250	0.333
		70	8.887	70	0.09706	275	0.340
		75	9.891	75	0.10700	300	0.347
		80	10.990	80	0.11780	325	0.354
		85	12.180	85	0.12940	350	0.361
		90	13.480	90	0.14180	375	0.369
		95	14.890	95	0.15520	400	0.376
		100	16.410	100	0.16960	425	0.383
						450	0.390
						475	0.397
						500	0.404
						525	0.412
						550	0.419
						575	0.426
						600	0.433