

# ETHYL PHOSPHONOTHIOIC DICHLORIDE

EPD

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b>	Liquid	Colorless	Choking odor
Ethyl phosphorodichlorodithionate Ethyl thionophosphoryl dichloride	Reacts with water. Poisonous gas is produced on contact with water.		
<p>Keep people away. Avoid inhalation. Call fire department. Notify local health and pollution control agencies. Protect water intakes.</p>			
<b>Fire</b>	Combustible. POISONOUS GASES ARE PRODUCED IN FIRE. Wear goggles and self-contained breathing apparatus. Extinguish with dry chemicals or carbon dioxide. DO NOT USE WATER OR FOAM ON FIRE.		
<b>Exposure</b>	CALL FOR MEDICAL AID. GAS PRODUCED IN REACTION WITH WATER. POISONOUS IF INHALED. Irritating to eyes, nose and throat. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.  LIQUID Irritating to 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.		
<b>Water Pollution</b>	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

Dilute and disperse  
 Stop discharge  
 Collection Systems: Pump  
 Chemical and Physical Treatment:  
 Neutralize  
 Do not burn

### 2. CHEMICAL DESIGNATIONS

2.1 **CG Compatibility Group:** Not listed.  
 2.2 **Formula:** CH<sub>3</sub>CH<sub>2</sub>PSCl<sub>2</sub>  
 2.3 **IMO/UN Designation:** 8/1760  
 2.4 **DOT ID No.:** 2927  
 2.5 **CAS Registry No.:** Currently not available  
 2.6 **NAERG Guide No.:** 154  
 2.7 **Standard Industrial Trade Classification:** 51631

### 3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Air mask; rubber or neoprene gloves; vapor-tight goggles.  
 3.2 **Symptoms Following Exposure:** Inhalation of vapor causes pulmonary and eye irritation; effects on lungs may be delayed 24 hours; very similar to phosgene poisoning. Contact with liquid causes painful irritation of eyes and lachrymation; also causes severe irritation and possible damage to skin. Ingestion causes severe irritation of mouth and stomach.  
 3.3 **Treatment of Exposure:** INHALATION: remove victim from exposure; oxygen can be used for pulmonary symptoms with decongestants; enforce complete rest, because effects may be delayed 24 hours; similar to phosgene poisoning. EYES: flush thoroughly with water and seek medical attention; apply Pontocaine drops (1/2%) and cortisone ointment (1%). SKIN: wash thoroughly with soap and water. INGESTION: give large amounts of water; induce vomiting; get medical attention; enforce rest for 24-36 hours.  
 3.4 **TLV-TWA:** Not listed.  
 3.5 **TLV-STEL:** Not listed.  
 3.6 **TLV-Ceiling:** Not listed.  
 3.7 **Toxicity by Ingestion:** Grade 2; LD<sub>50</sub> = 0.5 to 5 g/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:** 203°F O.C.  
 4.2 **Flammable Limits in Air:** Currently not available  
 4.3 **Fire Extinguishing Agents:** Dry chemical or carbon dioxide  
 4.4 **Fire Extinguishing Agents Not to Be Used:** Water or foam  
 4.5 **Special Hazards of Combustion Products:** Oxides of sulfur, phosphorus; hydrogen chloride and phosgene.  
 4.6 **Behavior in Fire:** Contact with water applied to adjacent fires will produce irritating fumes of hydrogen chloride.  
 4.7 **Auto Ignition Temperature:** Currently not available  
 4.8 **Electrical Hazards:** Currently not available  
 4.9 **Burning Rate:** Currently not available  
 4.10 **Adiabatic Flame Temperature:** Currently not available  
 4.11 **Stoichiometric Air to Fuel Ratio:** 19.0 (calc.)  
 4.12 **Flame Temperature:** Currently not available  
 4.13 **Combustion Molar Ratio (Reactant to Product):** 7.0 (calc.)  
 4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

### 5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** Reacts with water to evolve hydrogen chloride (hydrochloric acid)  
 5.2 **Reactivity with Common Materials:** Will react with surface moisture to evolve hydrogen chloride, which is corrosive to common metals.  
 5.3 **Stability During Transport:** Stable  
 5.4 **Neutralizing Agents for Acids and Caustics:** Flood with water, rinse with sodium bicarbonate or lime solution.  
 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:** Commercial  
 7.2 **Storage Temperature:** Ambient  
 7.3 **Inert Atmosphere:** Inerted with dry nitrogen.  
 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:** Poison  
 8.2 **49 CFR Class:** 6.1  
 8.3 **49 CFR Package Group:** I  
 8.4 **Marine Pollutant:** No  
 8.5 **NFPA Hazard Classification:** Not listed  
 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:** 163  
 9.3 **Boiling Point at 1 atm:** 342°F = 172°C = 445°K  
 9.4 **Freezing Point:** <-58°F = <-50°C = <223°K  
 9.5 **Critical Temperature:** Not pertinent  
 9.6 **Critical Pressure:** Not pertinent  
 9.7 **Specific Gravity:** 1.35 at 20°C (liquid)  
 9.8 **Liquid Surface Tension:** (est.) 28 dynes/cm = 0.028 N/m at 20°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):** Not pertinent  
 9.12 **Latent Heat of Vaporization:** Not pertinent  
 9.13 **Heat of Combustion:** -7,700 Btu/lb = -4,280 cal/g = -179 X 10<sup>6</sup> J/kg  
 9.14 **Heat of Decomposition:** Not pertinent  
 9.15 **Heat of Solution:** Currently not available  
 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
52	89.820	65	0.241	51	1.129	51	9.018
54	89.129	70	0.244	52	1.129	52	8.773
56	88.429	75	0.248	53	1.129	53	8.535
58	87.740	80	0.252	54	1.129	54	8.305
60	87.049	85	0.256	55	1.129	55	8.082
62	86.349	90	0.259	56	1.129	56	7.865
64	85.660	95	0.263	57	1.129	57	7.656
66	84.959	100	0.267	58	1.129	58	7.452
68	84.270	105	0.271	59	1.129	59	7.255
70	83.580	110	0.274	60	1.129	60	7.064
72	82.879	115	0.278	61	1.129	61	6.879
74	82.190	120	0.282	62	1.129	62	6.699
76	81.500	125	0.286	63	1.129	63	6.524
78	80.799	130	0.289	64	1.129	64	6.355
80	80.110			65	1.129	65	6.190
82	79.419			66	1.129	66	6.031
84	78.719			67	1.129	67	5.876
86	78.030			68	1.129	68	5.726
				69	1.129	69	5.580
				70	1.129	70	5.438
				71	1.129	71	5.301
				72	1.129	72	5.167
				73	1.129	73	5.037
				74	1.129	74	4.911
				75	1.129	75	4.789
				76	1.129	76	4.670

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
	R	55	0.017	55	0.00051		N
	E	60	0.020	60	0.00059		O
	A	65	0.024	65	0.00070		T
	C	70	0.028	70	0.00081		
	T	75	0.033	75	0.00095		P
	S	80	0.039	80	0.00110		E
		85	0.046	85	0.00127		R
		90	0.053	90	0.00147		T
		95	0.062	95	0.00170		I
		100	0.072	100	0.00196		N
		105	0.084	105	0.00225		E
		110	0.097	110	0.00258		N
		115	0.112	115	0.00296		T
		120	0.129	120	0.00338		
		125	0.148	125	0.00385		
		130	0.170	130	0.00438		
		135	0.195	135	0.00498		
		140	0.223	140	0.00564		
		145	0.254	145	0.00638		
		150	0.289	150	0.00721		
		155	0.329	155	0.00813		
		160	0.373	160	0.00915		
		165	0.423	165	0.01028		
		170	0.478	170	0.01154		
		175	0.540	175	0.01292		