BENZENE PHOSPHORUS THIODICHLORIDE

BPT

CAUTIONARY RESPONSE INFORMATION

Common Synonyms
Benzenethiophosphonyl chloride
Phenylphosphine thiodichloride
Phenylphosphonothioic dichloride

Liquid Colorless Unpleasant odor

Sinks and reacts in water. Poisonous visible vapor cloud is produced.

Restrict access.
Avoid contact with liquid and vapor.
Notify local health and pollution control agencies.
Protect water intakes.

Fire

Fire data not available.

Exposure

CALL FOR MEDICAL AID.

VAPOR 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.

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

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: $C_6H_5PSCl_2$
2.3 IMO/UN Designation: Not listed
2.4 DOT ID No.: 2799
2.5 CAS Registry No.: Currently not available
2.6 NAERG Guide No.: 137
2.7 Standard Industrial Trade Classification: 51549

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Self-contained breathing apparatus; acid-type canister mask; goggles and face shield; rubber gloves; protective clothing.
3.2 Symptoms Following Exposure: Inhalation of vapor irritates nose and throat; pulmonary edema may result. Contact with eyes or skin causes severe irritation. Ingestion causes severe irritation of mouth and stomach.
3.3 Treatment of Exposure: Get medical attention following all exposures to this compound. INHALATION: remove to fresh air. EYES: flush with water for at least 15 min.; do not use oils or ointments. SKIN: flush with water; wash with soap and water. INGESTION: give large amounts of water or milk; induce vomiting; give milk, eggs, or olive oil.
3.4 TLV-TWA: Not listed.
3.5 TLV-STEL: Not listed.
3.6 TLV-Ceiling: Not listed.
3.7 Toxicity by Ingestion: Currently not available
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: 252°F O.C.
4.2 Flammable Limits in Air: Not pertinent
4.3 Fire Extinguishing Agents: Water
4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent
4.5 Special Hazards of Combustion Products: Toxic fumes include oxides of phosphorus and sulfur and hydrogen chloride.
4.6 Behavior in Fire: Containers may rupture.
4.7 Auto Ignition Temperature: 338°F
4.8 Electrical Hazards: Currently not available
4.9 Burning Rate: Currently not available
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichometric Air to Fuel Ratio: 42.8 (calc.)
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): 11.0 (calc.)
4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed

5. CHEMICAL REACTIVITY

5.1 Reactivity with Water: Forms hydrogen chloride fumes (hydrochloric acid). The reaction is slow unless water is hot.
5.2 Reactivity with Common Materials: Corrodes metal slowly.
5.3 Stability During Transport: Stable
5.4 Neutralizing Agents for Acids and Caustics: Flush 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: 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: Corrosive material
8.2 49 CFR Class: 8
8.3 49 CFR Package Group: II
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: 211
9.3 Boiling Point at 1 atm: 518°F = 270°C = 543°K
9.4 Freezing Point: –11.2°F = –24.0°C = 249.2°K
9.5 Critical Temperature: Not pertinent
9.6 Critical Pressure: Not pertinent
9.7 Specific Gravity: 1.378 at 20°C (liquid)
9.8 Liquid Surface Tension: (est.) 25 dynes/cm = 0.025 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: (est.) –7,700 Btu/lb = –4,300 cal/g = –180 X 10^5 J/kg
9.14 Heat of Decomposition: Not pertinent
9.15 Heat of Solution: (est.) –9 Btu/lb = –5 cal/g = –0.2 X 10^5 J/kg
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	88.570	34	0.400	34	1.048	52	5.463
36	88.500	36	0.400	36	1.048	54	5.368
38	88.429	38	0.400	38	1.048	56	5.275
40	88.360	40	0.400	40	1.048	58	5.185
42	88.290	42	0.400	42	1.048	60	5.097
44	88.219	44	0.400	44	1.048	62	5.011
46	88.150	46	0.400	46	1.048	64	4.927
48	88.080	48	0.400	48	1.048	66	4.845
50	88.020	50	0.400	50	1.048	68	4.765
52	87.950	52	0.400	52	1.048	70	4.688
54	87.879	54	0.400	54	1.048	72	4.611
56	87.809	56	0.400	56	1.048	74	4.537
58	87.740	58	0.400	58	1.048	76	4.465
60	87.669	60	0.400	60	1.048	78	4.394
62	87.599	62	0.400	62	1.048	80	4.325
64	87.530	64	0.400	64	1.048	82	4.257
66	87.459	66	0.400	66	1.048	84	4.191
68	87.389	68	0.400	68	1.048	86	4.126
70	87.320						
72	87.250						
74	87.179						
76	87.110						

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	220	0.497	220	0.01437		N
	E	230	0.584	230	0.01664		O
	A	240	0.683	240	0.01918		T
	C	250	0.795	250	0.02202		
	T	260	0.921	260	0.02517		P
	S	270	1.064	270	0.02866		E
		280	1.224	280	0.03252		R
		290	1.402	290	0.03676		T
		300	1.601	300	0.04142		I
		310	1.821	310	0.04652		N
		320	2.066	320	0.05208		E
		330	2.335	330	0.05812		N
		340	2.632	340	0.06468		T
		350	2.957	350	0.07178		
		360	3.313	360	0.07945		
		370	3.702	370	0.08771		
		380	4.126	380	0.09658		
		390	4.586	390	0.10610		
		400	5.085	400	0.11630		
		410	5.626	410	0.12710		
		420	6.209	420	0.13870		
		430	6.838	430	0.15110		
		440	7.514	440	0.16420		
		450	8.240	450	0.17800		
		460	9.018	460	0.19270		
		470	9.850	470	0.20830		