

# THIOPHOSGENE

TPG

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> Thiocarbonyl chloride	Liquid	Red	Sharp choking odor
Sinks in water. Reacts slowly with water and produces poisonous vapor.			
<p>Evacuate.  <b>KEEP PEOPLE AWAY. AVOID CONTACT WITH LIQUID AND VAPOR.</b>  Wear goggles and self-contained breathing apparatus.  Stay upwind. Use water spray to "knock down" vapor.  Notify local health and pollution control agencies.  Protect water intakes.</p>			
<b>Fire</b>	<p>Combustible.  <b>POISONOUS GASES ARE PRODUCED IN FIRE.</b>  Wear goggles and self-contained breathing apparatus.  Extinguish with dry chemicals or carbon dioxide.  <b>DO NOT USE WATER OR FOAM ON FIRE.</b>  Cool exposed containers with water.</p>		
<b>Exposure</b>	<p>CALL FOR MEDICAL AID.</p> <p>VAPOR  <b>POISONOUS IF INHALED.</b>  Irritating to eyes, nose and throat.  Move victim to fresh air.  If breathing has stopped, give artificial respiration (but not mouth-to-mouth).  If breathing is difficult, give oxygen.</p> <p>LIQUID  <b>POISONOUS IF SWALLOWED.</b>  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.</p>		
<b>Water Pollution</b>	<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>		

<p><b>1. CORRECTIVE RESPONSE ACTIONS</b>  Dilute and disperse  Stop discharge  Collection Systems: Pump  Chemical and Physical Treatment:  Neutralize  Do not burn</p>	<p><b>2. CHEMICAL DESIGNATIONS</b>  2.1 <b>CG Compatibility Group:</b> Not listed.  2.2 <b>Formula:</b> CSCl<sub>2</sub>  2.3 <b>IMO/UN Designation:</b> 6.1/2474  2.4 <b>DOT ID No.:</b> 2474  2.5 <b>CAS Registry No.:</b> 463-71-8  2.6 <b>NAERG Guide No.:</b> 157  2.7 <b>Standard Industrial Trade Classification:</b> 51549</p>
<p><b>3. HEALTH HAZARDS</b></p> <p>3.1 <b>Personal Protective Equipment:</b> Self-contained breathing apparatus or organic canister mask; goggles or face shield; rubber gloves</p> <p>3.2 <b>Symptoms Following Exposure:</b> Inhalation causes irritation of respiratory system and delayed pulmonary edema. Vapor irritates eyes. Liquid burns skin and eyes. Ingestion causes irritation of mouth and stomach.</p> <p>3.3 <b>Treatment of Exposure:</b> Get medical attention at once after any exposure to this compound.  <b>INHALATION:</b> remove victim from exposure; support respiration; watch for pulmonary edema.  <b>EYES:</b> irrigate with large quantities of water for 15 min. <b>SKIN:</b> flush with water. <b>INGESTION:</b> do NOT induce vomiting; give large amount of water.</p> <p>3.4 <b>TLV-TWA:</b> Not listed.  3.5 <b>TLV-STEL:</b> Not listed.  3.6 <b>TLV-Ceiling:</b> Not listed.  3.7 <b>Toxicity by Ingestion:</b> Grade 2; oral LD<sub>50</sub> = 929 mg/kg (rat)  3.8 <b>Toxicity by Inhalation:</b> Currently not available.  3.9 <b>Chronic Toxicity:</b> Currently not available  3.10 <b>Vapor (Gas) Irritant Characteristics:</b> Currently not available  3.11 <b>Liquid or Solid Characteristics:</b> Currently not available  3.12 <b>Odor Threshold:</b> Currently not available  3.13 <b>IDLH Value:</b> Not listed.  3.14 <b>OSHA PEL-TWA:</b> Not listed.  3.15 <b>OSHA PEL-STEL:</b> Not listed.  3.16 <b>OSHA PEL-Ceiling:</b> Not listed.  3.17 <b>EPA AEGL:</b> Not listed</p>	

## 4. FIRE HAZARDS

- 4.1 **Flash Point:** Currently not available
- 4.2 **Flammable Limits in Air:** Currently not available
- 4.3 **Fire Extinguishing Agents:** Dry chemical, carbon dioxide
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Water, foam
- 4.5 **Special Hazards of Combustion Products:** Toxic phosgene, hydrogen chloride, and sulfur dioxide may be generated in a fire.
- 4.6 **Behavior in Fire:** Decomposes above 200°C to carbon bisulfide (very flammable) and carbon tetrachloride.
- 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:** 9.5 (calc.)
- 4.12 **Flame Temperature:** Currently not available
- 4.13 **Combustion Molar Ratio (Reactant to Product):** 3.0 (calc.)
- 4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

## 5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** Evolves hydrogen chloride, carbon disulfide, and carbon dioxide. Reaction is slow unless water is hot.
- 5.2 **Reactivity with Common Materials:** Corrodes metals in presence of moisture.
- 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:**  
**Bioaccumulation:** -  
**Damage to living resources:** -  
**Human Oral hazard:** 1  
**Human Contact hazard:** II  
**Reduction of amenities:** XX

## 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:** 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)..... | 3              |
| Flammability (Red).....   | 1              |
| 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:** 115.0
- 9.3 **Boiling Point at 1 atm:** 163°F = 73°C = 346°K
- 9.4 **Freezing Point:** Not pertinent
- 9.5 **Critical Temperature:** Not pertinent
- 9.6 **Critical Pressure:** Not pertinent
- 9.7 **Specific Gravity:** 1.513 at 20°C
- 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:** 4
- 9.11 **Ratio of Specific Heats of Vapor (Gas):** Currently not available
- 9.12 **Latent Heat of Vaporization:** (est.) 128 Btu/lb = 71 cal/g = 3.0 X 10<sup>5</sup> J/kg
- 9.13 **Heat of Combustion:** (est.) -3,400 Btu/lb = -1,900 cal/g = -80 X 10<sup>5</sup> 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

# THIOPHOSGENE

TPG

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	95.440		N	51	0.887		N
36	95.370		O	52	0.887		O
38	95.299		T	53	0.887		T
40	95.230			54	0.887		
42	95.160		P	55	0.887		P
44	95.089		E	56	0.887		E
46	95.020		R	57	0.887		R
48	94.950		T	58	0.887		T
50	94.879		I	59	0.887		I
52	94.809		N	60	0.887		N
54	94.740		E	61	0.887		E
56	94.669		N	62	0.887		N
58	94.599		T	63	0.887		T
60	94.530			64	0.887		
62	94.469			65	0.887		
64	94.400			66	0.887		
66	94.330			67	0.887		
68	94.259			68	0.887		
70	94.190			69	0.887		
72	94.120			70	0.887		
74	94.049			71	0.887		
76	93.980			72	0.887		
				73	0.887		
				74	0.887		
				75	0.887		
				76	0.887		

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	124	6.618	124	0.12150	100	0.138
	E	126	6.909	126	0.12640	120	0.139
	A	128	7.211	128	0.13150	140	0.139
	C	130	7.524	130	0.13670	160	0.140
	T	132	7.849	132	0.14210	180	0.141
	S	134	8.185	134	0.14770	200	0.142
		136	8.533	136	0.15350	220	0.143
		138	8.893	138	0.15940	240	0.144
		140	9.266	140	0.16550	260	0.145
		142	9.652	142	0.17190	280	0.146
		144	10.050	144	0.17840	300	0.147
		146	10.460	146	0.18510	320	0.148
		148	10.890	148	0.19200	340	0.148
		150	11.330	150	0.19920	360	0.149
		152	11.790	152	0.20650	380	0.150
		154	12.260	154	0.21410	400	0.151
		156	12.750	156	0.22180	420	0.152
		158	13.250	158	0.22990	440	0.153
		160	13.770	160	0.23810		
		162	14.310	162	0.24660		
		164	14.860	164	0.25530		
		166	15.430	166	0.26430		
		168	16.020	168	0.27350		
		170	16.630	170	0.28300		
		172	17.260	172	0.29270		
		174	17.910	174	0.30270		