

THIOPHOSGENE

TPG

CAUTIONARY RESPONSE INFORMATION			
Common Synonyms Thiocarbonyl chloride	Liquid	Red	Sharp choking odor Sinks in water. Reacts slowly with water and produces poisonous vapor.
Evacuate. KEEP PEOPLE AWAY. AVOID CONTACT WITH LIQUID AND VAPOR. 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.			
Fire	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. Cool exposed containers with water.		
Exposure	CALL FOR MEDICAL AID. VAPOR POISONOUS IF INHALED. 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. 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 CON- VULSIONS , 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	2. CHEMICAL DESIGNATIONS
Dilute and disperse Stop discharge Collection Systems: Pump Chemical and Physical Treatment: Neutralize Do not burn	2.1 CG Compatibility Group: Not listed. 2.2 Formula: CSC ₂ 2.3 IMO/UN Designation: 6.1/2474 2.4 DOT ID No.: 2474 2.5 CAS Registry No.: 463-71-8 2.6 NAERG Guide No.: 157 2.7 Standard Industrial Trade Classification: 51549
3. HEALTH HAZARDS	
3.1 Personal Protective Equipment: Self-contained breathing apparatus or organic canister mask; goggles or face shield; rubber gloves	
3.2 Symptoms Following Exposure: 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.	
3.3 Treatment of Exposure: Get medical attention at once after any exposure to this compound. INHALATION: remove victim from exposure; support respiration; watch for pulmonary edema. EYES: irrigate with large quantities of water for 15 min. SKIN: flush with water. INGESTION: do NOT induce vomiting; give large amount of water.	
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; oral LD ₅₀ = 929 mg/kg (rat)	
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	7. SHIPPING INFORMATION								
4.1 Flash Point: Currently not available	7.1 Grades of Purity: Commercial								
4.2 Flammable Limits in Air: Currently not available	7.2 Storage Temperature: Ambient								
4.3 Fire Extinguishing Agents: Dry chemical, carbon dioxide	7.3 Inert Atmosphere: No requirement								
4.4 Fire Extinguishing Agents Not to Be Used: Water, foam	7.4 Venting: Pressure-vacuum								
4.5 Special Hazards of Combustion Products: Toxic phosgene, hydrogen chloride, and sulfur dioxide may be generated in a fire.	7.5 IMO Pollution Category: Currently not available								
4.6 Behavior in Fire: Decomposes above 200°C to carbon bisulfide (very flammable) and carbon tetrachloride.	7.6 Ship Type: Currently not available								
4.7 Auto Ignition Temperature: Currently not available	7.7 Barge Hull Type: Currently not available								
4.8 Electrical Hazards: Currently not available	8. HAZARD CLASSIFICATIONS								
4.9 Burning Rate: Currently not available	8.1 49 CFR Category: Poison								
4.10 Adiabatic Flame Temperature: Currently not available	8.2 49 CFR Class: 6.1								
4.11 Stoichiometric Air to Fuel Ratio: 9.5 (calc.)	8.3 49 CFR Package Group: II								
4.12 Flame Temperature: Currently not available	8.4 Marine Pollutant: No								
4.13 Combustion Molar Ratio (Reactant to Product): 3.0 (calc.)	8.5 NFPA Hazard Classification:								
4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed	<table border="0"> <tr> <td>Category</td> <td>Classification</td> </tr> <tr> <td>Health Hazard (Blue).....</td> <td>3</td> </tr> <tr> <td>Flammability (Red).....</td> <td>1</td> </tr> <tr> <td>Instability (Yellow).....</td> <td>0</td> </tr> </table>	Category	Classification	Health Hazard (Blue).....	3	Flammability (Red).....	1	Instability (Yellow).....	0
Category	Classification								
Health Hazard (Blue).....	3								
Flammability (Red).....	1								
Instability (Yellow).....	0								
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 ³ J/kg									
9.13 Heat of Combustion: (est.) -3,400 Btu/lb = -1,900 cal/g = -80 X 10 ³ 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	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		