

# PHOSGENE

PHG

## CAUTIONARY RESPONSE INFORMATION

Common Synonyms Carbonyl chloride Chloroformyl chloride	Liquefied compressed gas	Colorless gas, or light yellow liquid	Sweet or sharp odor
Liquid sinks in water. Poisonous vapor is produced. Boiling point is 47°F.			
Keep people away. AVOID CONTACT WITH LIQUID AND VAPOR. Wear goggles and self-contained breathing apparatus. Evacuate area in case of large discharge. Stay upwind and use water spray to "knock down" vapor. Notify local health and pollution control agencies. Protect water intakes.			
Fire	Not flammable. POISONOUS GASES ARE PRODUCED WHEN HEATED. Wear goggles and self-contained breathing apparatus. Cool exposed containers and protect men effecting shutoff with water.		
Exposure	CALL FOR MEDICAL AID.  VAPOR POISONOUS IF INHALED. Irritating to eyes, nose, and throat. Effects may be delayed. Move to fresh air. If breathing has stopped, give artificial respiration (but NOT mouth-to-mouth). If breathing is difficult, give oxygen. Maintain absolute rest until medical aid arrives.		
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

## 2. CHEMICAL DESIGNATIONS

- 2.1 CG Compatibility Group: Not listed.
- 2.2 Formula:  $\text{COCl}_2$
- 2.3 IMO/UN Designation: 2.0/1076
- 2.4 DOT ID No.: 1076
- 2.5 CAS Registry No.: 75-44-5
- 2.6 NAERG Guide No.: 125
- 2.7 Standard Industrial Trade Classification: 51625

## 3. HEALTH HAZARDS

- 3.1 Personal Protective Equipment: Approved U.S. Bureau of Mines respirator; protective clothing.
- 3.2 Symptoms Following Exposure: Irritates lungs, causing delayed pulmonary edema. Slight gassing produces dryness or burning sensation in the throat, numbness, pain in the chest, bronchitis, and shortness of breath.
- 3.3 Treatment of Exposure: INHALATION: remove victim from contaminated area; enforce absolute rest; call a doctor.
- 3.4 TLV-TWA: 0.1 ppm
- 3.5 TLV-STEL: Not listed.
- 3.6 TLV-Ceiling: Not listed.
- 3.7 Toxicity by Ingestion: Not pertinent
- 3.8 Toxicity by Inhalation: Currently not available.
- 3.9 Chronic Toxicity: Severe delayed pulmonary edema.
- 3.10 Vapor (Gas) Irritant Characteristics: Vapors cause severe irritation of eyes and throat and can cause eye and lung injury. They cannot be tolerated even at low concentrations.
- 3.11 Liquid or Solid Characteristics: Severe irritant to all tissues.
- 3.12 Odor Threshold: 0.5 ppm
- 3.13 IDLH Value: 2 ppm
- 3.14 OSHA PEL-TWA: 0.1 ppm
- 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: Not flammable
- 4.2 Flammable Limits in Air: Not flammable
- 4.3 Fire Extinguishing Agents: Water to cool containers
- 4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent
- 4.5 Special Hazards of Combustion Products: Toxic gas is generated when heated.
- 4.6 Behavior in Fire: Not pertinent
- 4.7 Auto Ignition Temperature: Not flammable
- 4.8 Electrical Hazards: Not pertinent
- 4.9 Burning Rate: Not flammable
- 4.10 Adiabatic Flame Temperature: Currently not available
- 4.11 Stoichiometric Air to Fuel Ratio: Not pertinent.
- 4.12 Flame Temperature: Currently not available
- 4.13 Combustion Molar Ratio (Reactant to Product): Not pertinent.
- 4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed

## 5. CHEMICAL REACTIVITY

- 5.1 Reactivity with Water: Decomposes, but not vigorously.
- 5.2 Reactivity with Common Materials: No reaction
- 5.3 Stability During Transport: Stable
- 5.4 Neutralizing Agents for Acids and Caustics: Can be absorbed in caustic soda solution. One ton of phosgene requires 2,480 lbs. of caustic soda dissolved in 1000 gal. of water.
- 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): None
- 6.4 Food Chain Concentration Potential: None
- 6.5 GESAMP Hazard Profile: Bioaccumulation: 0  
Damage to living resources: -  
Human Oral hazard: -  
Human Contact hazard: II  
Reduction of amenities: XX

## 7. SHIPPING INFORMATION

- 7.1 Grades of Purity: Commercial; 100%
- 7.2 Storage Temperature: Ambient
- 7.3 Inert Atmosphere: No requirement
- 7.4 Venting: Safety relief
- 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 gas
- 8.2 49 CFR Class: 2.3
- 8.3 49 CFR Package Group: Not pertinent.
- 8.4 Marine Pollutant: No
- 8.5 NFPA Hazard Classification:
 

Category	Classification
Health Hazard (Blue)	4
Flammability (Red)	0
Instability (Yellow)	1
- 8.6 EPA Reportable Quantity: 10 pounds
- 8.7 EPA Pollution Category: A
- 8.8 RCRA Waste Number: P095
- 8.9 EPA FWCNA List: Yes

## 9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 Physical State at 15°C and 1 atm: Gas
- 9.2 Molecular Weight: 98.92
- 9.3 Boiling Point at 1 atm: 46.8°F = 8.2°C = 281.4°K
- 9.4 Freezing Point: -195°F = -126°C = 147°K
- 9.5 Critical Temperature: 359.6°F = 182°C = 455.2°K
- 9.6 Critical Pressure: 823 psia = 56.0 atm = 5.67 MN/m²
- 9.7 Specific Gravity: 1.38 at 20°C (liquid)
- 9.8 Liquid Surface Tension: 22.8 dynes/cm = 0.0228 N/m at 0°C
- 9.9 Liquid Water Interfacial Tension: Not pertinent
- 9.10 Vapor (Gas) Specific Gravity: 3.4
- 9.11 Ratio of Specific Heats of Vapor (Gas): 1.170
- 9.12 Latent Heat of Vaporization: 110 Btu/lb = 59 cal/g =  $2.5 \times 10^5$  J/kg
- 9.13 Heat of Combustion: Not pertinent
- 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
35	89.009	0	0.250		N		NOT
40	88.570	5	0.250		O		NOT
45	88.139	10	0.250		T		PER
		15	0.250		P		T
		20	0.250		E		I
		25	0.250		R		N
		30	0.250		T		E
		35	0.250		I		N
		40	0.250		N		E
		45	0.250		E		N

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	E	50	15.710	50	0.28400	0	0.132
E	A	60	19.260	60	0.34160	25	0.134
A	C	70	23.440	70	0.40770	50	0.137
C	T	80	28.310	80	0.48340	75	0.139
T	S	90	33.960	90	0.56930	100	0.142
S		100	40.480	100	0.66640	125	0.144
		110	47.940	110	0.77560	150	0.146
		120	56.460	120	0.89760	175	0.148
		130	66.120	130	1.03300	200	0.150
		140	77.030	140	1.18400	225	0.152
		150	89.290	150	1.35000	250	0.154
		160	103.000	160	1.53200	275	0.155
		170	118.299	170	1.73100	300	0.157
		180	135.299	180	1.94900	325	0.159
		190	154.000	190	2.18500	350	0.160
		200	174.699	200	2.44100	375	0.161
		210	197.400	210	2.71700	400	0.163
						425	0.164
						450	0.165
						475	0.166
						500	0.167
						525	0.167
						550	0.168
						575	0.169
						600	0.169