

**MATERIAL SAFETY DATA SHEET****PRODUCT NAME: PHOSGENE****1. Chemical Product and Company Identification**

BOC Gases,
Division of
The BOC Group, Inc.
575 Mountain Avenue
Murray Hill, NJ 07974

BOC Gases
Division of
BOC Canada Limited
5975 Falbourne Street, Unit 2
Mississauga, Ontario L5R 3W6

TELEPHONE NUMBER: (908) 464-8100**24-HOUR EMERGENCY TELEPHONE NUMBER:**
CHEMTREC (800) 424-9300**TELEPHONE NUMBER:** (905) 501-1700**24-HOUR EMERGENCY TELEPHONE NUMBER:**
(905) 501-0802**EMERGENCY RESPONSE PLAN NO:** 20101**PRODUCT NAME:** PHOSGENE**CHEMICAL NAME:** Phosgene**COMMON NAMES/SYNONYMS:** Carbon Oxychloride; Carbonyl Chloride; Carbonyl Dichloride;
Diphosgene**TDG (Canada) CLASSIFICATION:** 2.3 (8)**WHMIS CLASSIFICATION:** A, E, F, D1A**PREPARED BY:** Loss Control (908)464-8100/(905)501-1700**PREPARATION DATE:** 6/1/95**REVIEW DATES:** 6/7/96**2. Composition, Information on Ingredients**

INGREDIENT	% VOLUME	PEL-OSHA ¹	TLV-ACGIH ²	LD ₅₀ or LC ₅₀ Route/Species
Phosgene FORMULA: CCl ₂ O CAS: 75-44-5 RTECS #: SY5600000	100.0	0.1 ppm TWA	0.1 ppm TWA	LC ₅₀ 800 ppm (human)

¹ As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)² As stated in the ACGIH 1994-95 Threshold Limit Values for Chemical Substances and Physical Agents**3. Hazards Identification+****EMERGENCY OVERVIEW**

Corrosive to exposed tissues. Inhalation of vapors may result in pulmonary edema and chemical pneumonitis. Nonflammable. Reacts violently and decomposes to toxic compounds, including chlorine, on contact with moisture.

ROUTE OF ENTRY:

Skin Contact Yes	Skin Absorption No	Eye Contact Yes	Inhalation Yes	Ingestion No
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MSDS: G-67**Revised:** 6/7/96

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HEALTH EFFECTS:

Exposure Limits Yes	Irritant Yes	Sensitization No
Teratogen No	Reproductive Hazard No	Mutagen No
Synergistic Effects None Reported		

Carcinogenicity: -- NTP: No ARC: No OSHA: No

EYE EFFECTS:

None known.

SKIN EFFECTS:

None known.

INGESTION EFFECTS:

None known.

INHALATION EFFECTS:

Immediate symptoms from inhalation are choking, coughing, tightness of the chest, catching of the breath, lacrimation, difficulty in and painful breathing and eventual cyanosis. Serious symptoms are pulmonary edema and asphyxiation which may not be manifested for several hours after overexposure. Long lasting (several months) symptoms may be coughing, bloody sputum and general malaise.

NFPA HAZARD CODES

Health: 4
Flammability: 0
Reactivity: 1

HMIS HAZARD CODES

Health: 4
Flammability: 0
Reactivity: 1

RATINGS SYSTEM

0 = No Hazard
1 = Slight Hazard
2 = Moderate Hazard
3 = Serious Hazard
4 = Severe Hazard

4. First Aid Measures**EYES:**

None required.

SKIN:

None required.

INGESTION:

None required.

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INHALATION:

Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Unconscious persons should be moved to an uncontaminated area, and given artificial resuscitation and supplemental oxygen. Keep the victim warm and quiet. Assure that mucous does not obstruct the airway by positional drainage. Delayed pulmonary edema may occur. Keep patient under medical observation for at least 48 hours. Treatment should be symptomatic and supportive.

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO PHOSGENE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

5. Fire Fighting Measures

Conditions of Flammability: Nonflammable		
Flash point: None	Method: Not Applicable	Autoignition Temperature: None
LEL(%): None		UEL(%): None
Hazardous combustion products: None		
Sensitivity to mechanical shock: None		
Sensitivity to static discharge: None		

FIRE AND EXPLOSION HAZARDS:

Nonflammable.

FIRE FIGHTING INSTRUCTIONS:

NONE. Material is not flammable. See spill and leaks information for protective equipment when fighting a spill.

6. Accidental Release Measures

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or container valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest BOC location.

7. Handling and Storage

Moist phosgene is corrosive to most metals. Hastelloy A or B as well as tantalum, platinum and gold show good corrosive resistance to moist phosgene.

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130°F (54°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time.

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Use only in well-ventilated areas. Valve protection caps and valve outlet threaded plugs must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (less than 75 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

For additional storage and handling recommendations, consult Compressed Gas Association's Pamphlet P-1.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

8. Exposure Controls, Personal Protection

EXPOSURE LIMITS¹:

INGREDIENT	% VOLUME	PEL-OSHA ²	TLV-ACGIH ³	LD ₅₀ or LC ₅₀ Route/Species
Phosgene FORMULA: CCl ₂ O CAS: 75-44-5 RTECS #: SY5600000	100.0	0.1 ppm TWA	0.1 ppm TWA	LC ₅₀ 800 ppm (human)

¹ Refer to individual state or provincial regulations, as applicable, for limits which may be more stringent than those listed here.

² As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

³ As stated in the ACGIH 1994-1995 Threshold Limit Values for Chemical Substances and Physical Agents.

IDLH: 2 ppm

ENGINEERING CONTROLS:

Use a laboratory hood with forced ventilation for handling small quantities. Use local exhaust to prevent accumulation above the exposure limits.

EYE/FACE PROTECTION:

Gas tight chemical goggles or full-face piece respirator.

SKIN PROTECTION:

Rubber or Teflon® protective gloves.

RESPIRATORY PROTECTION:

Positive pressure air line with full-face mask and escape bottle or self-contained breathing apparatus should be available for emergency use and routine use when exposures are above set limits.

OTHER/GENERAL PROTECTION:

Safety shoes, safety shower, eyewash "fountain".

9. Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure	: 22.6	psia
Vapor density (Air = 1)	: 3.41	
Evaporation point	: Not Available	
Boiling point	: 45.6	°F
	: 7.55	°C
Freezing point	: -198	°F
	: -127	°C
pH	: Not Available	
Specific gravity	: Not Available	
Oil/water partition coefficient	: Not Available	
Solubility (H2O)	: Decomposes	
Odor threshold	: Not Available	
Odor and appearance	: Colorless gas with sweet odor in low concentrations, becoming suffocating in high concentrations	

10. Stability and Reactivity

STABILITY:

Stable at temperatures below 572°F (300°C).

INCOMPATIBLE MATERIALS:

May react violently with water, ammonia, primary amines.

HAZARDOUS DECOMPOSITION PRODUCTS:

Hydrochloric acid and carbon dioxide. Carbon monoxide, chlorine.

HAZARDOUS POLYMERIZATION:

Will not occur.

11. Toxicological Information

No chronic effects data unrelated to phosgene's corrosivity given in the Registry of Toxic Effects of Chemical Substances (RTECS) or Sax, Dangerous Properties of Industrial Materials, 7th ed.

12. Ecological Information

No data given.

13. Disposal Considerations

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to BOC Gases or authorized distributor for proper disposal.

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14. Transport Information

PARAMETER	United States DOT	Canada TDG
PROPER SHIPPING NAME:	Phosgene	Phosgene
HAZARD CLASS:	2.3	2.3 (8)
IDENTIFICATION NUMBER:	UN 1076	UN 1076
SHIPPING LABEL:	POISON GAS, CORROSIVE	POISON GAS, CORROSIVE

Additional Marking Requirement: "Inhalation Hazard"

If net weight of product \geq 10 pounds, the container must be also marked with the letters "RQ".

Additional Shipping Paper Description Requirement: "Poison Inhalation Hazard, Zone A"

If net weight of product \geq 10 pounds, the shipping papers must be also marked with the letters "RQ".

15. Regulatory Information

Phosgene is listed under the accident prevention provisions of section 112(r) of the Clean Air Act (CAA) with a threshold quantity (TQ) of 500 pounds.

SARA TITLE III NOTIFICATIONS AND INFORMATION

Phosgene is listed as an extremely hazardous substance (EHS) subject to state and local reporting under Section 304 of SARA Title III (EPCRA).

The presence of phosgene in quantities in excess of the threshold planning quantity (TPQ) of 10 pounds requires certain emergency planning activities to be conducted.

Releases of phosgene in quantities equal to or greater than the reportable quantity (RQ) of 10 pounds are subject to reporting to the National Response Center under CERCLA, Section 304 SARA Title III.

SARA TITLE III - HAZARD CLASSES:

Acute Health Hazard

Chronic Health Hazard

Sudden Release of Pressure Hazard

Reactivity Hazard

Fire Hazard

SARA TITLE III - SECTION 313 SUPPLIER NOTIFICATION:

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372:

CAS NUMBER	INGREDIENT NAME	PERCENT BY VOLUME
75-44-5	PHOSGENE	~ 100.0

This information must be included on all MSDSs that are copied and distributed for this material.

16. Other Information

Compressed gas cylinders shall not be refilled without the express written permission of the owner. Shipment of a compressed gas cylinder which has not been filled by the owner or with his/her (written) consent is a violation of transportation regulations.

MSDS: G-67

Revised: 6/7/96

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DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES:

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).