

Praxair Material Safety Data Sheet

1. Chemical Product and Company Identification



Product Name: Phosgene	Trade Name: Phosgene
Product Use: Many.	
Chemical Name: Phosgene	Synonym: Carbon dichloride oxide, Diphosgene, Compat Gas, CG, Carbon oxychloride, Carbonyl chloride, Chloroformyl chloride, Carbonic dichloride
Chemical Formula: COCl ₂	Chemical Family: Carbonyl.
Telephone: Emergencies: * 1-800-363-0042	Supplier /Manufacture: Praxair Canada Inc. 1 City Centre Drive Suite 1200 Mississauga, ON L5B 1M2 Phone: 905-803-1600 Fax: 905-803-1682

**Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier or Praxair sales representative.*

2. Composition and Information on Ingredients

INGREDIENTS	% (VOL)	CAS NUMBER	LD ₅₀ (Species & Routes)	LC ₅₀ (Rat, 4 hrs.)	TLV-TWA (ACGIH)
Phosgene	100	75-44-5	Not applicable.	3 ppm	0.1 ppm

3. Hazards Identification

	Emergency Overview	
<p>DANGER! Toxic, corrosive high pressure gas. May be fatal if inhaled. Causes eye and skin burns. Self-contained breathing apparatus must be worn by rescue workers.</p>		

ROUTES OF EXPOSURE: Inhalation. Swallowing. Skin contact. Eye contact.

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

INHALATION: May be fatal if inhaled. Symptoms of dangerous overexposure may be delayed several hours. Effects may include lachrymation, coughing, bloody sputum, burning of the nose and throat, chest pain, vomiting, dyspnea, lung lesions, pulmonary edema, and death.

SKIN CONTACT: Liquid causes burns

SKIN**ABSORPTION:** No evidence of adverse effects from available information.**SWALLOWING:**

An unlikely route of exposure. This product is a gas at room temperature and pressure, but frostbite of the lips and mouth may result from contact with the liquid.

EYE CONTACT:

Vapours are very irritating and will be experienced as discomfort, excess tear production, and excess blinking; liquid may cause severe local irritation and burns.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE:

Repeated overexposure may cause irreversible pulmonary injury, including bronchitis, emphysema, and fibrosis.

OTHER EFFECTS OF OVEREXPOSURE:

None known.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

Breathing of vapour (and/or mist) may aggravate asthma and inflammatory or fibrotic pulmonary disease. The skin irritating effects of the material may aggravate an existing dermatitis.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:

None currently known.

CARCINOGENICITY:

Not listed as carcinogen by OSHA, NTP or IARC.

4. First Aid Measures**INHALATION:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

SKIN CONTACT:

In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

SWALLOWING:

This product is a gas at normal temperature and pressure.

EYE CONTACT:

Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. See a physician, preferably an ophthalmologist, immediately.

NOTES TO PHYSICIAN:*The onset of severe respiratory distress may be delayed up to 72 hours. Anyone inhaling this product should be kept under observation, warm and at rest for at least 48 hours. Even minor physical efforts, especially walking and unnecessary talking are to be avoided. X-ray examination is required to detect the onset of pulmonary edema during the latent period. The onset of pulmonary edema is characterized by cough, abundant quantities of foamy sputum,, progressive dyspnea and severe cyanosis. Cardiac failure may occur.***5. Fire Fighting Measures****FLAMMABLE :** No. **IF YES, UNDER WHAT CONDITIONS?** Not applicable.**FLASH POINT (test method)** Not applicable.**AUTOIGNITION TEMPERATURE** Not applicable.**FLAMMABLE LIMITS IN AIR, % by volume:****LOWER:** Not applicable.**UPPER:** Not applicable.

EXTINGUISHING MEDIA:

This material cannot catch fire. Use media appropriate for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES:

DANGER! Highly toxic gas. Evacuate all personnel from danger area. Do not approach area without self-contained breathing apparatus and protective clothing. Immediately cool containers with water spray from maximum distance until cool, then move containers away from fire area if without risk. If containers are leaking, reduce vapours with water spray or fog. Shut off leak if without risk while continuing cooling water spray. Reduce corrosive vapours with water spray or fog. Remove containers away from fire area of fire if without risk.

UNUSUAL FIRE AND EXPLOSION HAZARD:

Toxic, corrosive liquid and gas under pressure. Container may rupture due to heat of fire. Vapours are very irritating. Contact may cause burns to skin and eyes. No part of a container should be subjected to temperature higher than 52 C. Contact with some organic and inorganic compounds can produce shock sensitive compounds.

HAZARDOUS COMBUSTION PRODUCTS:

None.

SENSITIVITY TO IMPACT:

Avoid impact against container.

SENSITIVITY TO STATIC DISCHARGE:

Not applicable.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

DANGER! Immediately evacuate all personnel from danger area. Use self-contained breathing apparatus operated in the pressure demand mode and appropriate protective clothing. Reverse flow into cylinder may cause rupture. Shut off leak if without risk. Ventilate area of leak or move leaking container to well ventilated area. Prevent runoff from contaminating surrounding environment. Corrosive, toxic vapours may spread from spill. Before entering area, especially confined areas, check atmosphere with appropriate device.

WASTE DISPOSAL METHOD:

Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, provincial, and local regulations. If necessary, call your local supplier for assistance.

7. Handling and Storage

PRECAUTIONS TO BE TAKEN IN STORAGE:

Store and use with adequate ventilation. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 52°C. Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.

PRECAUTIONS TO BE TAKEN IN HANDLING:

Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Open valve slowly. If valve is hard to open, discontinue use and contact your supplier. For other precautions, see Section 16.

For additional information on storage and handling, refer to Compressed Gas Association (CGA) pamphlet P-1, *Safe Handling of Compressed Gases in Containers*, available from the CGA. Refer to Section 16 for the address and phone number along with a list of other available publications.

OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:

Toxic, corrosive liquid and gas under pressure. Do not breathe gas. Do not get vapour in eyes, on skin, or on clothing. Have safety showers and eyewash fountains immediately available. Use only in a closed system. Use piping and equipment adequately designed to withstand pressures to be encountered. Store and use with adequate ventilation. Close valve after each use; keep closed even when empty. **Prevent reverse flow.** Reverse flow into cylinder may cause rupture. Use a check valve or other protective device in any line or piping from the cylinder. **When returning cylinder to supplier,** be sure valve is closed, then install valve outlet plug tightly. **Never work on a pressurized system.** If there is a leak, close the cylinder valve. Vent the system down in a safe and environmentally sound manner in compliance with all federal, provincial, and local laws; then repair the leak. **Never place a compressed gas cylinder where it may become part of an electrical circuit.**

8. Exposure Controls/Personal Protection

VENTILATION/ENGINEERING CONTROLS:

LOCAL EXHAUST: A corrosion-resistant system is acceptable.
See SPECIAL.

MECHANICAL (general): Inadequate.
See SPECIAL.

SPECIAL: Use only in a closed system.
A corrosion-resistant, forced-draft fume hood is preferred.

OTHER: See SPECIAL.

PERSONAL PROTECTION:

RESPIRATORY PROTECTION: Use respirable fume respirator or air supplied respirator when working in confined space or where local exhaust or ventilation does not keep exposure below TLV. Select in accordance with the provincial regulations or guidelines. Selection should also be based on the current CSA standards Z94.4, "Selection, care and use of respirators". Respirators should be approved by NIOSH and MSHA.

SKIN PROTECTION: Neoprene gloves.

EYE PROTECTION: Wear safety glasses when handling cylinders.

Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.

OTHER PROTECTIVE EQUIPMENT: Metatarsal shoes for cylinder handling. Protective clothing where needed. Cuffless trousers should be worn outside the shoes. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines.

9. Physical and Chemical Properties

PHYSICAL STATE: Gas. (Compressed Gas)	FREEZING POINT: -127.8°C (-198°F)	pH: Not applicable.
BOILING POINT: 8.2°C (46.8°F)	VAPOUR PRESSURE: 62.7 kPa (@ 20°C)	MOLECULAR WEIGHT: 98.92 g/mole
SPECIFIC GRAVITY: LIQUID (Water = 1) 1.338 @ 20 C	SOLUBILITY IN WATER, Reacts slowly.	
SPECIFIC GRAVITY: VAPOUR (air = 1) 3.5	EVAPORATION RATE (Butyl Acetate=1): >1 compared to Butyl acetate.	COEFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable.

Product Name: Phosgene

MSDS# E-4641-J

Date: Oct. 15, 2013

VAPOUR DENSITY: 0.00416 g/ml @ 21.1 C

% VOLATILES BY VOLUME: 100% (v/v).

ODOUR THRESHOLD: Not available.

APPEARANCE & ODOUR: Colourless. Odour: Initially, musty hay, then the sense of smell is deadened.

10. Stability and Reactivity

STABILITY:	The product is stable.
CONDITIONS OF CHEMICAL INSTABILITY:	Elevated temperatures (> 300 C).
INCOMPATIBILITY (materials to avoid):	Water, amines, ammonia, alcohols, sodium, potassium, lithium. Corrosive to most metals in the presence of moisture.
HAZARDOUS DECOMPOSITION PRODUCTS:	Carbon monoxide and chlorine above 300 C. The presence of moisture or steam will produce hydrochloric acid and carbon monoxide.
HAZARDOUS POLYMERIZATION:	No.
CONDITIONS OF REACTIVITY:	None known.

11. Toxicological Information

See section 3.

12. Ecological Information

No adverse ecological effects expected. This product does not contain any Class I or Class II ozone-depleting chemicals. The components of this mixture are not listed as marine pollutants by TDG Regulations.

13. Disposal Considerations

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.

14. Transport Information

TDG/IMO SHIPPING NAME: Phosgene

HAZARD CLASS: CLASS 2.3 (8) Toxic gas and corrosive material.

IDENTIFICATION #:

UN1076

PRODUCT REPORTABLE QUANTITY (PRQ): Any accidental release in a quantity that could pose a danger to the public safety or any sustained release of 10 minutes or more.

SHIPPING LABEL(s): Toxic gas, corrosive material.

PLACARD (when required): Toxic gas

SPECIAL SHIPPING INFORMATION:

Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, non-ventilated compartment of a vehicle can present serious safety hazards.

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, provincial, and local regulations.

DSL (Canada) This product is on the DSL list
WHMIS (Canada) CLASS A: Compressed gas.
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).
CLASS E: Corrosive gas.

International Regulations

EINECS Not available.
DSCL (EEC) R26- Very toxic by inhalation.

International Lists No products were found.

16. Other Information

MIXTURES:

When two or more gases, or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist, or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

HAZARD RATING SYSTEM:

HMIS RATINGS:

HEALTH 4
FLAMMABILITY 0
PHYSICAL HAZARD 2

STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:

THREADED: CGA-660
PIN-INDEXED YOKE: Not available.
ULTRA-HIGH-INTEGRITY CONNECTION: Not available.

Use the proper CGA connections. **DO NOT USE ADAPTERS.** Additional limited-standard connections may apply. See CGA pamphlets V-1 and V-7 listed below.

Ask your supplier about free Praxair safety literature as referred to in this MSDS and on the label for this product. Further information about this product can be found in the following pamphlets published by the Compressed Gas Association, Inc. (CGA), 4221 Walney Road, 5th Floor, Chantilly, VA 20151-2923, Telephone (703) 788-2700, Fax (703) 961-1831, website: www.cganet.com.

AV-1 Safe Handling and Storage of Compressed Gas
P-1 Safe Handling of Compressed Gases in Containers
V-1 Compressed Gas Cylinder Valve Inlet and Outlet Connections
V-7 Standard Method of Determining Cylinder Valve Outlet Connections for Industrial Gas Mixtures
--- Handbook of Compressed Gases, Fifth Edition

PREPARATION INFORMATION:

DATE: October 15, 2013
DEPARTMENT: Safety and Environmental Services

Product Name: Phosgene

MSDS# E-4641-J

Date: Oct. 15, 2013

TELEPHONE: 905-803-1600

The opinions expressed herein are those of qualified experts within Praxair Canada Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair Canada Inc., it is the user's obligation to determine the conditions of safe use of the product.

Praxair Canada Inc. requests the users of this product to study this Material Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

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