

Phosphorus oxychloride

This document provides a brief description of phosphorus oxychloride, its uses, and the potential hazards associated with short and long term exposure. Environmental impact information for accidental releases is included. This information is general in nature and is not intended as a replacement for the safety data sheet (SDS), product label and other safe handling literature. For additional information consult the LANXESS Corporation safety data sheet.

Identification

Product Name:	Phosphorus oxychloride
Chemical Name:	Phosphorus oxychloride
Synonym(s):	Phosphoryl chloride Trichlorophosphorus oxide Trichlorophosphine oxide
CAS Number:	10025-87-3

Description

Overview:	Phosphorus oxychloride is a colorless liquid at ambient temperatures. The chemical has a low viscosity, pungent odor and fumes with exposure to air.						
Uses:	Phosphorous oxychloride is sold by LANXESS for use as a base chemical in the production of phosphorous acid esters, as a chlorinating agent used in the manufacture of acid chlorides and anhydrides, and as an intermediate in the production of Vilsmeier reagents.						
Properties:	<table><tr><td>Boiling Point:</td><td>105.8°C (222.4°F)</td></tr><tr><td>Freezing Point:</td><td>1 to 2°C (33.8 to 35.6°F)</td></tr><tr><td>Solubility in Water:</td><td>Hydrolyzes</td></tr></table>	Boiling Point:	105.8°C (222.4°F)	Freezing Point:	1 to 2°C (33.8 to 35.6°F)	Solubility in Water:	Hydrolyzes
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Solubility in Water:	Hydrolyzes						

Potential Human Health Effects

Occupational Exposure

Potential for occupational exposure exists during manufacture and at transloading, storage and staging areas in facilities where the chemical is used as an intermediate in the manufacture of other products. A much lower potential for exposure exists in facilities using phosphorus oxychloride in closed manufacturing processes by trained personnel.

Employee Training

Workers handling phosphorus oxychloride should be trained to implement proper handling procedures and to understand the potential health and physical hazards of the chemical. A NIOSH-approved air-purifying respirator that has been deemed suitable by plant site safety professionals based on environmental monitoring of exposure levels is required for transloading, unloading and other operations not contained within a closed system. Respiratory protection that also protects the eyes should be employed. If vapor concentrations are unknown, a self-contained positive pressure breathing apparatus (SCBA) is required. In addition, when a SCBA respirator is not used, LANXESS recommends that chemical splash goggles and a full face shield, permeation resistant clothing, suitable rubber gloves and suitable foot protection be worn when handling phosphorus oxychloride.

Consumer Exposure

LANXESS Corporation does not sell phosphorus oxychloride to the general public and only sells this product to pre-approved customers.

Short-Term Health Effects

Phosphorous oxychloride is corrosive and highly toxic. Skin or eye contact may result in severe irritation or burns with symptoms of redness, itching, swelling and severe pain. Permanent damage is possible. Inhalation is corrosive to the respiratory system. Symptoms of inhalation may include coughing, burning, sore throat, dizziness, nausea, vomiting, shortness of breath, weakness, ulceration and pain. Ingestion of phosphorus oxychloride is corrosive to the digestive tract. Symptoms of ingestion may include coughing, burning, ulceration, abdominal pain, shock or collapse. Exposure at high levels may be fatal.

The effects of exposure to phosphorus oxychloride may be delayed. Pre-existing respiratory, skin and eye disorders may be aggravated by overexposure.

Long-Term Health Effects

Prolonged or repeated exposure to phosphorus oxychloride may result in adverse effects including coughing, tightness of the chest, shortness of breath, bronchitis (inflammation of lung tissues) and pulmonary edema (fluid buildup in the lungs).

Physical Hazards

Phosphorus oxychloride is stable under normal conditions of use. Phosphorus oxychloride reacts violently with water, alcohols, phenols, amines and many other materials. Hydrolyzation forms corrosive reaction products. Heating to decomposition (400 C) may release phosphorus oxides, hydrochloric acid, phosphoric acid and halogenated compounds.

Potential Environmental Impact

An accidental release of phosphorus oxychloride to air or water will decompose rapidly into hydrochloric acid and phosphorous acid. A release to water in sufficient quantities may result in a significant pH shift, posing a potential danger to fish, invertebrates or aquatic plants.

Conclusion

Under normal conditions of anticipated use as described in this Product Safety Assessment, and if the recommended safe use and handling procedures are followed, phosphorus oxychloride is not expected to pose a significant risk to human health or the environment.

References

International Chemical Safety Card, PHOSPHORUS OXYCHLORIDE, International Programme on Chemical Safety (IPCS)

Safety Data Sheet (SDS), PHOSPHORUS OXYCHLORIDE, LANXESS Corporation

MedlinePlus Medical Encyclopedia, U.S. National Library of Medicine and the National Institutes of Health

Phosphorus Oxychloride Screening Information Data Set (SIDS), Organization for Economic Cooperation and Development

ToxNet Hazardous Substance Data Bank, U.S. National Library of Medicine, National Institutes of Health and the U.S. Department of Health and Human Services

Contact Information

LANXESS Corporation, Product Safety & Regulatory Affairs, 111 RIDC Park West Drive, Pittsburgh, PA 15275-1112, USA, Phone 1-800-526-9377 [1-800-LANXESS]

Notices

Use and Application Information

The manner in which you use and the purpose to which you put and utilize our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. This application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety, and environmental standpoint. Such testing has not necessarily been done by us. Unless we otherwise agree in writing, all products are sold strictly pursuant to the terms of our standard conditions of sale. All information and technical assistance is given without warranty or guarantee and is subject to change without notice. It is expressly understood and agreed that you assume and hereby expressly release us from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance, and information. Any statement or recommendation not contained herein is unauthorized and shall not bind us. Nothing herein shall be construed as a recommendation to use any product in conflict with patents covering any material or its use. No license is implied or in fact granted under the claims of any patent.