

SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.1
Creation Date: July 15, 2019
Revision Date: May 23, 2024

SECTION 1: Identification

1.1 GHS Product identifier

Product name Phosphoryl chloride

1.2 Other means of identification

Product number C1002901
Other names fosforoxychloride;oxychloridfosforecny;Phosphorus oxychlori

1.3 Recommended use of the chemical and restrictions on use

Identified uses For laboratory and Industrial use only.
Uses advised against no data available

1.4 Supplier's details

Company CATO Research Chemicals Inc.
Address 3/F,Building B,No.179 BASIGO, Guangpu Rd East,Huangpu Dist,Guangzhou
Telephone +86-20-81960175

1.5 Emergency phone number

Emergency phone number +86-20-81960175
Service hours 'Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Acute toxicity - Category 4, Oral
Skin corrosion, Sub-category 1A
Acute toxicity - Category 2, Inhalation
Specific target organ toxicity – repeated exposure, Category 1

2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H302 Harmful if swallowed
H314 Causes severe skin burns and eye damage
H330 Fatal if inhaled
H372 Causes damage to organs through prolonged or repeated exposure

Precautionary statement(s)

Prevention

P264 Wash ... thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P271 Use only outdoors or in a well-ventilated area.
P284 [In case of inadequate ventilation] wear respiratory protection.

Response	P301+P317 IF SWALLOWED: Get medical help. P330 Rinse mouth. P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. P363 Wash contaminated clothing before reuse. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P316 Get emergency medical help immediately. P321 Specific treatment (see ... on this label). P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P320 Specific treatment is urgent (see ... on this label). P319 Get medical help if you feel unwell.
Storage	P405 Store locked up. P403+P233 Store in a well-ventilated place. Keep container tightly closed.
Disposal	P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

2.3 Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Phosphoryl chloride	Phosphoryl trichloride	10025-87-3	233-046-7	100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Fresh air, rest. Half-upright position. Artificial respiration may be needed. Refer for medical attention.

Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention.

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

4.2 Most important symptoms/effects, acute and delayed

Health Hazards : This poison is toxic by inhalation and ingestion and is strongly irritating to skin and tissues. It causes burns of the mucous membranes of the mouth and digestive tract and may be fatal. (EPA, 1998)

4.3 Indication of immediate medical attention and special treatment needed, if necessary

Caution: persons doing treatment should protect themselves against exposure. inhalation: remove victim from contaminated area at once; if breathing has stopped, start artificial respiration; call doctor.

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Use appropriate extinguishing agents on nearby combustible fires. Use water spray to knock down acid vapors.

5.2 Specific hazards arising from the chemical

Poisonous, corrosive, and irritating gases are generated when this material is heated or is in contact with water. It may ignite other combustible materials (wood, paper, oil, etc.). It reacts violently with water. When heated to decomposition, it emits toxic fumes of chlorides and oxides of phosphorus; it will react with water or steam to produce heat and toxic and corrosive fumes. Incompatible with carbon disulfide; N,N-dimethylformamide; 2,5-dimethylpyrrole; 2,6-dimethylpyridine N-oxide; dimethylsulfoxide; Ferrocene-1,1-dicarboxylic acid; water; and zinc. Do not store with combustible materials, particularly fibrous organic materials, or with electrical or other equipment that can be corroded. Reacts violently with moisture. (EPA, 1998)

5.3 Special protective actions for fire-fighters

In case of fire in the surroundings, use appropriate extinguishing media. NO hydrous agents. NO water. In case of fire: keep drums, etc., cool by spraying with water. NO direct contact with water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Consult an expert! Personal protection: chemical protection suit including self-contained breathing apparatus.

Ventilation. Collect leaking and spilled liquid in sealable dry containers as far as possible. Absorb remaining liquid in dry sand or inert absorbent. Then store and dispose of according to local regulations.

6.2 Environmental precautions

Evacuate danger area! Consult an expert! Personal protection: chemical protection suit including self-contained breathing apparatus. Ventilation. Collect leaking and spilled liquid in sealable dry containers as far as possible. Absorb remaining liquid in dry sand or inert absorbent. Then store and dispose of according to local regulations.

6.3 Methods and materials for containment and cleaning up

Releases may require isolation or evacuation. Use water spray to cool & disperse vapors & protect personnel.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

NO contact with water. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2 Conditions for safe storage, including any incompatibilities

See Chemical Dangers. Cool. Dry. Well closed. Keep in a well-ventilated room. Keep in tightly closed containers.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

TLV: 0.1 ppm as TWA. MAK: 0.13 mg/m³, 0.02 ppm; peak limitation category: I(1); pregnancy risk group: C

Biological limit values

no data available

8.2 Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear face shield or eye protection in combination with breathing protection.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Phosphorus oxychloride is a colorless fuming liquid with a pungent odor. Density 14.0 lb / gal. Very toxic by inhalation and corrosive to metals and tissue. Used in gasoline additives and hydraulic fluids.
Colour	Clear, colorless to yellow, oily liquid [Note: A solid below 34 degrees F].
Odour	Pungent & musty odor
Melting point/freezing point	1.2°C
Boiling point or initial boiling point and boiling range	105°C
Flammability	Noncombustible Liquid, but may set fire to combustible materials.
Lower and upper explosion limit/flammability limit	no data available
Flash point	Non-combustible
Auto-ignition temperature	Not flammable (USCG, 1999)
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	Decomposes (NIOSH, 2016)
Partition coefficient n-octanol/water	no data available
Vapour pressure	104 mm Hg (50 °C)

Density and/or relative density	1.645
Relative vapour density	5.3 (vs air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Decomposes on heating. This produces toxic and corrosive fumes including hydrogen chloride and phosphorus oxides. Reacts violently with water. This produces heat and decomposition products including hydrochloric acid and phosphoric acid. This generates fire and explosion hazard. Reacts violently with alcohols, phenols, amines and many other materials.

10.2 Chemical stability

no data available

10.3 Possibility of hazardous reactions

PRODUCTS OF ITS REACTION WITH WATER RAPIDLY CORRODE STEEL & MOST METALS WITH FORMATION OF FLAMMABLE HYDROGEN GAS. The vapour is heavier than air. PHOSPHORUS OXYCHLORIDE is water reactive. Incompatible with strong oxidizing agents, alcohols, bases (including amines). May react vigorously or explosively if mixed with diisopropyl ether or other ethers in the presence of trace amounts of metal salts [J. Haz. Mat., 1981, 4, 291]. Combining the chloride with zinc dust caused immediate ignition, due to the formation of phosphine gas which ignites, [Mellor, 1940, Vol. 8, 1025]. An exotherm starting with the mixing of phosphorus oxychloride with acetone (a ketone) lead to an explosion, may behave similarly with other ketones, [Organic Process Research and Development, Vol. 4, No. 6, 200, "Phosphorus Oxychloride and Acetone: An Incompatibility Investigation Using ARC."]

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Will react with water or steam to produce heat and toxic and corrosive fumes.

10.6 Hazardous decomposition products

When heated to decomposition, it emits highly toxic fumes of chlorides and po(x).

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Rat oral 380 mg/kg
- Inhalation: LC50 Rat /inhalation/ 48 ppm/4 hr
- Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

no data available

Reproductive toxicity

no data available

STOT-single exposure

The substance is corrosive to the eyes, skin and respiratory tract. Inhalation of the vapour may cause lung oedema. See Notes. Exposure at high levels could cause death. The effects may be delayed. Medical observation is indicated.

STOT-repeated exposure

no data available

Aspiration hazard

A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: no data available
- Toxicity to daphnia and other aquatic invertebrates: no data available
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

Phosphorus oxychloride hydrolyzes rapidly in water at room temperature(1), and therefore is not expected to bioconcentrate in organisms(SRC).

12.4 Mobility in soil

Phosphorus oxychloride hydrolyzes rapidly in water at room temperature(1), and therefore will not adsorb to soils and sediments(SRC).

12.5 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

14.1 UN Number

ADR/RID: UN1810 (For reference only, please check.) IMDG: UN1810 (For reference only, please check.) IATA: UN1810 (For reference only, please check.)

14.2 UN Proper Shipping Name

ADR/RID: PHOSPHORUS OXYCHLORIDE (For reference only, please check.) IMDG: PHOSPHORUS OXYCHLORIDE (For reference only, please check.) IATA: PHOSPHORUS OXYCHLORIDE (For reference only, please check.)

14.3 Transport hazard class(es)

ADR/RID: 6.1 (For reference only, please check.) IMDG: 6.1 (For reference only, please check.) IATA: 6.1 (For reference only, please check.)

14.4 Packing group, if applicable

ADR/RID: I (For reference only, please check.) IMDG: I (For reference only, please check.) IATA: I (For reference only, please check.)

14.5 Environmental hazards

ADR/RID: No IMDG: No IATA: No

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
Phosphoryl trichloride	Phosphoryl trichloride	10025-87-3	233-046-7
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Listed.

New Zealand Inventory of Chemicals (NZIoC)	Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	Listed.
Vietnam National Chemical Inventory	Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)	Listed.
Korea Existing Chemicals List (KECL)	Listed.

SECTION 16: Other information

Information on revision

Creation Date July 15, 2019
Revision Date May 23, 2024

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

References

- IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

Other Information

Reacts violently with fire extinguishing agents such as water. The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation is therefore essential. Immediate administration of an appropriate inhalation therapy by a doctor or a person authorized by him/her, should be considered.

Any questions regarding this SDS, Please send your inquiry to info@cato-chem.com

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.