

## Chemical Safety Data Sheet MSDS / SDS

## Phosphorus trichloride SDS

Revision Date:2024-04-25 Revision Number:1

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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****Product identifier**

Product name: Phosphorus trichloride

CAS: 7719-12-2

**Relevant identified uses of the substance or mixture and uses advised against**

Relevant identified uses: For R&amp;D use only. Not for medicinal, household or other use.

Uses advised against: none

**Company Identification**

Company: Chemicalbook.in

Address: 5 vasavi Layout Basaveswara Nilayam Pragathi Nagar Hyderabad, India -500090

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**SECTION 2: Hazards identification****Classification of the substance or mixture**Acute toxicity - Category 2, Oral  
Skin corrosion, Sub-category 1A

Acute toxicity - Category 2, Inhalation  
Specific target organ toxicity - repeated exposure, Category 2

### GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

### Hazard statement(s)

H300 Fatal if swallowed  
H314 Causes severe skin burns and eye damage  
H330 Fatal if inhaled  
H373 May cause 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+P316 IF SWALLOWED: Get emergency medical help immediately.  
P321 Specific treatment (see ... on this label).  
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.  
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.

### Other hazards which do not result in classification

no data available

## SECTION 3: Composition/information on ingredients

### Substance

Chemical name: Phosphorus trichloride

Common names and synonyms: Phosphorus trichloride

CAS number: 7719-12-2

EC number: 231-749-3

Concentration: 100%

## SECTION 4: First aid measures

### 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 .

### **Most important symptoms/effects, acute and delayed**

This material is highly toxic; it may cause death or permanent injury. Contact is highly irritating to the skin, eyes, and mucous membranes, and the material is an irritant through oral and inhalation exposure. (EPA, 1998)

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

Basic treatment: Establish a patent airway (oropharyngeal or nasopharyngeal airway, if needed). Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Monitor for pulmonary edema and treat if necessary . Monitor for shock and treat if necessary . For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with 0.9% saline (NS) during transport . Do not use emetics. For ingestion, rinse mouth and administer 5 ml/kg up to 200 ml of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool . Cover skin burns with dry sterile dressings after decontamination . Chlorine and related compounds

## **SECTION 5: Firefighting measures**

### **Suitable extinguishing media**

Evacuation: If fire becomes uncontrollable or container is exposed to direct flame - consider evacuation of one-third (1/3) mile radius.

### **Specific hazards arising from the chemical**

This material will react violently with water, producing heat and toxic and corrosive fumes. When heated to decomposition, it emits highly toxic fumes of chlorides and phosphorus oxides. It may ignite other combustible materials. Reacts violently with water. Reacts explosively with acetic acid, aluminum, chromyl chloride, diallylphosphite and allyl alcohol, dimethyl sulfoxide, fluorine, hydroxylamine, iodine monochloride, lead dioxide, nitric acid, nitrous acid, organic matter, potassium, and sodium. Avoid contact with water, steam, or acids. Hazardous polymerization may not occur. (EPA, 1998)

### **Special protective actions for fire-fighters**

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

## SECTION 6: Accidental release measures

### Personal precautions, protective equipment and emergency procedures

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

### Environmental precautions

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

### Methods and materials for containment and cleaning up

Environmental considerations: water spill: Neutralize with agricultural lime (CaO), crushed limestone (CaCO<sub>3</sub>), or sodium bicarbonate (NaCO<sub>3</sub>). Use mechanical dredges or lifts to remove immobilized masses of pollutant and precipitates. Adjust pH to neutral (pH=7).

## SECTION 7: Handling and storage

### 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.

### Conditions for safe storage, including any incompatibilities

Provision to contain effluent from fire extinguishing. Separated from food and feedstuffs. See Chemical Dangers. Dry. Well closed. Ventilation along the floor. Provision to contain effluent from fire extinguishing. Separated from food and feedstuffs. See Chemical Dangers. Dry. Well closed. Ventilation along the floor.

## SECTION 8: Exposure controls/personal protection

### Control parameters

### Occupational Exposure limit values

TLV: 0.2 ppm as TWA; 0.5 ppm as STEL. MAK: 0.57 mg/m<sup>3</sup>, 0.1 ppm; peak limitation category: I(1); pregnancy risk group: C

### **Biological limit values**

no data available

### **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.

### **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 trichloride is a colorless or slightly yellow fuming liquid with a pungent and irritating odor resembling that of hydrochloric acid. Causes severe burns to skin, eyes and mucous membranes. Very toxic by inhalation, ingestion and skin absorption. Reacts with water to evolve hydrochloric acid, an irritating and corrosive gas apparent as white fumes. Used during electrodeposition of metal on rubber and for making pesticides, surfactants, gasoline additives, plasticizers, dyestuffs, textile finishing agents, germicides, medicinal products, and other chemicals.
Colour:	Clear colorless, fuming liquid
Odour:	Pungent

Melting point/freezing point:	-112°C
Boiling point or initial boiling point and boiling range:	76°C
Flammability:	Noncombustible Liquid; however, a strong oxidizer that may ignite combustibles upon contact.
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	none
Auto-ignition temperature:	Not flammable (USCG, 1999)
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	0.65 cP at 0 deg C; 0.438 cP at 50 deg C
Solubility:	Reacts with water (NIOSH, 2016)
Partition coefficient n-octanol/water:	no data available
Vapour pressure:	23.32 psi ( 55 °C)
Density and/or relative density:	1.363g/mL at 25°C
Relative vapour density:	4.75 (vs air)
Particle characteristics:	no data available

## SECTION 10: Stability and reactivity

### Reactivity

Decomposes on heating. This produces toxic and corrosive fumes including hydrogen chloride and phosphorus oxides. Reacts with oxidants. 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 and bases. Attacks metals and many other materials.

### Chemical stability

no data available

### Possibility of hazardous reactions

Reacts with water to form hydrochloric acid, which reacts with most metals to form flammable hydrogen gas. The vapour is heavier than air. PHOSPHORUS TRICHLORIDE is a strong reducing agent that may ignite combustible organic materials upon contact. May generate flammable and potentially explosive gaseous hydrogen upon contact with many common metals (except nickel and lead). Reactions with water are violent and produce heat and flashes of fire. Gives intensely exothermic reactions with iodine monochloride [Mellor 2, Supp. 1:502. 1956]. Several laboratory explosions have been reported arising from mixtures with acetic acid, along with other acids, sulfuric acid and derivatives, carboxylic acids, etc. These have been ascribed to poor heat control allowing the formation of phosphine [J. Am. Chem. Soc. 60:488. 1938]. Ignites when mixed with hydroxylamine [Mellor 8:290. 1946-47]. Causes an explosion on contact with nitric acid [Comp. Rend. 28:86]. It is incompatible with many common oxidants such as: sodium peroxide, fluorine, chromyl chloride, iodine chloride, to name a few. Isopropanol can react with PCl<sub>3</sub>, forming toxic HCl gas. (Logsdon, John E., Richard A. Loke., Isopropyl Alcohol. Kirk-Othmer Encyclopedia of Chemical Technology. John Wiley & Sons, Inc. 1996.)

### Conditions to avoid

no data available

### Incompatible materials

Reacts with water to form hydrochloric acid, which reacts with most metals to form flammable hydrogen gas.

### Hazardous decomposition products

When heated to decomposition it emits toxic fumes of /hydrogen chloride and phosphorus oxide/.



## SECTION 11: Toxicological information

### Acute toxicity

Oral: LD50 Rat oral 550 mg/kg

Inhalation: LC50 Rat inhalation 104 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 above the OEL 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**

### **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

### **Persistence and degradability**

no data available

### **Bioaccumulative potential**

no data available

### **Mobility in soil**

no data available

### **Other adverse effects**

no data available

## **SECTION 13: Disposal considerations**

### **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**

### **UN Number**

ADR/RID: UN1809 (For reference only, please check.)

IMDG: UN1809 (For reference only, please check.)

IATA: UN1809 (For reference only, please check.)

### **UN Proper Shipping Name**

ADR/RID: PHOSPHORUS TRICHLORIDE (For reference only, please check.)

IMDG: PHOSPHORUS TRICHLORIDE (For reference only, please check.)

IATA: PHOSPHORUS TRICHLORIDE (For reference only, please check.)

### **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.)

### **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.)

### **Environmental hazards**

ADR/RID: No

IMDG: No

IATA: No

### **Special precautions for user**

no data available

**Transport in bulk according to IMO instruments**

no data available

## **SECTION 15: Regulatory information**

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

**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.

**(PICCS)**

Listed.

**Vietnam National Chemical Inventory**

Listed.

**IECSC)**

Listed.

**Korea Existing Chemicals List (KECL)**

Listed.

## SECTION 16: Other information

### 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](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.

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