



## EXCEL INDUSTRIES LIMITED

### PHOSPHORUS TRICHLORIDE MATERIAL SAFETY DATA SHEET

#### SECTION 1 : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

- **Product identifier** :
  - Chemical Name : Phosphorus trichloride
  - Molecular formula :  $\text{PCl}_3$
  - Chemical class : Inorganic liquid
  - Trade name : Phosphorus trichloride
  - Synonyms : Phosphorus chloride, Chloride of phosphorus
- **Name of manufacturer** :

#### CORPORATE HEAD OFFICE :

Excel Industries Limited  
184-87, S. V. Road  
Jogeshwari (West)  
Mumbai - 400 102  
Maharashtra, INDIA  
Emergency Tel. : +91 22 6646 4200, 2678 8258  
Fax : +91 22 2678 3508

#### MANUFACTURED AT :

Excel Industries Limited  
Plot No. 112, MIDC Industrial Area  
Dhatav, Roha  
District - Raigad 402116  
Maharashtra, INDIA  
Emergency Tel. : +91 2194 264004, 264005  
Fax : +91 2194 263703

- **Product use** : Used as raw material for many organophosphorus pesticide, phosphonates, dye intermediates and fire retardant plasticisers

#### SECTION 2 : COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient name	CAS No.	%	EC / EINECS No.	Symbol	R / S Phrases
Phosphorus trichloride	7719-12-2	99.5	231-749-3	T+, C	R14; R26/28; R35; R48/20 S7/8; S26; S36/37/39; S45

Note: See Section 16 for full text of R & S phrases mentioned above.

#### SECTION 3 : HAZARDS IDENTIFICATION

- **Potential hazards** : Toxic, Corrosive.
- **Potential health effects** : Very Toxic, Corrosive. May be fatal if swallowed or inhaled.
- **Relevant route of exposure** :
  - Skin contact : Causes severe burns. Local pain, redness and possible acid burns on prolonged contact. Vapours can cause irritation.
  - Eye Contact : Causes severe burns. Vapours can cause pain, redness and blurred vision. Irreversible eye damage can occur from vapours and liquid splashes.
  - Inhalation : Extremely destructive to tissues of the mucous membrane and upper respiratory tract. Symptoms may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. Inhalation may be fatal as a result of spasm inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema.
  - Ingestion : Causes severe burns. Symptoms include abdominal pain, diarrhea, vomiting. Aspiration of the swallowed product or vomitus can cause severe pulmonary complication. Ingestion may be fatal.



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- R-phrases : R14; R26/28; R35; R48/20
- S-phrases : S7/8; S26; S36/37/39; S45
- NFPA Code : H=3; F=0; R=2; W
- Environmental effects : May be harmful to aquatic organisms
- Hazard symbols : T+ , C



**SECTION 4 : FIRST AID MEASURES**

- Eyes : Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.
- Skin : Remove all contaminated clothing and under safety shower flush the affected area with soap and water. Get medical attention immediately.
- Inhalation : Remove the affected person to fresh air. If breathing has stopped, start artificial respiration immediately. If breathing is difficult, give oxygen. Allow to rest. Get medical attention immediately.
- Ingestion : First rinse mouth. If the affected person is conscious , give several glasses of water but DO NOT INDUCE VOMITING. Never give anything by mouth to an unconscious person. Get medical attention immediately.
- Note to Physician : There is no specific antidote for the toxic effect of  $\text{PCl}_3$  and medical treatment is symptomatic and supportive. The medical regimen utilized in the treatment of injury due to strong mineral acids should be followed in treatment of burns. In case of ingestion dilute with water or milk. Do not attempt to neutralise the acid since exothermic reaction may extend the corrosive injury. Be careful to avoid further vomit since the re-exposure of the mucosa to the acid is harmful. In case of injury due to inhalation, keep under medical observation depending upon the severity.

**SECTION 5 : FIREFIGHTING MEASURES**

- HAZCHEM code : 4WE
- Hazardous combustion products : HCl, Phosphorus acid
- Conditions under which flammability could occur : Reacts violently with water. May cause flashes of fires due to spontaneous ignition of diphosphine
- Extinguishing media : DO NOT USE WATER. Use Dry chemical, Carbon dioxide, Dry sand
- Unsuitable fire extinguishing media : Water or Hydrous agents should not be used.
- Sensitivity to explosion : Not applicable
- Fire fighting procedure : In case of fire use extinguishing media mentioned above. Cool intact drums etc. by spraying with water but avoid contact of the material with water.
- Special protective equipment for the fighters : Use self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.



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SECTION 6 : ACCIDENTAL RELEASE MEASURES

- Personal precautions : Do not inhale. Avoid contact of material with skin, eyes, clothing. Use personal protection recommended in Section 8.
- Environmental precautions : Ventilate the area of leak or spill. Prevent mixing with water bodies
- Procedures for dealing with release or spill (Major/Minor) : Make dyke using dry sand/earth. Absorb on absorbent granules and shovel into plastic drums for temporary on site storage. Collect in containers for disposal. Use respiratory equipment & personal protective clothing. Dispose as per instructions mentioned in Section 13.
- Additional instructions : After clean up operations, decontaminate & launder all protective clothing and equipment before storing & reusing.

SECTION 7 : HANDLING AND STORAGE

**HANDLING :**

- **Safe handling practices and equipment:** Good industrial practice in housekeeping and personal hygiene should be followed. Avoid contact with eyes, skin and clothing. Ensure good ventilation at workplace.
- **Instruction for fire & explosion protection:** No smoking.

**STORAGE :**

- **Appropriate storage practices/ requirements:** Store in sealed containers in a cool, dry and well ventilated place. Check for leaks & corrosion of containers.
- **Technical measures:** Provide adequate ventilation.
- **Material of construction of containers:** Mild Steel. Aluminium, Galvanised steel & most plastics are not suitable

SECTION 8 : EXPOSURE CONTROL / PERSONAL PROTECTION

- **Occupational exposure limit values / Biological limit values:**
  - OSHA PEL : 0.5 ppm (TWA)
  - ACGIH TLV : 0.2 ppm (TWA) ; 0.5 ppm (STEL)
- **Applicable control measures, including engineering controls:** Good industrial practice in housekeeping and personal hygiene should be followed. Avoid contact with eyes, skin and clothing. Do not breathe fumes. Ensure adequate ventilation of workplace. Provide eyewash facility & safety shower.
- **Industrial Hygiene Controls:** Good personal hygiene practices should be followed. Avoid contact with eyes, skin and clothing. Wash hands before breaks and after work. Do not eat, drink, smoke in the workplace. Use personal protective equipment.
- **Personal protective equipment for each exposure route (type & MOC):**
  - Eyes : Full face shield, Safety goggles
  - Skin : PVC / Rubber gloves
  - Clothing : Acid resistant clothing , apron
  - Foot : Safety shoes / Gumboots
  - Respiratory protection : Wear a supplied air, full face piece respirator; airlined hood



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**SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES**

- Physical state : Liquid
- Appearance : Colourless to light yellow fuming liquid
- Odour : Pungent , penetrating
- Vapor pressure & reference temperature : 100 mm Hg at 21°C
- Vapour density : 4.75 (air = 1)
- Boiling point : 75.3 °C at 760 mm Hg
- Freezing / Melting point : -111.8 °C
- Specific gravity : 1.56 at 27°C
- pH : Acidic
- Solubility in water : Decomposes exothermally in water

**SECTION 10 : STABILITY AND REACTIVITY**

- Chemical stability : Generally stable under normal conditions of handling and storage.
- Conditions to avoid : Water, Moisture, Heat
- Incompatibility with other materials : Water, Oxidizing substance, Alkalies, Amines, Alcohols
- Hazardous decomposition products : HCl acid, Hydrogen Chloride, Phosphorus acid. Thermal decomposition may include phosphine & diphosphine.
- Hazardous polymerization : Will not occur under normal condition
- Effect of weather (Humidity/ oxygen/ CO<sub>2</sub>) : Traces of material in humid conditions will lead to corrosion of steel.

**SECTION 11 : TOXICOLOGICAL INFORMATION**

**Toxicology data:**

- Skin : Dermal LD50 (Rabbit) - 1260 mg/kg
- Ingestion : Oral LD50 (Rat) - 18 mg/kg
- Inhalation : Inhalation LC50 (Rat) - 104 ppm / 4H
- Irritancy : No data available
- Sensitization : No data available
- Carcinogenicity : None reported
- Reproductive toxicity : No data available
- Teratogenicity : No data available
- Mutagenicity : No data available
- Name of toxicologically synergistic products : No data available

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## SECTION 12 : ECOLOGICAL INFORMATION




Ecotoxicity : May be toxic to aquatic life in high concentration

- Mobility : No data available
- Persistence and degradability in soil/ water : No data available
- Bioaccumulation potential : No data available
- Other adverse effects (ODP, GWP, etc). : No data available

## SECTION 13 : DISPOSAL CONSIDERATION

- **Waste disposal information of product & contaminated packaging:** Spill and waste disposal procedures approved by state and local authorities must be observed. Labels should not be removed from containers until they have been cleaned and decontaminated. Decontaminate the container taking suitable precaution considering the hazard.

## SECTION 14 : TRANSPORT INFORMATION

Regulatory information	UN No.	Proper shipping name	UN Class & Subs. Haz class	Packaging group	Label	Additional information
IMDG	1809	Phosphorus trichloride	6.1 8	I		
ADR/ RID	1809	Phosphorus trichloride	6.1 8	I		
US-DOT	1809	Phosphorus trichloride	6.1 8	I		
ICAO/ IATA	----	Not approved for air transport	----	----	----	

## SECTION 15 : REGULATORY INFORMATION

- National laws/ Regional laws:-
  - USA -
    - RTECS no. - TH3675000
  - Europe -
    - EC No. - 231-749-3
    - Hazard Symbol T+, C



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SECTION 16 : OTHER INFORMATION

Full text of R & S phrases given below:-

- R14 - Reacts violently with water
- R26/28 - Very toxic by inhalation and if swallowed
- R35 - Causes severe burns
- R48/20 - Harmful; danger of serious damage to health by prolonged exposure through inhalation
- S7/8 - Keep container tightly closed and dry
- S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
- S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
- S45 - In case of accident or if you feel unwell, seek medical advice immediately (show label where possible)

**DISCLAIMER:** Information contained in this Material Safety Data Sheet is believed to be reliable but no representation, guarantee or warranties of any kind are made as to the accuracy, suitability for a particular application or results to be obtained from them. It is up to the user to ensure that the information contained in the Material Safety Data Sheet is relevant to the product manufactured/ handled or sold by him as the case may be. Excel Industries Limited makes no warranties, expressed or implied, in respect of the adequacy of this document for any particular purpose.