



THIOPHOSPHORYL CHLORIDE
MATERIAL SAFETY DATA SHEET

SECTION 1 : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

- **Product identifier** :
 - Chemical Name : Thiophosphoryl chloride
 - Molecular formula : PSCl_3
 - Chemical class : Inorganic liquid
 - Trade name : Thiophosphoryl chloride
 - Synonyms : Phosphorus sulfochloride, Phosphorus thiochloride, Trichlorophosphine sulfide, Phosphorothionic trichloride, Thiophosphoric trichloride
- **Name of manufacturer** :

CORPORATE HEAD OFFICE :

Excel Industries Limited
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Mumbai - 400 102
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Emergency Tel. : +91 22 6646 4200, 2678 8258
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MANUFACTURED AT :

Excel Industries Limited
Plot No. 112, MIDC Industrial Area
Dhatav, Roha
District - Raigad 402116
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- **Product use** : Pesticide intermediate

SECTION 2 : COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient name	CAS No.	%	EC / EINECS No.	Symbol	R / S Phrases
Thiophosphoryl chloride	3982-91-0	99%	223-622-6	T+, C, N	R14; R22; R26; R34; R48/23; R52/53 S7/8; S26; S28; S36/37/39; S45; S61

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.
- **Relevant route of exposure** :
 - Skin contact : Causes skin burns. Causes local pain, redness and blisters
 - Eye Contact : Causes severe eye burns. Vapours can cause pain, redness and loss of vision.
 - 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 delayed pulmonary edema.. Death may result hours after initial exposure.
 - Ingestion : Causes burns to the respiratory tract. Symptoms include abdominal pain, burning sensation, nausea. Aspiration of the swallowed material into the lungs may cause chemical pneumonitis, which may be fatal.



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MATERIAL SAFETY DATA SHEET**

- R-phrases : R14; R22; R26; R34; R48/23; R52/53
- S-phrases : S7/8; S26; S28; S36/37/39; S45; S61
- NFPA Code : H=3; F=0; R=2
- Environmental effects : May be harmful to aquatic organisms
- Hazard symbols : T+ , C, N



T+



C



N

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 water for atleast 15 minutes. 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 2-3 glasses of water or milk. DO NOT INDUCE VOMITING. Never give anything by mouth to an unconscious person. Get medical attention immediately.
- Note to Physician : Medical treatment is symptomatic and supportive. 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. Exposure may result in death. The effects may be delayed therefore medical observation is essential.

SECTION 5 : FIREFIGHTING MEASURES

- HAZCHEM code : 2XE
- Hazardous combustion products : HCl, Hydrogen sulphide, Oxides of Phosphorus & Sulfur
- Conditions under which flammability could occur : ----
- Extinguishing media : DO NOT USE WATER. Use Dry chemical powder, Carbon dioxide
- 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. Emits toxic fumes under fire conditions.
- Special protective equipment for the fighters : Use self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.



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MATERIAL SAFETY DATA SHEET

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) : Evacuate unnecessary personnel. Make dyke using dry sand/earth. Absorb on suitable absorbent, sand or earth 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. Keep away from water, moisture and incompatible materials.
- **Technical measures:** Provide adequate ventilation.
- **Material of construction of containers:** Stainless Steel.

SECTION 8 : EXPOSURE CONTROL / PERSONAL PROTECTION

- **Occupational exposure limit values / Biological limit values:**
 - OSHA PEL : None listed
 - ACGIH TLV : None listed
- **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 approved supplied air, full face piece respirator; airlined hood



THIOPHOSPHORYL CHLORIDE
MATERIAL SAFETY DATA SHEET

SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

- Physical state : Liquid
- Appearance : Clear colourless fuming liquid
- Odour : Pungent , penetrating
- Vapor pressure & reference temperature : 2.9 kPa at 25°C
- Vapour density : 5.8 (air = 1)
- Boiling point : 125 °C at 760 mm Hg
- Freezing / Melting point : -35 °C
- Specific gravity : 1.625 at 25°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, Alcohols, Metals, Moisture
- Hazardous decomposition products : Hydrogen Chloride gas, Phosphorus oxides, Oxides of Sulfur. Thermal decomposition may produce phosphine.
- Hazardous polymerization : Will not occur
- Effect of weather (Humidity/ oxygen/ CO₂) : Traces of material in humid conditions will lead to corrosion.

SECTION 11 : TOXICOLOGICAL INFORMATION

Toxicology data:

- Skin : No data available
- Ingestion : Oral LD50 (Rat) - 660 mg/kg
Oral LD50 (Mouse) - 700 mg/kg
- Inhalation : Inhalation LC50 (Rat) - 20 ppm
- Irritancy : Corrosive
- Sensitization : No data available
- Carcinogenicity : Not listed by ACGIH, IARC, NTP
- 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 : Harmful to aquatic organisms, may cause long term adverse effects in the aquatic environment

- 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	1837	Thiophosphoryl chloride	8	II		
ADR/ RID	1837	Thiophosphoryl chloride	8	II		
US-DOT	1837	Thiophosphoryl chloride	8	II		
ICAO/ IATA	1837	Thiophosphoryl chloride	8	II		

SECTION 15 : REGULATORY INFORMATION

- National laws/ Regional laws:-
 - USA - 1) RTECS no. - XN2930000 2) SARA - Not listed 3) TSCA Inventory Item - Yes
 - Europe - EINECS / ELINCS No. - 223-622-6 Hazard Symbol - T+, N



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MATERIAL SAFETY DATA SHEET

SECTION 16 : OTHER INFORMATION

Full text of R & S phrases given below:-

- R14 - Reacts violently with water
- R22 - Harmful if swallowed
- R26 - Very toxic by inhalation
- R34 - Causes burns
- R48/23 - Toxic : danger of serious damage to health by prolonged exposure through inhalation
- R52/53 - Harmful to aquatic organisms, may cause long term adverse effects in the aquatic environment

- 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)
- S61 - Avoid release to the environment. Refer to special instructions / safety data sheets

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