Material Safety Data Sheet
Phosphorus Trichloride

Section 1 - Chemical Product and Company Identification

**MSDS Name:** Phosphorus Trichloride
**Synonyms:** Phosphorus Perchloride; Phosphoric Chloride.

Section 2 - Composition, Information on Ingredients

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
<th>Percent</th>
<th>EINECS/ELINCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>7719-12-2</td>
<td>Phosphorus Trichloride</td>
<td>100</td>
<td>231-749-3</td>
</tr>
</tbody>
</table>

Section 3 - Hazards Identification

**EMERGENCY OVERVIEW**

Appearance: colorless or slight yellow liquid.
**Danger!** May be fatal if swallowed. Corrosive. Causes severe eye and skin burns. Causes severe digestive and respiratory tract burns. Water-reactive. Poison! May be fatal if inhaled.
**Target Organs:** Respiratory system, eyes, skin.

**Potential Health Effects**
**Eye:** Causes severe eye burns.
**Skin:** Causes skin burns. May be absorbed through the skin in harmful amounts.
**Ingestion:** May be fatal if swallowed. Causes digestive tract burns with immediate pain, swelling of the throat, convulsions, and possible coma.
**Inhalation:** May be fatal if inhaled. May cause severe irritation of the respiratory tract with sore throat, coughing, shortness of breath and delayed lung edema. Causes chemical burns to the respiratory tract.
**Chronic:** No information found.

Section 4 - First Aid Measures

**Eyes:** Immediately flush eyes with plenty of water for at least 15 minutes,
occasionally lifting the upper and lower eyelids. Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed.

**Skin:** Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes.

**Ingestion:** Call a poison control center. If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

**Inhalation:** Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

**Notes to Physician:** Treat symptomatically and supportively.

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**Section 5 - Fire Fighting Measures**

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Substance is noncombustible. Contact with water can cause violent liberation of heat and splattering of the material. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Containers may explode when heated.

**Extinguishing Media:** Do NOT use water directly on fire. Use carbon dioxide or dry chemical.

**Flash Point:** Not available.

**Autoignition Temperature:** Noncombustible

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 3; Flammability: 0; Instability: 2; Special Hazard: -W-

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**Section 6 - Accidental Release Measures**

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation.

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**Section 7 - Handling and Storage**

**Handling:** Wash thoroughly after handling. Wash hands before eating. Follow all MSDS and label precautions even after container is emptied because they may
contain product residues. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Do not ingest or inhale. Do not allow contact with water.

**Storage:** Store in a cool, dry, well-ventilated area away from incompatible substances. Corrosives area.

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### Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

**Exposure Limits**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA - Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus Trichloride</td>
<td>0.2 ppm TWA; 0.5 ppm STEL</td>
<td>0.2 ppm TWA; 1.5 mg/m3 TWA 25 ppm IDLH</td>
<td>0.5 ppm TWA; 3 mg/m3 TWA</td>
</tr>
</tbody>
</table>

**Personal Protective Equipment**

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

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### Section 9 - Physical and Chemical Properties

**Physical State:** Liquid  
**Appearance:** colorless or slight yellow  
**Odor:** pungent odor  
**pH:** Not available.  
**Vapor Pressure:** 100 mm Hg @ 25C  
**Vapor Density:** 4.74  
**Evaporation Rate:** Not available.  
**Viscosity:** Not available.  
**Boiling Point:** 76 deg C  
**Freezing/Melting Point:** -112 deg C  
**Decomposition Temperature:** Not available.  
**Solubility:** Reacts.  
**Specific Gravity/Density:** 1.574  
**Molecular Formula:** PCl3  
**Molecular Weight:** 137.3328

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### Section 10 - Stability and Reactivity
**Chemical Stability:** Reacts with water to form hydrogen chloride, a toxic and corrosive gas.

**Conditions to Avoid:** Contact with water.

**Incompatibilities with Other Materials:** Reacts violently with water. Alcohols, amines, aluminum, sodium, potassium acids.

**Hazardous Decomposition Products:** Hydrogen chloride, oxides of phosphorus, phosphorous fumes.

**Hazardous Polymerization:** Will not occur.

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### Section 11 - Toxicological Information

**RTECS#:**
CAS# 7719-12-2: TH3675000

**LD50/LC50:**
CAS# 7719-12-2:
- Inhalation, rat: LC50 = 104 ppm/4H;
- Inhalation, rat: LC50 = 132 mg/m³;
- Oral, rat: LD50 = 18 mg/kg;

**Carcinogenicity:**
CAS# 7719-12-2: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information found

**Teratogenicity:** No information found

**Reproductive Effects:** No information found

**Mutagenicity:** No information found

**Neurotoxicity:** No information found

**Other Studies:**

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### Section 12 - Ecological Information

No information available.

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### Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.
Section 14 - Transport Information

<table>
<thead>
<tr>
<th>IATA</th>
<th>PHOSPHORUS TRICHLORIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping Name</td>
<td>PHOSPHORUS TRICHLORIDE</td>
</tr>
<tr>
<td>Hazard Class</td>
<td>6.1</td>
</tr>
<tr>
<td>UN Number</td>
<td>UN1809</td>
</tr>
<tr>
<td>Packing Group</td>
<td>I</td>
</tr>
</tbody>
</table>

Section 15 - Regulatory Information

**Hazard Symbols:**
T+ C

**Risk Phrases:**
R 14 Reacts violently with water.
R 26/28 Very toxic by inhalation and if swallowed.
R 29 Contact with water liberates toxic gas.
R 35 Causes severe burns.
R 48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.

**Safety Phrases:**
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 7/8 Keep container tightly closed and dry.

Section 16 - Additional Information

**MSDS Creation Date:** 5/18/1999
**Revision #9 Date:** 12/02/2004

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