### Material Safety Data Sheet

#### Section 1. Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>Common Name/ Trade Name</th>
<th>Phosphorus oxychloride</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog Number(s)</td>
<td>P1115, P1116</td>
</tr>
<tr>
<td>CAS#</td>
<td>10025-87-3</td>
</tr>
<tr>
<td>RTECS</td>
<td>TH4897000</td>
</tr>
<tr>
<td>TSCA</td>
<td>TSCA 8(b) inventory: Phosphorus oxychloride</td>
</tr>
<tr>
<td>CI#</td>
<td>Not available.</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248</td>
</tr>
<tr>
<td>Commercial Name(s)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Synonym</td>
<td>Phosphorus oxytrichloride Phosphoryl trichloride Trichlorophosphine oxide Trichlorophosphorus oxide</td>
</tr>
<tr>
<td>Chemical Name</td>
<td>Phosphoryl chloride</td>
</tr>
<tr>
<td>Chemical Family</td>
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</tr>
<tr>
<td>Chemical Formula</td>
<td>POCI3</td>
</tr>
<tr>
<td>Supplier</td>
<td>SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248</td>
</tr>
</tbody>
</table>

#### Section 2. Composition and Information on Ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>TWA (mg/m³)</th>
<th>STEL (mg/m³)</th>
<th>CEIL (mg/m³)</th>
<th>% by Weight</th>
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</thead>
<tbody>
<tr>
<td>1) Phosphorus oxychloride</td>
<td>10025-87-3</td>
<td>0.6</td>
<td></td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

**Toxicological Data on Ingredients**

Phosphorus oxychloride:

- **ORAL (LD50):** Acute: 380 mg/kg [Rat], 36 mg/kg [Rat], 327 mg/kg [Mouse].
- **VAPOR (LC50):** Acute: 53 ppm 4 hours [Guinea pig], 404 mg/m³ 2 hours [Mouse].

### Section 3. Hazards Identification

**Potential Acute Health Effects**

Very hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (corrosive), of eye contact (corrosive). Slightly hazardous in case of skin contact (permeator). Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

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**Continued on Next Page**
**Potential Chronic Health Effects**

CARCINOGENIC EFFECTS: Not available.
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Not available.

The substance is toxic to lungs, upper respiratory tract.
The substance may be toxic to kidneys, skin, eyes, central nervous system (CNS).
Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

**Section 4. First Aid Measures**

**Eye Contact**
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.

**Skin Contact**
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

**Serious Skin Contact**
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

**Inhalation**
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Serious Inhalation**
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

**Ingestion**
If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

**Serious Ingestion**
Not available.

**Section 5. Fire and Explosion Data**

**Flammability of the Product**
Non-flammable.

**Auto-Ignition Temperature**
Not applicable.

**Flash Points**
Not applicable.

**Flammable Limits**
Not applicable.

**Products of Combustion**
Not available.

**Fire Hazards in Presence of Various Substances**
Not applicable.

**Explosion Hazards in Presence of Various Substances**
Risks of explosion of the product in presence of mechanical impact: Not available.
Risks of explosion of the product in presence of static discharge: Not available.

**Fire Fighting Media and Instructions**
Not applicable.

**Special Remarks on Fire Hazards**
When heated to decomposition it emits highly toxic fumes of phosphorus oxides and chlorides (phosphorus trichloride, chlorine)

**Special Remarks on Explosion Hazards**
Not available.
Section 6. Accidental Release Measures

Small Spill
Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill
Corrosive liquid. Poisonous liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7. Handling and Storage

Precautions
Keep container dry. Keep away from heat. Keep away from sources of ignition. Keep away from direct sunlight or strong incandescent light. Do not ingest. Do not breathe gas/fumes/vapor/spray. Never add water to this product. Avoid shock and friction. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as combustible materials, organic materials, metals, acids, alkalis, moisture.

Storage
Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Engineering Controls
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection

Personal Protection in Case of a Large Spill
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits
TWA: 0.1 (ppm) from OSHA (PEL) [United States]
TWA: 0.1 (ppm) from ACGIH (TLV) [United States]
TWA: 0.6 (mg/m^3) from NIOSH [United States]
TWA: 0.1 (ppm) from NIOSH [United States]
TWA: 0.1 (ppm) [Canada]

Consult local authorities for acceptable exposure limits.

Section 9. Physical and Chemical Properties

Physical state and appearance
Liquid. (Fuming liquid. Mobile)

Molecular Weight
153.33 g/mole

pH (1% soln/water)
Not available.

Boiling Point
105.8°C (222.4°F)

Melting Point
1.25°C (34.3°F)

Critical Temperature
Not available.

Specific Gravity
1.675 (Water = 1)

Vapor Pressure
3.7 kPa (@ 20°C)

Vapor Density
5.3 (Air = 1)

Volatility
Not available.

Odor Threshold
Not available.

Water/Oil Dist. Coeff.
Not available.

Ionicity (in Water)
Not available.

Dispersion Properties
Not available.

Solubility
Reacts with water

Continued on Next Page
### Section 10. Stability and Reactivity Data

<table>
<thead>
<tr>
<th><strong>Stability</strong></th>
<th>The product is stable.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instability Temperature</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Conditions of Instability</strong></td>
<td>Incompatible materials, water, moisture</td>
</tr>
<tr>
<td><strong>Incompatibility with various substances</strong></td>
<td>Reactive with combustible materials, organic materials, metals, acids, alkalis, moisture. The product may undergo hazardous decomposition, condensation or polymerization, it may react violently with water to emit toxic gases or it may become self-reactive under conditions of shock or increase in temperature or pressure.</td>
</tr>
</tbody>
</table>

**Corrosivity**
- Extremely corrosive in presence of zinc.
- Non-corrosive in presence of glass.

**Special Remarks on Reactivity**
- Moisture sensitive. Reacts violently with water or steam, or moisture producing hydrochloric and phosphoric acids, heat, toxic and corrosive fumes.
- Reacts exothermically with alcohol.
- Reacts violently with acids, alkalies, alkali metals.
- Reacts with carbon disulfide, dimethylformamide.

**Special Remarks on Corrosivity**
- Not available.

**Polymerization**
- Will not occur.

### Section 11. Toxicological Information

**Routes of Entry**
- Absorbed through skin. Inhalation. Ingestion.

**Toxicity to Animals**

**WARNING:** THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE.

- Acute oral toxicity (LD50): 36 mg/kg [Rat].
- Acute toxicity of the vapor (LC50): 31.4 4 hours [Rat].

**Chronic Effects on Humans**
- Causes damage to the following organs: lungs, upper respiratory tract.
- May cause damage to the following organs: kidneys, skin, eyes, central nervous system (CNS).

**Other Toxic Effects on Humans**
- Extremely hazardous in case of inhalation (lung corrosive).
- Very hazardous in case of skin contact (irritant), of ingestion, .
- Hazardous in case of skin contact (corrosive), of eye contact (corrosive).
- Slightly hazardous in case of skin contact (permeator).

**Special Remarks on Toxicity to Animals**
- Not available.

**Special Remarks on Chronic Effects on Humans**
- Not available.

**Special Remarks on other Toxic Effects on Humans**

- Acute Potential Health Effects:
  - Skin: Corrosive. Causes severe irritation and burns.
  - Eyes: Corrosive. Contact with eyes causes severe irritation and burns.
  - Inhalation: May be fatal if inhaled. Causes severe irritation and possible chemical burns of the respiratory tract. Exposure to vapor also causes irritation of the eyes and lacrimation. Other symptoms of exposure included dizziness, headache, weakness, anorexia, nausea, vomiting, chest pain, pain in the throat, wheezing, cough, difficulty breathing and shortness of breath (dyspnea) respiratory depression, bronchitis, bronchopneumonia, pulmonary edema. May also cause corneal damage, metabolic acidosis, and affect the kidneys (kidney damage, nephritis), and the liver, behavior/central nervous system(somnolence).
  - Ingestion: May be harmful or fatal if swallowed. May cause anorexia, and may affect the liver. It may cause ulceration or bleeding from the stomach. Chronic Potential Health Effects:
    - Chronic phosphorus poisoning may cause osteomyelitis of the jaw bones ("phossy jaw"), most frequently of the mandible and less often of the maxilla which commonly begins as a dental disturbance. May also cause osteoporosis.
    - Chronic ingestion may also affect the liver and kidneys.

**Continued on Next Page**
### Section 12. Ecological Information

<table>
<thead>
<tr>
<th>Ecotoxicity</th>
<th>Not available.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD5 and COD</td>
<td>Not available.</td>
</tr>
<tr>
<td>Products of Biodegradation</td>
<td>Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.</td>
</tr>
<tr>
<td>Toxicity of the Products of Biodegradation</td>
<td>The products of degradation are less toxic than the product itself.</td>
</tr>
<tr>
<td>Special Remarks on the Products of Biodegradation</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

### Section 13. Disposal Considerations

| Waste Disposal                        | Waste must be disposed of in accordance with federal, state and local environmental control regulations. |

### Section 14. Transport Information

| DOT Classification                     | CLASS 6.1: Poisonous material. Class 8: Corrosive material |
| Identification                         | UNNA: 1810 : Phosphorous oxychloride PG: I |
| Special Provisions for Transport       | Poison inhalation hazard zone B |
| DOT (Pictograms)                       | ![Hazardous Material](image) ![Corrosive](image) |

### Section 15. Other Regulatory Information and Pictograms

| California Proposition 65 Warnings   | California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found. California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found. |

| Other Classifications                  | WHMIS (Canada) CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS E: Corrosive liquid. CLASS F: Dangerously reactive material. |

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Phosphorus oxychloride

DSCL (EEC)

- R14- Reacts violently with water.
- R22- Harmful if swallowed.
- R26- Very toxic by inhalation.
- R35- Causes severe burns.

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 the label where possible).

HMIS (U.S.A.)

| Health Hazard | 3 |
| Fire Hazard | 0 |
| Reactivity | 2 |
| Personal Protection |

National Fire Protection Association (U.S.A.)

| Health | 4 |
| Reactivity | 2 |

WHMIS (Canada) (Pictograms)

- Skull
- Hand
- Safety data sheet

DSCL (Europe) (Pictograms)

- Skull

TDG (Canada) (Pictograms)

ADR (Europe) (Pictograms)

Protective Equipment

- Gloves.
- Full suit.
- Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.
- Face shield.

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### Section 16. Other Information

<table>
<thead>
<tr>
<th>MSDS Code</th>
<th>P3730</th>
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<tbody>
<tr>
<td>References</td>
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<tr>
<td>Other Special Considerations</td>
<td>Major Uses: Chemical intermediate; used to manufacture alkyl and aryl orthophosphate triesters. Used in the manufacture of phosphate esters for plasticizers, flame retardants, hydraulic fluids</td>
</tr>
</tbody>
</table>

Validated by Sonia Owen on 6/11/2012.  
Verified by Sonia Owen.  
Printed 6/11/2012.

**Notice to Reader**

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.