1. Product Identification

**Synonyms:** Phosphoryl chloride; Phosphorus oxytrichloride
**CAS No.:** 10025-87-3
**Molecular Weight:** 153.32
**Chemical Formula:** POCl₃
**Product Codes:**
- J.T. Baker: 5400
- Mallinckrodt: 6628, V601, V657

2. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Percent</th>
<th>Hazardous</th>
<th>CAS No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus Oxychloride</td>
<td>100%</td>
<td>Yes</td>
<td>10025-87-3</td>
</tr>
</tbody>
</table>

3. Hazards Identification

**Emergency Overview**

**DANGER! CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. MAY BE FATAL IF**
PHOSPHORUS OXYCHLORIDE

INHALED. AFFECTS RESPIRATORY SYSTEM, CENTRAL NERVOUS SYSTEM AND KIDNEYS. HARMFUL IF SWALLOWED. WATER REACTIVE. REACTS VIOLENTLY WITH WATER TO GENERATE HEAT, HYDROGEN CHLORIDE AND PHOSPHORIC ACID.

SAF-T-DATA™ Ratings (Provided here for your convenience)

-----------------------------------------------------------------------------------------------------------
Health Rating: 4 - Extreme (Poison)
Flammability Rating: 0 - None
Reactivity Rating: 3 - Severe (Water Reactive)
Contact Rating: 4 - Extreme (Corrosive)
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
Storage Color Code: White Stripe (Store Separately)
-----------------------------------------------------------------------------------------------------------

Potential Health Effects

Contact with moisture from body tissue causes formation of hydrogen chloride, hydrochloric acid and phosphoric acid.

Inhalation:
Inhalation of vapors may cause dizziness, headache, weakness, vomiting, chest pain, coughing, labored breathing, pulmonary edema and kidney inflammation. May be fatal.

Ingestion:
Corrosive. Swallowing can cause severe burns of the mouth, throat, and stomach. Can cause sore throat, vomiting, diarrhea.

Skin Contact:
Corrosive. Symptoms of redness, pain, and severe burn can occur.

Eye Contact:
Causes irritation, possibly corrosive to eyes. Symptoms include redness, pain, blurred vision; may cause serious and permanent eye damage.

Chronic Exposure:
Chronic exposure may cause respiratory system effects. Chronic ingestion or inhalation may induce systemic phosphorous poisoning. Liver damage, kidney damage, jaw/tooth abnormalities, blood disorders and cardiovascular effects can result.

Aggravation of Pre-existing Conditions:
Persons with pre-existing skin disorders or eye problems, jaw/tooth abnormalities, or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance.

4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion:
If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:
Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures
**Fire:**
Non-combustible but can cause increase the flammability of combustible materials. Yields high local temperatures in contact with water. Reacts violently with water to form hydrogen chloride, hydrochloric acid and phosphoric acid. Hydrochloric and phosphoric acids in contact with common metals may generate flammable and explosive hydrogen gas.

**Explosion:**
Not considered to be an explosion hazard.

**Fire Extinguishing Media:**
Dry chemical or carbon dioxide. If water is used, the amount should be enough to overcome heat and acid build-up.

**Special Information:**
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Structural firefighter's protective clothing is ineffective for fires involving this material. Stay away from sealed containers. Do not let water enter containers of phosphorus oxychloride, explosion or rupture hazard. Forms hydrogen chloride fumes and hydrochloric or phosphoric acid with water. Fumes are irritating; acids may form hydrogen with metals.

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**6. Accidental Release Measures**

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Treat spilled material with an excess of soda ash or slaked lime, mix and add water cautiously to yield acid(s) and react with the alkali until fully neutralized. Collect the residual for disposal. Flush spill area with plenty of water. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

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**7. Handling and Storage**

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage and moisture. Isolate from any source of heat or ignition. Avoid storage on wood floors. Separate from incompatibles, combustibles, organic or other readily oxidizable materials. Keep away from water. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

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**8. Exposure Controls/ Personal Protection**

**Airborne Exposure Limits:**
- ACGIH Threshold Limit Value (TLV): 0.1 ppm (TWA)

**Ventilation System:**
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**
If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134).
9. Physical and Chemical Properties

**Appearance:**
Colorless or slightly yellow fuming liquid.

**Odor:**
Sharp, unpleasant.

**Solubility:**
Exothermic reaction with water.

**Specific Gravity:**
1.65 @ 25C/4C

**pH:**
No information found.

**% Volatiles by volume @ 21C (70F):**
100

**Boiling Point:**
105.8C (223F)

**Melting Point:**
1.25C (34F)

**Vapor Density (Air=1):**
5.3

**Vapor Pressure (mm Hg):**
37 @ 20C (68F)

**Evaporation Rate (BuAc=1):**
No information found.

10. Stability and Reactivity

**Stability:**
Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**
Hydrogen chloride, hydrochloric acid, phosphoric acid at higher temperatures or in contact with water.

**Hazardous Polymerization:**
Will not occur.

**Incompatibilities:**
Carbon disulfide, DMF, water, combustible materials, most common metals (except nickel and lead),
alcohols, amines and dimethyl sulfoxide.

**Conditions to Avoid:**
Moisture and incompatibles.

11. Toxicological Information

Oral rat LD50: 380 mg/kg; Inhalation rat LC50: 32 ppm/4-hr.
12. Ecological Information

**Environmental Fate:**
No information found.

**Environmental Toxicity:**
No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

**Domestic (Land, D.O.T.)**

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**Proper Shipping Name:** PHOSPHORUS OXYCHLORIDE  
**Hazard Class:** 8, 6.1  
**UN/NA:** UN1810  
**Packing Group:** II  
**Information reported for product/size:** 500ML

**International (Water, I.M.O.)**

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**Proper Shipping Name:** PHOSPHORUS OXYCHLORIDE  
**Hazard Class:** 8, 6.1  
**UN/NA:** UN1810  
**Packing Group:** II  
**Information reported for product/size:** 500ML

15. Regulatory Information

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**Chemical Inventory Status - Part 1**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>TSCA</th>
<th>EC</th>
<th>Japan</th>
<th>Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus Oxychloride (10025-87-3)</td>
<td>Yes</td>
<td>Yes</td>
<td>-----</td>
<td>----------</td>
</tr>
</tbody>
</table>

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**Chemical Inventory Status - Part 2**

--Canada--
Phosphorus Oxychloride (10025-87-3) Yes Yes

Federal, State & International Regulations - Part 1

Ingredient RQ TPQ List Chemical Catg.
Phosphorus Oxychloride (10025-87-3) 1000 500 No No

Federal, State & International Regulations - Part 2

Ingredient CERCLA 261.33 8(d)
Phosphorus Oxychloride (10025-87-3) 1000 No No

Chemical Weapons Convention: Yes TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: Yes (Pure / Liquid)

Australian Hazchem Code: 4WE
Poison Schedule: None allocated.
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 3 Flammability: 0 Reactivity: 2 Other: Water reactive

Label Hazard Warning:
DANGER! CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. MAY BE FATAL IF INHALED. AFFECTS RESPIRATORY SYSTEM, CENTRAL NERVOUS SYSTEM AND KIDNEYS. HARMFUL IF SWALLOWED. WATER REACTIVE. REACTS VIOLENTLY WITH WATER TO GENERATE HEAT, HYDROGEN CHLORIDE AND PHOSPHORIC ACID.

Label Precautions:
Do not breathe vapor.
Do not get in eyes, on skin, or on clothing.
Keep container closed.
Use only with adequate ventilation.
Keep from contact with clothing and other combustible materials.
Do not contact with water.
Wash thoroughly after handling.

Label First Aid:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. In all cases get medical attention immediately.

Product Use:
Laboratory Reagent.

Revision Information:
MSDS Section(s) changed since last revision of document include: 3.
Disclaimer:

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