1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Phosphorus oxychloride
Product Number: 79582
Brand: Fluka
Company: Sigma-Aldrich Canada, Ltd
2149 Winston Park Drive
OAKVILLE ON L6H 6J8
CANADA
Telephone: +1 9058299500
Fax: +1 9058299292
Emergency Phone #: 800-424-9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: Phosphorus oxide chloride
           Phosphoryl chloride
Formula: POCl3
Molecular Weight: 153.33 g/mol

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoryl trichloride</td>
<td>10025-87-3</td>
<td>233-046-7</td>
<td>015-009-00-5</td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

WHMIS Classification
D1A Very Toxic Material Causing Immediate and
E Serious Toxic Effects
Highly toxic by ingestion
Highly toxic by inhalation
Corrosive

HMIS Classification
Health Hazard: 3
Flammability: 0
Physical hazards: 3

NFPA Rating
Health Hazard: 3
Fire: 0
Reactivity Hazard: 3
Special hazard: W
Potential Health Effects

**Inhalation**
May be fatal if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. May cause respiratory tract irritation.

**Skin**
May be harmful if absorbed through skin. Causes skin burns. May be fatal if absorbed through skin.

**Eyes**
May cause eye irritation. Causes eye burns.

**Ingestion**
May be fatal if swallowed. Causes burns.

### 4. FIRST AID MEASURES

**General advice**
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

**If inhaled**
If breathed in, move person into fresh air. If not breathing give artificial respiration. Consult a physician.

**In case of skin contact**
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

**In case of eye contact**
Continue rinsing eyes during transport to hospital. Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

**If swallowed**
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

### 5. FIRE-FIGHTING MEASURES

**Flammable properties**
- Flash point: No data available
- Ignition temperature: No data available

**Suitable extinguishing media**
Carbon dioxide (CO2) Dry powder. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Extinguishing media which shall not be used for safety reasons**
Water

**Special protective equipment for fire-fighters**
Wear self-contained breathing apparatus for fire fighting if necessary.

**Further information**
The product itself does not burn. Water hydrolyzes material liberating acidic gas which in contact with metal surfaces can generate flammable and/or explosive hydrogen gas.

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions**
Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

**Environmental precautions**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

**Methods for cleaning up**
Soak up with inert absorbent material and dispose of as hazardous waste. Do not flush with water. Keep in suitable, closed containers for disposal.

### 7. HANDLING AND STORAGE
Handling
Avoid inhalation of vapour or mist.

Storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store under inert gas.
Never allow product to get in contact with water during storage. Keep away from water.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Update</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoryl trichloride</td>
<td>10025-87-3</td>
<td>TWA</td>
<td>0.1 ppm</td>
<td>2004-08-01</td>
<td>Canada. Worker's Compensation Act, Occupational Health and Safety Regulations (BC Reg 296/97 as amended), 7.2 [B.C. Reg. 382/2004, s.1]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>0.1 ppm, 0.6 mg/m3</td>
<td>2005-02-03</td>
<td>Canada. Occupational Health and Safety Act [R.S.O. 1990, c.1], Industrial Establishments (R.R.O. 1990, Reg 851),139</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>0.5 ppm, 3 mg/m3</td>
<td>2005-02-03</td>
<td>Canada. Occupational Health and Safety Act [R.S.O. 1990, c.1], Industrial Establishments (R.R.O. 1990, Reg 851),139</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>0.1 ppm, 0.63 mg/m3</td>
<td>2004-04-30</td>
<td>Canada. Occupational Health and Safety Code 218</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>0.1 ppm, 0.63 mg/m3</td>
<td>2000-01-12</td>
<td>Canada. Act Respecting Occupational Health and Safety [R.S.Q., c.2.1], Regulation respecting Occupational Health and Safety (O.C.885-2001), Division XV, Sections 130-14</td>
</tr>
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</table>

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves.
Eye protection
Safety glasses

**Skin and body protection**
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

**Hygiene measures**
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

#### Appearance
- Form: liquid

#### Safety data
- **pH**: 1 at 20 °C (68 °F)
- **Melting point**: 1.25 °C (34.25 °F)
- **Boiling point**: 105 - 110 °C (221 - 230 °F)
- **Flash point**: no data available
- **Ignition temperature**: no data available
- **Lower explosion limit**: no data available
- **Upper explosion limit**: no data available
- **Vapour pressure**: 37 hPa (28 mmHg) at 20 °C (68 °F)
  - 139 hPa (104 mmHg) at 50 °C (122 °F)
- **Density**: 1.675 g/cm³
- **Water solubility**: no data available
- **Relative vapour density**: 5.29
  - \((\text{Air} = 1.0)\)

### 10. STABILITY AND REACTIVITY

#### Storage stability
Stable under recommended storage conditions.

#### Conditions to avoid
Exposure to moisture.

#### Materials to avoid
- Strong bases, Alcohols, Amines, Phenol, Metals, Strong oxidizing agents, Reacts violently with water,
- Acetone reacts violently with phosphorous oxychloride.

#### Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Thermal decomposition may produce toxic fumes of phosphorus oxides and/or phosphine, Hydrogen chloride gas

#### Hazardous reactions
Reacts violently with water.

### 11. TOXICOLOGICAL INFORMATION

#### Acute toxicity
- **LD50 Oral - rat**: 36 mg/kg
Remarks: Gastrointestinal:Other changes. Liver:Other changes. Nutritional and Gross Metabolic:Weight loss or decreased weight gain.

LC50 Inhalation - rat - 4 h - 32 ppm

Irritation and corrosion
no data available

Sensitisation
no data available

Chronic exposure

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Potential Health Effects

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</tbody>
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12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)
no data available

Ecotoxicity effects
no data available

Further information on ecology
May be harmful to aquatic organisms due to the shift of the pH.

13. DISPOSAL CONSIDERATIONS

Product
Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN-Number: 1810 Class: 8 (6.1) Packing group: II
Proper shipping name: Phosphorus oxychloride

IMDG
UN-Number: 1810 Class: 8 Packing group: II EMS-No: F-A, S-B
Proper shipping name: PHOSPHORUS OXYCHLORIDE
Marine pollutant: No

IATA
UN-Number: 1810 Class: 8
Proper shipping name: Phosphorus oxychloride
IATA Passenger: Not permitted for transport
IATA Cargo: Not permitted for transport

15. REGULATORY INFORMATION

TSCA Status
On TSCA Inventory

DSL Status
All components of this product are on the Canadian DSL list.

WHMIS Classification

- D1A Very Toxic Material Causing Immediate and Highly toxic by ingestion
- E Serious Toxic Effects Highly toxic by inhalation
- Corrosive

16. OTHER INFORMATION

Further information
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