Dear Customer,

This File Contains Both The ANSI Material Safety Data Sheet and The GHS Safety Data Sheet For The Same Product

Spectrum is currently transitioning all chemical product labeling from the ANSI\(^1\) format to the GHS\(^2\) format (see note below). In order to ensure that you receive complete labelling during the transition, we have included both the ANSI MSDS and the GHS SDS in a single file. The ANSI MSDS is given first, followed by the GHS SDS. Please use whichever matches the container label.

**Why It Matters:**

The complete precautionary labeling for this chemical consists of BOTH the label on the container AND the matching Material Safety Data Sheet (for ANSI labels) or Safety Data Sheet (for GHS labels). Both elements of the labeling [Label + (M)SDS] are written to be read and understood together, so as to provide complete precautionary information. It is intended for you to read and understood BOTH before handling or using the chemical.

**Picking the Right One: 2 Easy Ways To Tell Whether Your Container Has an ANSI Label or a GHS Label**

1) GHS labels: any pictogram displayed in the upper left-hand corner will be inside a red diamond. ANSI labels: pictograms, if present, will be inside individual black boxes.

2) GHS labels: on the bottom of the right-hand panel of the label, locate the Lot Number. Directly to the left will be a string of control characters, followed by a single letter. For GHS labels, the string of characters will end in “GHS.”

---

**Label in ANSI Format**

---

**Corporate Offices**

14422 South San Pedro Street
Gardena, California 90248
PHONE 310.516.8000
FAX 310.516.9843

**AN ISO 9001:2008 REGISTERED COMPANY**
\(^1\) American National Standards Institute
\(^2\) Globally Harmonized System for Hazard Communication

Sincerely,

Regulatory Affairs
SAFETY DATA SHEET

Preparation Date: No data available  
Revision Date: 04/10/2015  
Revision Number: G1

Product identifier

Product code: P1115  
Product Name: PHOSPHORUS OXYCHLORIDE, REAGENT

Other means of identification

Synonyms: Phosphorus oxytrichloride; Phosphoryl trichloride; Trichlorophosphine oxide; Trichlorophosphorus oxide

CAS #: 10025-87-3  
RTECS #: TH4897000  
CI#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: No information available.  
Uses advised against: No information available

Supplier: Spectrum Chemicals and Laboratory Products, Inc.  
14422 South San Pedro St.  
Gardena, CA 90248  
(310) 516-8000

Order Online At: https://www.spectrumchemical.com

Emergency telephone number: Chemtrec 1-800-424-9300  
Contact Person: Martin LaBenz (West Coast)  
Contact Person: Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

<table>
<thead>
<tr>
<th>Classification</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity - Oral</td>
<td>Category 4</td>
</tr>
<tr>
<td>Acute toxicity - Inhalation (Gases)</td>
<td>Category 1</td>
</tr>
<tr>
<td>Acute toxicity - Inhalation (Vapors)</td>
<td>Category 1</td>
</tr>
<tr>
<td>Acute toxicity - Inhalation (Dusts/Mists)</td>
<td>Category 2</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Category 1 Sub-category A</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Category 1</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>Category 3</td>
</tr>
<tr>
<td>Specific target organ toxicity (repeated exposure)</td>
<td>Category 1</td>
</tr>
<tr>
<td>Corrosive to metals</td>
<td>Category 1</td>
</tr>
</tbody>
</table>

Label elements

Product code: P1115  
Product name: PHOSPHORUS OXYCHLORIDE, REAGENT
Hazards not otherwise classified (HNOC)
Not Applicable

Other hazards
Reacts with water to evolve heat and poisonous and corrosive gases

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear respiratory protection
Wear protective gloves/protective clothing/eye protection/face protection
Keep only in original container

Precautionary Statements - Response
Specific treatment is urgent (see .? on this label)
Immediately call a POISON CENTER or doctor/physician
Specific treatment (see .? on this label)
Absorb spillage to prevent material damage
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER or doctor/physician.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician. Call a POISON CENTER or doctor/physician if you feel unwell.
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
Do NOT induce vomiting

Product code: P1115  Product name: PHOSPHORUS OXYCHLORIDE, REAGENT
Precautionary Statements - Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up
Store in corrosive resistant/... container with a resistant inner liner

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Weight %</th>
<th>Trade Secret</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus Oxychloride</td>
<td>10025-87-3</td>
<td>100</td>
<td>*</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

First aid measures
General Advice: Poison information centers in each State capital city can provide additional assistance for scheduled poisons (13 1126)

Skin Contact: Wash off immediately with soap and plenty of water. Continue flushing with plenty of water for at least 15 minutes. Remove all contaminated clothes and shoes. Immediate medical attention is required. Call a physician or Poison Control Centre immediately.

Eye Contact: Flush eye with water for 15 minutes. Immediate medical attention is required. Call a physician immediately.

Inhalation: Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. WARNING! It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled or ingested material is toxic, infectious or corrosive. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Immediate medical attention is required.

Most important symptoms and effects, both acute and delayed
Symptoms: Fatal if inhaled. Harmful if swallowed. Severe skin and eye irritation or burns. May cause irritation of respiratory tract.

Indication of any immediate medical attention and special treatment needed
Notes to Physician: Treat symptomatically

Protection of first-aiders
First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste

5. FIRE-FIGHTING MEASURES

Extinguishing Media
Suitable Extinguishing Media: The product is not flammable.

Unsuitable Extinguishing Media: No information available.

Specific hazards arising from the chemical
Hazardous Combustion Products: No information available.

Specific hazards: Reacts with water to evolve heat and poisonous and corrosive gases
When heated to decomposition it emits toxic fumes

Special Protective Actions for Firefighters

Specific Methods: No information available.

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Do not get water inside containers.

Environmental precautions Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Absorb spill with inert material (e.g. vermiculite, dry sand or earth). In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up Use appropriate tools to put the spilled material in a suitable chemical waste disposal container. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions: Provide sufficient air exchange and/or exhaust in work rooms. Remove all sources of ignition. Keep away from incompatible materials.

Safe Handling Advice: Wear personal protective equipment. Use only in well-ventilated areas. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Do not breathe vapors or spray mist. Do not ingest. When using do not smoke. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities


8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
National occupational exposure limits

**United States**

<table>
<thead>
<tr>
<th>Components</th>
<th>OSHA</th>
<th>NIOSH</th>
<th>ACGIH</th>
<th>AIHA WHEEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus Oxychloride - 10025-87-3</td>
<td>None</td>
<td>≤ 0.8 mg/m³ TWA</td>
<td>= 0.1 ppm TWA</td>
<td>None</td>
</tr>
</tbody>
</table>

**Canada**

<table>
<thead>
<tr>
<th>Components</th>
<th>Alberta</th>
<th>British Columbia</th>
<th>Ontario</th>
<th>Quebec</th>
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</thead>
<tbody>
<tr>
<td>Phosphorus Oxychloride - 10025-87-3</td>
<td>= 0.1 ppm TWA</td>
<td>= 0.1 ppm TWA</td>
<td>0.1 ppm TWA</td>
<td>0.1 ppm TWA</td>
</tr>
</tbody>
</table>

**Australia and Mexico**

<table>
<thead>
<tr>
<th>Components</th>
<th>Australia</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus Oxychloride 10025-87-3</td>
<td>0.63 mg/m³ TWA</td>
<td>None</td>
</tr>
</tbody>
</table>

**Appropriate engineering controls**

**Engineering measures to reduce exposure:** Ensure adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

**Individual protection measures, such as personal protective equipment**

**Personal Protective Equipment**

**Eye protection:** Goggles. Safety glasses with side-shields.

**Skin and body protection:** Chemical resistant apron. Gloves. Long sleeved clothing.

**Respiratory protection:** Vapor respirator. Be sure to use an approved/certified respirator or equivalent.

**Hygiene measures:** Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES
9. PHYSICAL AND CHEMICAL PROPERTIES

**Physical state:** Liquid

**Appearance:** Fuming. Mobile.

**Odor:** Pungent. Musty.

**Taste:** No information available

**Formula:** POCl₃

**Flash point (°C):** No data available

**Flash Point Tested according to:** Not available

**Autoignition Temperature (°C/°F):** No information available

**Boiling point/range(°C/°F):** 105.8°C/222.4°F

**Specific gravity:** 1.675

**Evaporation rate:** No information available

**Odor threshold (ppm):** No information available

**Miscibility:** No information available

**Solubility:** Reacts with water

**Color:** Clear. Colorless.

**Molecular/Formula weight:** 153.33

**Upper Explosion Limit (%):** No information available

**Lower Explosion Limit (%):** No information available

**Melting point/range(°C/°F):** 1.25°C/34.3°F

**Decomposition temperature(°C/°F):** No information available

**Density (g/cm3):** No information available

**Vapor density:** 5.3

**Partition coefficient (n-octanol/water):** No information available

**Viscosity:** No information available

**VOC content (g/L):** No information available

**Flashpoint (°C/°F):** No information available.

**Odor threshold (ppm):** No information available

**Miscibility:** No information available

**Solubility:** Reacts with water

**Physical state:** Liquid

**Odor:** Pungent. Musty.

**Taste:** No information available

**Formula:** POCl₃

**Flash point (°C):** No data available

**Flash Point Tested according to:** Not available

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**Odor threshold (ppm):** No information available

**Miscibility:** No information available

**Solubility:** Reacts with water

10. STABILITY AND REACTIVITY

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

**Chemical stability**

**Stability:** Moisture Sensitive.

**Possibility of Hazardous Reactions:** 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

**Conditions to avoid:** Stable at normal conditions


**Hazardous decomposition products:** No information available

**Other Information**

**Corrosivity:** Extremely corrosive in presence of zinc

**Special Remarks on Corrosivity:** No information available
11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:
Ingestion. Inhalation. Skin.

Acute Toxicity

Component Information

Phosphorus Oxychloride - 10025-87-3

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50/oral/rat</td>
<td>36 mg/kg Oral LD50 Rat</td>
</tr>
<tr>
<td>LD50/oral/mouse</td>
<td>327 mg/kg Oral LD50 Mouse</td>
</tr>
<tr>
<td>LD50/dermal/rat</td>
<td>No information available</td>
</tr>
<tr>
<td>LD50/dermal/rabbit</td>
<td>No information available</td>
</tr>
<tr>
<td>LC50/inhalation/rat</td>
<td>32 ppm Inhalation LC50 Rat 4 h</td>
</tr>
<tr>
<td>LC50/inhalation/mouse</td>
<td>404 mg/m³ Inhalation LC50 Mouse 2H</td>
</tr>
</tbody>
</table>

Product Information

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50/oral/rat</td>
<td>VALUE- Acute Tox Oral = 36mg/kg</td>
</tr>
<tr>
<td>LD50/oral/mouse</td>
<td>Value - Acute Tox Oral = 327mg/kg</td>
</tr>
<tr>
<td>LD50/dermal/rabbit</td>
<td>VALUE-Acute Tox Dermal = No information available</td>
</tr>
<tr>
<td>LD50/dermal/rat</td>
<td>VALUE - Acute Tox Dermal = No information available</td>
</tr>
<tr>
<td>LC50/inhalation/rat</td>
<td>VALUE-Vapor = 32ppm (4-hr)</td>
</tr>
<tr>
<td></td>
<td>VALUE-Gas = No information available</td>
</tr>
<tr>
<td></td>
<td>VALUE-Dust/Mist = No information available</td>
</tr>
<tr>
<td>LC50/inhalation/mouse</td>
<td>VALUE-Vapor = 404 mg/m³ 2H</td>
</tr>
<tr>
<td></td>
<td>VALUE - Gas = No information available</td>
</tr>
<tr>
<td></td>
<td>VALUE - Dust/Mist = No information available</td>
</tr>
</tbody>
</table>

Symptoms

Skin Contact: Causes severe irritation and burns.

Eye Contact: Causes severe eye irritation and possible burns.
Inhalation
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 include dizziness, headache, weakness, anorexia, nausea, vomiting, chest pain, pain in the throat, wheezing, coughing, 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
Harmful if swallowed. May cause anorexia. May affect liver. May cause ulceration or bleeding from the stomach.

Aspiration hazard
No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity
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.

Sensitization:
No information available

Mutagenic Effects:
No information available

Carcinogenic effects:
Not considered carcinogenic

<table>
<thead>
<tr>
<th>Components</th>
<th>ACGIH - Carcinogens</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA HCS - Carcinogens</th>
<th>Australia - Prohibited Carcinogenic Substances</th>
<th>Australia - Notifiable Carcinogenic Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus Oxychloride</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

Reproductive toxicity
No data is available

Reproductive Effects:
No information available

Developmental Effects:
No information available

Teratogenic Effects:
No information available

Specific Target Organ Toxicity

STOT - single exposure
No information available

STOT - repeated exposure
No information available

Target Organs:

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects:
No data available.

Persistence and degradability:
No information available

Bioaccumulative potential:
No information available

Mobility:
No information available

Product code: P1115
Product name: PHOSPHORUS OXYCHLORIDE, REAGENT
13. DISPOSAL CONSIDERATIONS

Disposal Methods

**Waste from residues / unused products:**
Waste must be disposed of in accordance with Federal, State and Local regulation.

**Contaminated packaging:**
Empty containers should be taken for local recycling, recovery or waste disposal

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus Oxychloride</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

14. TRANSPORT INFORMATION

**DOT**
- UN-No: UN1810
- Proper Shipping Name: Phosphorus oxychloride
- Hazard Class: 6.1
- Subsidiary Risk: 8
- Packing Group: I
- ERG No: 137
- Marine Pollutant: No data available
- DOT RQ (lbs): No information available
- Symbol(s): +, R4

**TDG (Canada)**
- UN-No: UN1810
- Proper Shipping Name: Phosphorus oxychloride
- Hazard Class: 8
- Subsidiary Risk: No information available
- Packing Group: II
- Description: No information available

**ADR**
- UN-No: UN1810
- Proper Shipping Name: Phosphorus oxychloride
- Hazard Class: 6.1
- Packing Group: I
- Subsidiary Risk: 8
- Classification Code: No information available
- Description: No information available
- CEFIC Tremcard No: No information available

**IMO / IMDG**
- UN-No: UN1810
- Proper Shipping Name: Phosphorus oxychloride
- Hazard Class: 6.1
- Subsidiary Risk: 8
- Packing Group: I
- Description: No information available
- IMDG Page: No information available
14. TRANSPORT INFORMATION

Marine Pollutant: No information available
EMS: F-A
MFAK: No information available
Maximum Quantity: No information available

RID
UN-No: UN1810
Proper Shipping Name: Phosphorus oxychloride
Hazard Class: 6.1
Subsidiary Risk: 8
Packing Group: I
Classification Code: No information available
Description: No information available

ICAO
UN-No: UN1810
Proper Shipping Name: Phosphorus oxychloride
Hazard Class: 6.1
Subsidiary Risk: 8
Packing Group: No information available
Description: No information available

IATA
UN-No: UN1810
Proper Shipping Name: Phosphorus oxychloride
Hazard Class: 6.1
Subsidiary Risk: 8
Packing Group: No information available
ERG Code: 6C
Description: No information available

15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Components</th>
<th>U.S. TSCA</th>
<th>KOREA KECL</th>
<th>Philippines (PICCS)</th>
<th>Japan ENCS (1)</th>
<th>CHINA</th>
<th>Australia (AICS)</th>
<th>EINECS-No.</th>
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<tbody>
<tr>
<td>Phosphorus oxychloride</td>
<td>Present</td>
<td>Present KE- 28728</td>
<td>Present</td>
<td>Present 244</td>
<td>Present</td>
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<td>Present 233-046-7</td>
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U.S. Regulations

Phosphorus oxychloride

Massachusetts RTK: Present
New Jersey RTK Hazardous Substance List: 1523
New Jersey (EHS) List: 1523 500 lb TPQ
New Jersey - Discharge Prevention - List of Hazardous Substances: Present
New Jersey TCPA - EHS: =900lbTQ
Pennsylvania RTK: Environmental hazard
Pennsylvania RTK - Environmental Hazard List Present
Pennsylvania RTK - Special Hazardous Substances Present
RI RTK - Hazardous Substances List: Present
Minnesota - Hazardous Substance List: Present
New York Release Reporting - List of Hazardous Substances:
= 1000 lb RO
Louisiana Reportable Quantity List for Pollutants: Listed
California Directors List of Hazardous Substances: Present
FDA - Direct Food Additives 21 CFR 172.892
FDA - 21 CFR - Total Food Additives 172.892

Product code: P1115  Product name: PHOSPHORUS OXYCHLORIDE, REAGENT

Chemicals Known to the State of California to Cause Cancer:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

<table>
<thead>
<tr>
<th>Components</th>
<th>Carcinogen</th>
<th>Developmental Toxicity</th>
<th>Male Reproductive Toxicity</th>
<th>Female Reproductive Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus Oxychloride</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

CERCLA/SARA

<table>
<thead>
<tr>
<th>Components</th>
<th>CERCLA - Hazardous Substances and their Reportable Quantities</th>
<th>Section 302 Extremely Hazardous Substances and TPQs</th>
<th>Section 302 Extremely Hazardous Substances and RQs</th>
<th>Section 313 - Chemical Category</th>
<th>Section 313 - Reporting de minimis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus Oxychloride</td>
<td>404 kg final RQ 200 lb TPQ None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

U.S. TSCA

<table>
<thead>
<tr>
<th>Components</th>
<th>TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)</th>
<th>TSCA 8(d) -Health and Safety Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus Oxychloride</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

Canada

WHMIS hazard class:
D1A Very toxic materials
E Corrosive material
F Dangerously reactive material

Phosphorus Oxychloride
B6 D1A E F

Canada Controlled Products Regulation:
This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

<table>
<thead>
<tr>
<th>Components</th>
<th>WHMIS Ingredient Disclosure List -</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus Oxychloride</td>
<td>1 %</td>
</tr>
</tbody>
</table>

Inventory

<table>
<thead>
<tr>
<th>Components</th>
<th>Canada (DSL)</th>
<th>Canada (NDSL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus Oxychloride</td>
<td>Present</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>CEPA Schedule I - Toxic Substances</th>
<th>CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus Oxychloride</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

EU Classification

Product code: P1115  
Product name: PHOSPHORUS OXYCHLORIDE, REAGENT
R-phrase(s)
R14 - Reacts violently with water.
R22 - Harmful if swallowed.
R26 - Very toxic by inhalation.
R35 - Causes severe burns.

S-phrase(s)
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S7/8 - Keep container tightly closed and dry.
S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.

<table>
<thead>
<tr>
<th>Components</th>
<th>Classification</th>
<th>Concentration Limits:</th>
<th>Safety Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus Oxychloride</td>
<td>R14</td>
<td>No information</td>
<td>S1/2 S7/8 S26 S36/37/39 S45</td>
</tr>
<tr>
<td></td>
<td>Xn; R22</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>T+; R26</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>R29</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C; R35</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>T; R48/23</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:
C - Corrosive.
T+ - Very toxic.

16. OTHER INFORMATION
Disclaimer:

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) 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 SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. 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 SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet
Material Safety Data Sheet

Section 1. Chemical Product and Company Identification

Common Name/Trade Name: Phosphorus oxychloride
Catalog Number(s): P1115, P1116
CAS#: 10025-87-3
RTECS: TH4897000
TSCA: TSCA 8(b) inventory: Phosphorus oxychloride
CI#: Not available.

Manufacturer: SPECTRUM LABORATORY PRODUCTS INC.
14422 S. SAN PEDRO STREET
GARDENA, CA 90248

Commercial Name(s): Not available.
Synonym: Phosphorus oxytrichloride
Phosphoryl trichloride
Trichlorophosphine oxide
Trichlorophosphorus oxide

Chemical Name: Phosphoryl chloride
Chemical Family: Not available.
Chemical Formula: POCi3
Supplier: SPECTRUM LABORATORY PRODUCTS INC.
14422 S. SAN PEDRO STREET
GARDENA, CA 90248

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>
</tr>
</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.

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 phosorus oxides and chlorides (phosphorus trichloride, chlorine)

Special Remarks on Explosion Hazards
Not available.

Continued on Next Page
### 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/m³) from NIOSH [United States]
TWA: 0.1 (ppm) from NIOSH [United States]
TWA: 0.1 [Canada]

Consult local authorities for acceptable exposure limits.

### Section 9. Physical and Chemical Properties

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

**Odor**
Pungent. Musty (Strong.)

**Taste**
Not available.

**Color**
Clear. Colorless.

**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>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stability</strong></td>
<td>The product is stable.</td>
</tr>
<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</strong></td>
<td>Reactive with combustible materials, organic materials, metals, acids, alkalis, moisture. The product may</td>
</tr>
<tr>
<td>substances</td>
<td>undergo hazardous decomposition, condensation or polymerization, it may react violently with water to emit</td>
</tr>
<tr>
<td></td>
<td>toxic gases or it may become self-reactive under conditions of shock or increase in temperature or pressure.</td>
</tr>
<tr>
<td><strong>Corrosivity</strong></td>
<td>Extremely corrosive in presence of zinc. Non-corrosive in presence of glass.</td>
</tr>
<tr>
<td><strong>Special Remarks on Reactivity</strong></td>
<td>Moisture sensitive. Reacts violently with water or steam, or moisture producing hydrochloric and phosphoric</td>
</tr>
<tr>
<td></td>
<td>acids, heat, toxic and corrosive fumes. Reacts exothermically with alcohol. Reacts violently with acids,</td>
</tr>
<tr>
<td></td>
<td>alkalis, alkali metals. Reacts with carbon disulfide, dimethylformamide.</td>
</tr>
<tr>
<td><strong>Special Remarks on Corrosivity</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Polymerization</strong></td>
<td>Will not occur.</td>
</tr>
</tbody>
</table>

### Section 11. Toxicological Information

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Routes of Entry</strong></td>
<td>Absorbed through skin. Inhalation. Ingestion.</td>
</tr>
<tr>
<td><strong>Toxicity to Animals</strong></td>
<td>WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity</td>
</tr>
<tr>
<td></td>
<td>(LD50): 36 mg/kg [Rat]. Acute toxicity of the vapor (LC50): 31.4 4 hours [Rat].</td>
</tr>
<tr>
<td><strong>Chronic Effects on Humans</strong></td>
<td>Causes damage to the following organs: lungs, upper respiratory tract. May cause damage to the following</td>
</tr>
<tr>
<td></td>
<td>organs: kidneys, skin, eyes, central nervous system (CNS).</td>
</tr>
<tr>
<td><strong>Other Toxic Effects on Humans</strong></td>
<td>Extremely hazardous in case of inhalation (lung corrosive). Very hazardous in case of skin contact (irritant),</td>
</tr>
<tr>
<td></td>
<td>of ingestion, . Hazardous in case of skin contact (corrosive), of eye contact (corrosive). Slightly</td>
</tr>
<tr>
<td></td>
<td>hazardous in case of skin contact (permeator).</td>
</tr>
<tr>
<td><strong>Special Remarks on Toxicity to Animals</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Special Remarks on Chronic Effects on Humans</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Special Remarks on other Toxic Effects on Humans</strong></td>
<td>Acute Potential Health Effects: Skin: Corrosive. Causes severe irritation and burns. Eyes: Corrosive.</td>
</tr>
<tr>
<td></td>
<td>Contact with eyes causes severe irritation and burns. Inhalation: May be fatal if inhaled. Causes severe</td>
</tr>
<tr>
<td></td>
<td>irritation and possible chemical burns of the respiratory tract. Other symptoms of exposure included</td>
</tr>
<tr>
<td></td>
<td>dizziness, headache, weakness, anorexia, nausea, vomiting, chest pain, pain in the throat, wheezing,</td>
</tr>
<tr>
<td></td>
<td>cough, difficulty breathing and shortness of breath (dyspnea) respiratory depression, bronchitis,</td>
</tr>
<tr>
<td></td>
<td>bronchopneumonia, pulmonary edema. May also cause corneal damage, metabolic acidosis, and affect the</td>
</tr>
<tr>
<td></td>
<td>kidneys (kidney damage, nephritis), and the liver, behavior/central nervous system (somnolence).</td>
</tr>
<tr>
<td></td>
<td>Ingestion: May be harmful or fatal if swallowed. May cause anorexia, and may affect the liver. It may</td>
</tr>
<tr>
<td></td>
<td>cause ulceration or bleeding from the stomach. Chronic Potential Health Effects: Chronic phosphorus</td>
</tr>
<tr>
<td></td>
<td>poisoning may cause osteomyelitis of the jaw bones (&quot;phossy jaw&quot;), most frequently of the mandible and</td>
</tr>
<tr>
<td></td>
<td>less often of the maxilla which commonly begins as a dental disturbance. May also cause osteoporosis.</td>
</tr>
<tr>
<td></td>
<td>Chronic ingestion may also affect the liver and kidneys.</td>
</tr>
</tbody>
</table>

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

Ecotoxicity Not available.

BOD5 and COD Not available.

Products of Biodegradation Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation Not available.

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)

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.

EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.(EINECS No. 233-046-7).
Canada: Listed on Canadian Domestic Substance List (DSL).
China: Listed on National Inventory.
Japan: Listed on National Inventory (ENCS).
Korea: Listed on National Inventory (KECI).
Philippines: Listed on National Inventory (PICCS).
Australia: Listed on AICS.

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.
Phosphorus oxychloride

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).

DSCL (EEC)

HMIS (U.S.A.)

WHMIS (Canada) (Pictograms)

DSCL (Europe) (Pictograms)

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.
Phosphorus oxychloride

Section 16. Other Information

<table>
<thead>
<tr>
<th>MSDS Code</th>
<th>P3730</th>
</tr>
</thead>
<tbody>
<tr>
<td>References</td>
<td>Not available.</td>
</tr>
<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>


CALL (310) 516-8000

Notice to Reader

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