1. PRODUCT AND COMPANY IDENTIFICATION
Product Identifier: PHOSPHORUS OXYCHLORIDE (POCl₃)
SDS Number: SDS- 5062 Revised Date: 13 DECEMBER 2018

MANUFACTURER:
Germanium Corporation of America
5836 Success Drive
Rome, New York 13440
Information: (315) 381-2401 or (315) 534-5859
(315) 853-4900 (Indium Corporation of America)

mschmitt@indium.com
nswarts@indium.com

The Indium Corporation of America®,
34 Robinson Road
Clinton, New York 13323

Industrial Use Only

Hazards: Highly toxic by inhalation/Reacts violently with water

EMERGENCY PHONE:
CHEMTREC 24 hrs.
USA: 1 (800) 424-9300
Outside USA: +1 (703) 527-3887
In China: Emergency 86+4008417580
2. HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY:
Eye √  Inhalation √  Skin √  Ingestion √

Carcinogen listed in
NTP  IARC  OSHA  Not Listed √

GHS:

Danger:
Hazard statement(s)
H300 + H330  Fatal if swallowed or if inhaled
H314  Causes severe skin burns and eye damage
H318  Causes serious eye damage
H372  Causes damage to organs through prolonged or repeated exposure if inhaled

Precautionary statement(s)
P260  Do not breathe dust/fume/gas/mist/vapors/spray
P264  Wash hands thoroughly after handling
P271  Use only outdoors or in well-ventilated areas
P280  Wear protective gloves/protective clothing/eye protection/face protection
P284  Wear respiratory protection
P301 + P310 + P330  IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse mouth.
P301 + P310 + P330  IF SWALLOWED: Rinse mouth. DO NOT induce vomiting.
P303 + P361 + P353  IF ON SKIN: Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P304 + P340 + P310  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
P305 + P351 + P310  IF IN EYES: Rinse cautiously with water for several minutes (15 min). Remove contact lenses, if present and easy to do. Immediately call a POISON CENTER/doctor.
P314  Get medical advice/attention if you feel unwell
P363  Wash contaminated clothing before re-use
P403 + P233  Store in a well-ventilated place. Keep container tightly closed
P405  Store locked up
P501  Dispose of contents/container to an approved waste disposal plant.

Classification:
Acute toxicity: Oral Category 2
Acute toxicity, Inhalation Category 1
Skin corrosion, Category 1A
Serious eye damage, Category 1
Specific target organ toxicity- repeated exposure, inhalation - Category 1

POTENTIAL HEALTH EFFECTS:

Eye Contact:  Causes eye burns. Causes severe eye burns.

Ingestion:  May be fatal if swallowed.

Inhalation:  Causes chemical burns to respiratory tract. Causes corrosive action on mucous membranes. Exposure through inhalation may result in delayed pulmonary edema which may be fatal. Death may result hours after initial exposure.
Skin Contact: Causes skin burns. May be harmful if absorbed through the skin. Can cause redness and pain, which may lead to blisters.

Emergency Overview: 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. Lachrymator.

3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>Wt. %</th>
<th>CAS Registry #/EINECS#</th>
<th>PEL mg/m³</th>
<th>TLV-TWA mg/m³</th>
<th>TLV-STEL mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHOSPHORUS OXYCHLORIDE (phosphoryl trichloride)</td>
<td>100</td>
<td>10025-87-3/233-046-7 (US)</td>
<td>0.6</td>
<td>0.1(ppm)</td>
<td>3(0.5ppm)</td>
</tr>
<tr>
<td>(Canada)</td>
<td>-</td>
<td>0.6</td>
<td>3.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(EU)</td>
<td>-</td>
<td>1.3</td>
<td>3.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Singapore)</td>
<td>0.63</td>
<td>-</td>
<td>-</td>
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</tr>
</tbody>
</table>

N.E. = Not established

4. FIRST AID MEASURES

**Eye Contact:** Hold eyelids apart and flush eyes with plenty of tepid water for more than 15 minutes until no evidence of chemical remains. Seek medical attention immediately. Rinse during transport to hospital.

**Ingestion:** If patient is conscious, ONLY induce vomiting as directed by trained personnel. NEVER give anything by mouth to an unconscious person. Seek medical attention immediately.

**Inhalation:** When safe to enter area, remove to fresh air. If not breathing, give artificial respiration or oxygen by trained personnel. Seek immediate medical attention.

**Skin Contact:** Remove contaminated clothing. Flush area with large amounts of water for 15 minutes until no evidence of chemical remains. Wash clothing before reuse. Destroy contaminated shoes. Get medical attention.

**Note:** Exposure may result in death. The effects may be delayed therefore medical attention is essential.

5. FIRE FIGHTING MEASURES

**Flash Point:** Not flammable

**Method:** Not established.

**Auto-ignition Temperature:** Not established.

**Flammable Limits:** Limits not established.

**Extinguishing Media:** Regular dry chemical or carbon dioxide. DO NOT USE WATER – REACTS VIOLENTLY.

**Special Fire Fighting Procedures:** Firefighters must wear NIOSH approved self-contained breathing apparatus and full protective clothing.

**Explosion Sensitivity:**
- **Mechanical Impact:** Not available
- **Static Discharge:** Not available

**Static Discharge:** Fire hydrants or any water supply. Water hydrolyzes material and can liberate acidic gases which if in contact with metal surfaces can generate a flammable and explosive hydrogen gas.
6. ACCIDENTAL RELEASE MEASURES

Spill or Leak Procedures: Wear the appropriate personal protective equipment (such as chemical resistant gloves, eye and face protection, respiratory protection and protective clothing). Spills require mandatory respiratory protection. Do not allow spillage to enter any drains, waterways or ground. All waste must be disposed of in accordance with applicable state, federal and local regulations. Keep unnecessary personnel away. Ventilate area.

7. HANDLING AND STORAGE

Handling and Storage Precautions: Store product in cool dry area in tightly sealed containers. Protect from moisture. Use material in chemical fume hood only. Keep closed when not in use. Keep away from water. Containers which have been opened must be properly re-sealed. Keep container upright at all times. Empty containers are considered to be hazardous.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Required: Work in a well-ventilated area. Use only with chemical fume hood or other high quality ventilation. Avoid inhalation of product.

Personal protection:

Eyes: Tight fitting goggles and face-shield. Provide an emergency eyewash/shower in the immediate work area. Avoid the use of contact lenses.

Respirator: Wear approved full face respirator with multi-gas cartridges with adequate exhaust ventilation. Should handling be outside of engineering controls additional protection is required which includes air supplied respirator. Evaluate area before using material. If proper engineering controls and respirators are not available do not use the product. Do not breathe this product.

Skin: Use compatible chemical resistant gloves. Nitrile gloves with minimum thickness of 0.4 mm.

Other: Lab coat or chemical resistant clothing, eyewash shower unit in work area.

Work/Hygienic Practices: Maintain good housekeeping. Clean up spills immediately. Avoid eating, smoking or drinking in the work area. Wash hands thoroughly with soap and water immediately upon leaving the work area.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Liquid, yellow fuming liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>Pungent odor, sharp unpleasant- odor, irritating odor</td>
</tr>
<tr>
<td>pH</td>
<td>1 @20°C (68°F)</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.625 at 25°C</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>153.33 g/mol</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>40 mm Hg @27.3</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>5.3</td>
</tr>
<tr>
<td>Freezing /Melting Point</td>
<td>1.2°C</td>
</tr>
</tbody>
</table>
10. STABILITY AND REACTIVITY
General: Reacts violently with water.
Conditions to Avoid: Moisture, excessive heat
Incompatible Materials: Metals, oxidizing materials, moisture, alcohols
Hazardous Decomposition / Combustion: Hydrogen chloride, hydrochloric acid, phosphoric acid, toxic and corrosive gas
Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION
Carcinogenicity:
- NTP: No
- OSHA: No
- IARC: No
Inhalation, rat: LC50 = 0.197 mg/l / 4h
Inhalation, rat: LC50 = 32 ppm / 4hr
Oral, rat: LD50 = 36 mg/kg
RTECS: TH4897000
Can cause redness, corneal injury, shortness of breath, headache, nausea, kidney injury, abdominal pain

12. ECOLOGICAL INFORMATION
No data available.
May be harmful to aquatic organisms due to changes in pH.

13. DISPOSAL CONSIDERATION
Waste Disposal Method: Dispose of in accordance with all applicable regulations: state, federal and local. Empty containers are treated as hazardous.

14. TRANSPORT INFORMATION
SHIPPING NAME: UN1810, PHOSPHORUS OXYCHLORIDE, 6.1 (8), PG I (INHALATION HAZARD ZONE B)

SHIPPING LABELS (MARKS): (Class 8 and 6.1)
RQ+: reportable quantity and known to pose a risk to humans.  RQ = 1000 lbs

All Packages must be marked with “INHALATION HAZARD”.          HAZARD ZONE B

Refer to Table on Initial Isolation and Protective Action Distances information in the event of a spill.
Small spill on land: Initial isolation 100 ft
Large spill on land: Initial isolation 300 ft

Shipping Modes Restriction: Forbidden Passenger and Cargo Aircraft
Marine pollutant: No

15. REGULATORY INFORMATION
The information in this Safety Data Sheet meets the requirements of the United States Occupational Safety and Health Act and regulations promulgated thereunder (29 CFR 1910.1200 ET. SEQ.),
This product has been classified in accordance with the hazard criteria of the Canadian Products Regulation (CPR).

Canadian WHMIS: D1B, D2A, D2B

This product has been classified in accordance with the Mexican regulations NOM-018-STPS-2015 and NOM-010-STPS-2014.

This product has been classified in accordance with the hazard criteria of the Commission Directive 91/155/EEC and EH40.

This product has been classified in accordance with the guidelines set by the Dept of Industrial Health of the Republic of Singapore.

SARA SECTION 302: Extremely Hazardous Substance
SARA 313 Listing: No

EPA TSCA Inventory: All ingredients are listed on the TSCA inventory

Listed as a hazardous substance under the Clean Water Act

Chemical Weapons Convention: Yes

Massachusetts, New Jersey and Pennsylvania Right To Know Components

This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

Malaysia:
This product has been classified in accordance with: Malaysian – OCCUPATIONAL SAFETY AND HEALTH (CLASSIFICATION, LABELING AND SAFETY DATA SHEET OF HAZARDOUS CHEMICALS) REGULATION OCTOBER 2013 – (CLASS). (GHS)
In China:
Decree No. 591: Regulations on the Control over Safety of Hazardous Chemicals
GB 30000.2-29-2013, Rules for classification and labeling of chemicals. (GHS)
GB/T 16483-2008, GB/T 17517-2013
This product has been classified using the Chinese Occupational Limit for Hazardous Agents in the Workplace, GBZ2-2007

16. OTHER INFORMATION

HMIS Hazard Rating:  
Health: 4  
Fire: 0  
Reactivity: 3  
Other: Water Reactive “W”

Revised Date: 13 DECEMBER 2018

Prepared by: Nancy Swarts, For the Germanium Corporation of America

Approved by: Nancy Swarts, For the Germanium Corporation of America.

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