**Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013**

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THECOMPANY/UNDERTAKING

**Product Identifier**

| | |
|---|---|
| **Perihalan Produk:** | **Phosphorus oxychloride** |
| **Product Description:** | **Phosphorus oxychloride** |
| **Cat No. :** | 315110000 |
| **Synonyms** | Phosphoryl Chloride |
| **CAS No** | 10025-87-3 |
| **Molecular Formula** | Cl3 O P |

**Relevant identified uses of the substance or mixture and uses advised against**

| | |
|---|---|
| **Recommended Use** | Laboratory chemicals. |
| **Uses advised against** | No Information available |

**Company**

Thermo Fisher Scientific Fisher Scientific (M) Sdn Bhd
Hap Seng Business Park, Lot 01-03, 01-04 Aras 1 Unity Square,
No 12, Persiaran Perusahaan, Seksyen 23, 40300 Shah Alam,
Selangor Darul Ehsan, Malaysia.
Main line: +60 3-5525 7888

**Supplier**

**E-mail address** Enquiry.my@thermofisher.com

**Emergency Telephone Number**

Tel: +03-5525 7888
CHEMTREC Malaysia **1-800-815-308** (Malay)
CHEMTREC Malaysia (Kuala Lumpur) **+(60)-327884561** (Malay)

## SECTION 2: HAZARDS IDENTIFICATION

**Classification of the substance or mixture**

| | |
|---|---|
| Substances/mixtures corrosive to metal | Category 1 (H290) |
| Acute oral toxicity | Category 4 (H302) |
| Acute Inhalation Toxicity - Vapors | Category 2 (H330) |
| Skin Corrosion/Irritation | Category 1 A (H314) |
| Serious Eye Damage/Eye Irritation | Category 1 (H318) |
| Specific target organ toxicity - (repeated exposure) | Category 1 (H372) |

**Label Elements**

**Signal Word** **Danger**

**Hazard Statements**
H290 - May be corrosive to metals
H302 - Harmful if swallowed
H330 - Fatal if inhaled
H314 - Causes severe skin burns and eye damage
H372 - Causes damage to organs through prolonged or repeated exposure

**Precautionary Statements**
**Prevention**
P234 - Keep only in original packaging
P264 - Wash face, hands and any exposed skin thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P284 - Wear respiratory protection
**Response**
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P330 - Rinse mouth
P331 - Do NOT induce vomiting
P390 - Absorb spillage to prevent material damage
P362 + P364 - Take off contaminated clothing and wash it before reuse
**Storage**
P402 - Store in a dry place
P405 - Store locked up
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed
P406 - Store in corrosion resistant polypropylene container with a resistant inliner
**Disposal**
P501 - Dispose of contents/ container to an approved waste disposal plant

**Other Hazards**
EUH014 - Reacts violently with water
EUH029 - Contact with water liberates toxic gas
Lachrymator (substance which increases the flow of tears)
This product does not contain any known or suspected endocrine disruptors

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

| Component | CAS No | Weight % |
|---|---|---|
| Phosphorus oxychloride | 10025-87-3 | >95 |

## SECTION 4: FIRST AID MEASURES

**Description of first aid measures**
**General Advice** Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

**Eye Contact** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In

| | |
|---|---|
| | the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. |
| **Skin Contact** | Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required. |
| **Ingestion** | Do NOT induce vomiting. Call a physician or poison control center immediately. |
| **Inhalation** | If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Remove to fresh air. Immediate medical attention is required. |
| **Self-Protection of the First Aider** | Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. |

**Most important symptoms and effects, both acute and delayed**

Causes burns by all exposure routes. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation. After inhalation exposure, observe for 24 to 72 hours as pulmonary edema may be delayed.

**Indication of any immediate medical attention and special treatment needed**

**Notes to Physician** Treat symptomatically.

## SECTION 5: FIREFIGHTING MEASURES

**Extinguishing media**

**Suitable Extinguishing Media**

Carbon dioxide ($CO_2$). Powder. $CO_2$, dry chemical, dry sand, alcohol-resistant foam.

**Extinguishing media which must not be used for safety reasons**

Contact with water liberates toxic gas. Water.

**Special hazards arising from the substance or mixture**

Thermal decomposition can lead to release of irritating gases and vapors. The product causes burns of eyes, skin and mucous membranes. Contact with water liberates toxic gas. Reacts violently with water.

**Hazardous Combustion Products**

Oxides of phosphorus, Hydrogen chloride gas.

**Advice for fire-fighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

**Personal Precautions, Protective Equipment and Emergency Procedures**

Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

**Environmental precautions**

Should not be released into the environment.

**Methods and Material for Containment and Cleaning Up**
Keep in suitable, closed containers for disposal. Soak up with inert absorbent material. Do not expose spill to water.

**Reference to Other Sections**
Refer to protective measures listed in Sections 8 and 13.

## SECTION 7: HANDLING AND STORAGE

**Precautions for Safe Handling**
Do not get in eyes, on skin, or on clothing. Wear personal protective equipment/face protection. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance. Do not allow contact with water. Handle under an inert atmosphere.

**Conditions for Safe Storage, Including any Incompatibilities**
Protect from moisture. Corrosives area. Keep under nitrogen. Keep away from water or moist air. Store under an inert atmosphere. Keep containers tightly closed in a dry, cool and well-ventilated place.

**Specific End Uses**
Use in laboratories.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

**Control Parameters**

| Component | Malaysia | ACGIH TLV | OSHA PEL |
|---|---|---|---|
| Phosphorus oxychloride | | TWA: 0.1 ppm | (Vacated) TWA: 0.1 ppm<br>(Vacated) TWA: 0.6 mg/m³ |

| Component | European Union | The United Kingdom | Germany |
|---|---|---|---|
| Phosphorus oxychloride | | STEL: 0.6 ppm 15 min<br>STEL: 3.8 mg/m³ 15 min<br>TWA: 0.2 ppm 8 hr<br>TWA: 1.3 mg/m³ 8 hr | TWA: 0.02 ppm (8 Stunden). AGW - exposure factor 1<br>TWA: 0.13 mg/m³ (8 Stunden). AGW - exposure factor 1<br>TWA: 0.02 ppm (8 Stunden). MAK<br>TWA: 0.13 mg/m³ (8 Stunden). MAK<br>Höhepunkt: 0.02 ppm<br>Höhepunkt: 0.13 mg/m³ |

**Exposure Controls**
**Engineering Measures**
Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. Use only under a chemical fume hood.
Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

**Personal protective equipment**

| | |
|---|---|
| **Eye Protection** | Goggles Face protection shield |
| **Hand Protection** | Protective gloves |
| **Skin and body protection** | Long sleeved clothing |

Inspect gloves before use.
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves.

(Refer to manufacturer/supplier for information)
Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.
Remove gloves with care avoiding skin contamination.

| | |
|---|---|
| **Respiratory Protection** | Wear a NIOSH/MSHA or European Standard EN 149 approved full-facepiece airline respirator in the positive pressure mode with emergency escape provisions |
| **Recommended Filter type:** | Particulates filter conforming to EN 143 Acid gases filter Type E Yellow conforming to EN14387<br>To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly<br>When RPE is used a face piece Fit Test should be conducted |

**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practice

**Environmental exposure controls** No information available

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

**Information on basic physical and chemical properties**

| | | |
|---|---|---|
| **Appearance** | Colorless | |
| **Physical State** | Liquid | |
| **Odor** | pungent | |
| **Odor Threshold** | No data available | |
| **pH** | No information available | |
| **Melting Point/Range** | 1.2 °C / 34.2 °F | |
| **Softening Point** | No data available | |
| **Boiling Point/Range** | 107 °C / 224.6 °F | |
| **Flash Point** | No information available | **Method -** No information available |
| **Evaporation Rate** | No data available | |
| **Flammability (solid,gas)** | Not applicable | Liquid |
| **Explosion Limits** | No data available | |
| **Vapor Pressure** | 36 mbar @ 20 °C | |
| **Vapor Density** | 5.3 | (Air = 1.0) |
| **Specific Gravity / Density** | 1.645 | |
| **Bulk Density** | Not applicable | Liquid |
| **Water Solubility** | Reacts violently with water | |
| **Solubility in other solvents** | No information available | |

**Partition Coefficient (n-octanol/water)**

| | |
|---|---|
| **Autoignition Temperature** | No data available |
| **Decomposition Temperature** | No data available |
| **Viscosity** | 1.11 mPa.s at 22 °C |
| **Explosive Properties** | No information available |
| **Oxidizing Properties** | No information available |

| | |
|---|---|
| **Molecular Formula** | Cl3 O P |
| **Molecular Weight** | 153.33 |

## SECTION 10: STABILITY AND REACTIVITY

**Reactivity**

Yes.

**Chemical Stability**

Reacts violently with water. Moisture sensitive. Contact with water liberates toxic gas.

**Possibility of Hazardous Reactions**

| | |
|---|---|
| **Hazardous Polymerization** | Hazardous polymerization does not occur. |
| **Hazardous Reactions** | Reacts violently with water. |

**Conditions to Avoid**

Excess heat. Incompatible products. Exposure to moist air or water. Exposure to moisture.

**Incompatible Materials**

Strong bases. Alcohols. Amines. Metals. Acids. Reducing Agent. Water. Oxidizing agent.

**Hazardous Decomposition Products**

Oxides of phosphorus. Hydrogen chloride gas.

## SECTION 11: TOXICOLOGICAL INFORMATION

**Information on Toxicological Effects**

**Product Information**

**(a) acute toxicity;**

| | |
|---|---|
| **Oral** | Category 4 |
| **Dermal** | Based on available data, the classification criteria are not met |
| **Inhalation** | Category 2 |

| Component | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|---|---|---|---|
| Phosphorus oxychloride | LD50 = 380 mg/kg ( Rat ) | LD50 > 250 mg/kg ( Rabbit ) | LC50 = 308 mg/m³ ( Rat ) 4 h |

**(b) skin corrosion/irritation;** Category 1 A

**(c) serious eye damage/irritation;** Category 1

**(d) respiratory or skin sensitization;**

| | |
|---|---|
| **Respiratory** | Based on available data, the classification criteria are not met |
| **Skin** | Based on available data, the classification criteria are not met |

| | |
|---|---|
| **(e) germ cell mutagenicity;** | Based on available data, the classification criteria are not met |
| **(f) carcinogenicity;** | Based on available data, the classification criteria are not met<br>There are no known carcinogenic chemicals in this product |
| **(g) reproductive toxicity;** | Based on available data, the classification criteria are not met |
| **(h) STOT-single exposure;** | Based on available data, the classification criteria are not met |
| **(i) STOT-repeated exposure;** | Category 1 |
| **Target Organs** | Respiratory system. |
| **(j) aspiration hazard;** | Based on available data, the classification criteria are not met |

**Other Adverse Effects**

| | |
|---|---|
| **Symptoms / effects,both acute and delayed** | Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation. After inhalation exposure, observe for 24 to 72 hours as pulmonary edema may be delayed. |
| **Endocrine Disrupting Properties** | Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors. |

## SECTION 12: ECOLOGICAL INFORMATION

| | |
|---|---|
| **Ecotoxicity effects** | Reacts with water so no ecotoxicity data for the substance is available. |

**Persistence and degradability**

| | |
|---|---|
| **Persistence** | Persistence is unlikely, based on information available. |
| **Degradability** | Decomposes in contact with water, Reacts with water. |
| **Degradation in sewage treatment plant** | Decomposes in contact with water. Reacts violently with water. |

| | |
|---|---|
| **Bioaccumulative potential** | Product does not bioaccumulate due to reaction with water |
| **Mobility in soil** | Decomposes in contact with water. Reacts violently with water. Is not likely mobile in the environment. |
| **Endocrine Disruptor Information** | This product does not contain any known or suspected endocrine disruptors |
| **Other adverse effects** | No information available |

## SECTION 13: DISPOSAL CONSIDERATIONS

**Waste treatment methods**

**Waste from Residues/Unused Products** Waste is classified as hazardous Dispose of in accordance with the European Directives on waste and hazardous waste Dispose of in accordance with local regulations

**Contaminated Packaging** Dispose of this container to hazardous or special waste collection point.

**Other Information** Waste codes should be assigned by the user based on the application for which the product was used Do not empty into drains Do not flush to sewer Large amounts will affect pH and harm aquatic organisms Solutions with low pH-value must be neutralized before discharge

## SECTION 14: TRANSPORT INFORMATION

**IMDG/IMO**

| | |
|---|---|
| **UN-No** | UN1810 |
| **Hazard Class** | 6.1 |
| **Subsidiary Hazard Class** | 8 |
| **Packing Group** | I |
| **Proper Shipping Name** | PHOSPHORUS OXYCHLORIDE |

**Road and Rail Transport**

| | |
|---|---|
| **UN-No** | UN1810 |
| **Hazard Class** | 6.1 |
| **Subsidiary Hazard Class** | 8 |
| **Packing Group** | I |
| **Proper Shipping Name** | PHOSPHORUS OXYCHLORIDE |

**IATA** FORBIDDEN FOR IATA TRANSPORT

| | |
|---|---|
| **UN-No** | UN1810 |
| **Hazard Class** | 6.1 |
| **Subsidiary Hazard Class** | 8 |
| **Packing Group** | I |
| **Proper Shipping Name** | PHOSPHORUS OXYCHLORIDE, FORBIDDEN FOR IATA TRANSPORT |

**Special Precautions for User** No special precautions required

## SECTION 15: REGULATORY INFORMATION

**Safety, health and environmental regulations/legislation specific for the substance or mixture**

**International Inventories** X = listed

| Component | EINECS | TSCA | DSL | PICCS | ENCS | ISHL | IECSC | AICS | KECL |
|---|---|---|---|---|---|---|---|---|---|
| Phosphorus oxychloride | 233-046-7 | X | X | X | X | X | X | X | KE-28728 |

**National Regulations**

**Persistent Organic Pollutant** This product does not contain any known or suspected substance
**Ozone Depletion Potential** This product does not contain any known or suspected substance

## SECTION 16: OTHER INFORMATION

**Legend**

**CAS** - Chemical Abstracts Service

**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

**PICCS** - Philippines Inventory of Chemicals and Chemical Substances

**IECSC** - Chinese Inventory of Existing Chemical Substances

**KECL** - Korean Existing and Evaluated Chemical Substances

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory

**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List

**ENCS** - Japanese Existing and New Chemical Substances

**AICS** - Australian Inventory of Chemical Substances

**NZIoC** - New Zealand Inventory of Chemicals

**WEL** - Workplace Exposure Limit

**ACGIH** - American Conference of Governmental Industrial Hygienists

**RPE** - Respiratory Protective Equipment

**LC50** - Lethal Concentration 50%

**POW** - Partition coefficient Octanol:Water

**TWA** - Time Weighted Average

**IARC** - International Agency for Research on Cancer

**LD50** - Lethal Dose 50%

**EC50** - Effective Concentration 50%

**ADR** - European Agreement Concerning the International Carriage of Dangerous Goods by Road

**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code

**OECD** - Organisation for Economic Co-operation and Development

**BCF** - Bioconcentration factor

**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association

**MARPOL** - International Convention for the Prevention of Pollution from Ships

**ATE** - Acute Toxicity Estimate

**VOC** - (Volatile Organic Compound)

**Key literature references and sources for data**

https://echa.europa.eu/information-on-chemicals

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

| | |
|---|---|
| **Revision Date** | 23-Mar-2025 |
| **Revision Summary** | Not applicable. |

## In accordance with local and national regulations: Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013

### Disclaimer

**The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text**

## End of Safety Data Sheet