

## SAFETY DATA SHEET

Creation Date 07-Jun-2010

Revision Date 29-Mar-2024

Revision Number 4

### 1. Identification

**Product Name** Phosphorus(V) chloride

**Cat No. :** 11849

**CAS No** 10026-13-8  
**Synonyms** Phosphoric chloride.; Phosphorus perchloride

**Recommended Use** Laboratory chemicals.  
**Uses advised against** Food, drug, pesticide or biocidal product use.

#### Details of the supplier of the safety data sheet

##### Company

Thermo Fisher Scientific Chemicals, Inc.  
30 Bond Street  
Ward Hill, MA 01835-8099  
Tel: 800-343-0660  
Fax: 800-322-4757

##### **Emergency Telephone Number**

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11  
Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99  
**CHEMTREC** Tel. No. **US**:001-800-424-9300 / **Europe**:001-703-527-3887

### 2. Hazard(s) identification

#### **Classification**

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

|  |              |
|--|--------------|
| Acute oral toxicity                                  | Category 4   |
| Acute Inhalation Toxicity - Dusts and Mists          | Category 2   |
| Skin Corrosion/Irritation                            | Category 1 B |
| Serious Eye Damage/Eye Irritation                    | Category 1   |
| Specific target organ toxicity - (repeated exposure) | Category 2   |
| Target Organs - Respiratory system.                  |              |

#### Label Elements

##### **Signal Word**

Danger

##### **Hazard Statements**

Harmful if swallowed  
Causes severe skin burns and eye damage  
Fatal if inhaled  
May cause damage to organs through prolonged or repeated exposure

**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

**Response**

Immediately call a POISON CENTER or doctor/physician

**Inhalation**

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

**Skin**

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower  
Wash contaminated clothing before reuse

**Eyes**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

**Ingestion**

Rinse mouth  
Do NOT induce vomiting

**Storage**

Store in a well-ventilated place. Keep container tightly closed  
Store locked up

**Disposal**

Dispose of contents/container to an approved waste disposal plant

**Hazards not otherwise classified (HNOC)**

Reacts violently with water  
Contact with water liberates toxic gas

**Other hazards**

May cause pulmonary edema.

### 3. Composition/Information on Ingredients

| Component                | CAS No     | Weight % |
|--------------------------|------------|----------|
| Phosphorus pentachloride | 10026-13-8 | 98       |

### 4. First-aid measures

**Eye Contact**

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

**Skin Contact**

Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

|  |   |
|--|---|
| <b>Inhalation</b>                          | Remove to fresh air. If breathing is irregular or stopped, administer 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. Immediate medical attention is required. If not breathing, give artificial respiration. |
| <b>Ingestion</b>                           | Do NOT induce vomiting. Call a physician or poison control center immediately.  |
| <b>Most important symptoms and effects</b> | 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                |
| <b>Notes to Physician</b>                  | Treat symptomatically   |

## 5. Fire-fighting measures

|   |  |
|---|--|
| <b>Suitable Extinguishing Media</b>     | Carbon dioxide (CO <sub>2</sub> ). Dry chemical. Substance is nonflammable; use agent most appropriate to extinguish surrounding fire. Flooding quantities of water. |
| <b>Unsuitable Extinguishing Media</b>   | No information available   |
| <b>Flash Point</b>                      | No information available   |
| <b>Method -</b>                         | No information available   |
| <b>Autoignition Temperature</b>         | No information available   |
| <b>Explosion Limits</b>                 |  |
| <b>Upper</b>                            | No data available  |
| <b>Lower</b>                            | No data available  |
| <b>Sensitivity to Mechanical Impact</b> | No information available   |
| <b>Sensitivity to Static Discharge</b>  | No information available   |

### Specific Hazards Arising from the Chemical

Water reactive. Contact with water liberates toxic gas.

### Hazardous Combustion Products

Fumes. Oxides of phosphorus. Phosphorus trihydride (phosphine). Hydrogen chloride gas.

### Protective Equipment and Precautions for Firefighters

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.

### NFPA

**Health**  
4

**Flammability**  
0

**Instability**  
2

**Physical hazards**  
W

## 6. Accidental release measures

|   |  |
|---|--|
| <b>Personal Precautions</b>                 | Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Avoid dust formation.  |
| <b>Environmental Precautions</b>            | Should not be released into the environment.   |
| <b>Methods for Containment and Clean Up</b> | Prevent product from entering drains. Provide adequate ventilation. Sweep up and shovel into suitable containers for disposal. Do not flush into surface water or sanitary sewer system. Avoid dust formation. |

## 7. Handling and storage

|                 |  |
|-----------------|--|
| <b>Handling</b> | Use only under a chemical fume hood. Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Avoid breathing vapors or mists. Do not ingest. If swallowed then seek immediate medical assistance. Wash thoroughly after handling. |
|-----------------|--|

Minimize dust generation and accumulation. Do not allow contact with water. Keep containers dry and tightly closed to avoid moisture absorption and contamination. Wash hands before breaks and immediately after handling the product.

**Storage.**

Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Corrosives area. Keep containers tightly closed in a dry, cool and well-ventilated place. Incompatible Materials. Water. Bases.

## 8. Exposure controls / personal protection

**Exposure Guidelines**

| Component                | ACGIH TLV    | OSHA PEL   | NIOSH  | Mexico OEL (TWA) |
|--------------------------|--------------|--|--|------------------|
| Phosphorus pentachloride | TWA: 0.1 ppm | (Vacated) TWA: 1 mg/m <sup>3</sup><br>TWA: 1 mg/m <sup>3</sup> | IDLH: 70 mg/m <sup>3</sup><br>TWA: 1 mg/m <sup>3</sup> | TWA: 0.1 ppm     |

Legend

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH: NIOSH - National Institute for Occupational Safety and Health

**Engineering Measures**

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

**Personal Protective Equipment****Eye/face Protection**

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin and body protection**

Wear appropriate protective gloves and clothing to prevent skin exposure.

**Respiratory Protection**

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

**Recommended Filter type:**

Particulates filter conforming to EN 143.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical and chemical properties

|                                  |                                  |
|----------------------------------|----------------------------------|
| Physical State                   | Powder Solid                     |
| Appearance                       | Off-white                        |
| Odor                             | No information available         |
| Odor Threshold                   | No information available         |
| pH                               | 1 - 5 g/L water                  |
| Melting Point/Range              | 167 °C / 332.6 °F                |
| Boiling Point/Range              | 160 °C / 320 °F                  |
| Flash Point                      | No information available         |
| Evaporation Rate                 | Not applicable                   |
| Flammability (solid,gas)         | No information available         |
| Flammability or explosive limits |                                  |
| Upper                            | No data available                |
| Lower                            | No data available                |
| Vapor Pressure                   | 0.11 mbar @ 30 °C                |
| Vapor Density                    | Not applicable                   |
| Specific Gravity                 | 1.600                            |
| Solubility                       | Decomposes in contact with water |

|  |                          |
|--|--------------------------|
| Partition coefficient; n-octanol/water | No data available        |
| Autoignition Temperature               | No information available |
| Decomposition Temperature              | 167 °C                   |
| Viscosity                              | Not applicable           |
| Molecular Formula                      | Cl <sub>5</sub> P        |
| Molecular Weight                       | 208.24                   |

## 10. Stability and reactivity

|                                  |   |
|----------------------------------|---|
| Reactive Hazard                  | Yes   |
| Stability                        | Water reactive. Reacts violently with water. Contact with water liberates toxic gas.  |
| Conditions to Avoid              | Avoid dust formation. Protect from water.   |
| Incompatible Materials           | Water, Bases  |
| Hazardous Decomposition Products | Fumes, Oxides of phosphorus, Phosphorus trihydride (phosphine), Hydrogen chloride gas |
| Hazardous Polymerization         | Hazardous polymerization does not occur.  |
| Hazardous Reactions              | None under normal processing.   |

## 11. Toxicological information

### Acute Toxicity

#### Product Information Component Information

| Component                | LD50 Oral                | LD50 Dermal                 | LC50 Inhalation |
|--------------------------|--------------------------|-----------------------------|-----------------|
| Phosphorus pentachloride | LD50 = 600 mg/kg ( Rat ) | LD50 = 660 mg/kg ( Rabbit ) | Not listed      |

**Toxicologically Synergistic Products** No information available

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

|                 |  |
|-----------------|--|
| Irritation      | Causes burns by all exposure routes  |
| Sensitization   | No information available   |
| Carcinogenicity | The table below indicates whether each agency has listed any ingredient as a carcinogen. |

| Component                | CAS No     | IARC       | NTP        | ACGIH      | OSHA       | Mexico     |
|--------------------------|------------|------------|------------|------------|------------|------------|
| Phosphorus pentachloride | 10026-13-8 | Not listed | Not listed | Not listed | Not listed | Not listed |

**Mutagenic Effects** No information available

**Reproductive Effects** No information available.

**Developmental Effects** No information available.

**Teratogenicity** No information available.

**STOT - single exposure** None known  
**STOT - repeated exposure** Respiratory system

**Aspiration hazard** No information available

**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 Disruptor Information** No information available

**Other Adverse Effects** The toxicological properties have not been fully investigated.

## 12. Ecological information

### Ecotoxicity

Do not empty into drains.

**Persistence and Degradability** Reacts violently with water Persistence is unlikely based on information available. Soluble in water

**Bioaccumulation/ Accumulation** No information available.

**Mobility** Will likely be mobile in the environment due to its water solubility.

## 13. Disposal considerations

**Waste Disposal Methods** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

## 14. Transport information

### DOT

UN-No UN1806  
Proper Shipping Name PHOSPHORUS PENTACHLORIDE  
Hazard Class 8  
Packing Group II

### TDG

UN-No UN1806  
Proper Shipping Name PHOSPHORUS PENTACHLORIDE  
Hazard Class 8  
Packing Group II

### IATA

UN-No UN1806  
Proper Shipping Name PHOSPHORUS PENTACHLORIDE  
Hazard Class 8  
Packing Group II

### IMDG/IMO

UN-No UN1806  
Proper Shipping Name PHOSPHORUS PENTACHLORIDE  
Hazard Class 8  
Packing Group II

## 15. Regulatory information

### United States of America Inventory

| Component                | CAS No     | TSCA | TSCA Inventory notification -<br>Active-Inactive | TSCA - EPA Regulatory<br>Flags |
|--------------------------|------------|------|--|--------------------------------|
| Phosphorus pentachloride | 10026-13-8 | X    | ACTIVE   | -                              |

### Legend:

**TSCA** US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

X - Listed

'-' - Not Listed

**TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT)** Not applicable

TSCA 12(b) - Notices of Export

Not applicable

**International Inventories**

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

| Component                | CAS No     | DSL | NDSL | EINECS    | PICCS | ENCS | ISHL | AICS | IECSC | KECL     |
|--------------------------|------------|-----|------|-----------|-------|------|------|------|-------|----------|
| Phosphorus pentachloride | 10026-13-8 | X   | -    | 233-060-3 | X     | X    | X    | X    | X     | KE-28719 |

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

**U.S. Federal Regulations****SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

**SARA 311/312 Hazard Categories**

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

**CWA (Clean Water Act)** Not applicable

**Clean Air Act** Not applicable

**OSHA - Occupational Safety and Health Administration** Not applicable

**CERCLA**

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

| Component                | Hazardous Substances RQs | CERCLA Extremely Hazardous Substances RQs | SARA Reportable Quantity (RQ) |
|--------------------------|--------------------------|---|-------------------------------|
| Phosphorus pentachloride | -                        | 500 lb                                    | -                             |

**California Proposition 65** This product does not contain any Proposition 65 chemicals.

**U.S. State Right-to-Know Regulations**

| Component                | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|--------------------------|---------------|------------|--------------|----------|--------------|
| Phosphorus pentachloride | X             | X          | X            | X        | X            |

**U.S. Department of Transportation**

Reportable Quantity (RQ): N  
DOT Marine Pollutant N  
DOT Severe Marine Pollutant N

**U.S. Department of Homeland Security**

This product contains the following DHS chemicals:

**Legend** - STQs = Screening Threshold Quantities, APA = A placarded amount

| Component                | DHS Chemical Facility Anti-Terrorism Standard |
|--------------------------|---|
| Phosphorus pentachloride | APA   |

**Other International Regulations**

**Mexico - Grade** No information available

**Authorisation/Restrictions according to EU REACH**

| Component                | CAS No     | REACH (1907/2006) - Annex XIV - Substances Subject to Authorization | REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances | REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC) |
|--------------------------|------------|---|---|---|
| Phosphorus pentachloride | 10026-13-8 | -   | Use restricted. See item 75. (see link for restriction details)               | -   |

**REACH links**

<https://echa.europa.eu/substances-restricted-under-reach>

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

| Component                | CAS No     | OECD HPV | Persistent Organic Pollutant | Ozone Depletion Potential | Restriction of Hazardous Substances (RoHS) |
|--------------------------|------------|----------|------------------------------|---------------------------|--|
| Phosphorus pentachloride | 10026-13-8 | Listed   | Not applicable               | Not applicable            | Not applicable                             |

**Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?**

Not applicable

**Other International Regulations**

| Component                | CAS No     | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements | Rotterdam Convention (PIC) | Basel Convention (Hazardous Waste) |
|--------------------------|------------|---|--|----------------------------|------------------------------------|
| Phosphorus pentachloride | 10026-13-8 | Not applicable  | Not applicable   | Not applicable             | Not applicable                     |

## 16. Other information

**Prepared By** Health, Safety and Environmental Department  
 Email: chem.techinfo@thermofisher.com  
 www.thermofisher.com

**Creation Date** 07-Jun-2010  
**Revision Date** 29-Mar-2024  
**Print Date** 29-Mar-2024  
**Revision Summary** New emergency telephone response service provider.

**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 SDS**