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Material Safety Data Sheet
Phosphorus Trichloride

Section 1 - Product Identification

Synonyms : Phosphorus (III) Trichloride
Molecular Weight : 137.33 g/mol
Chemical Formula : PCl3
Company Identification : Tradeasia International Pte. Limited
Address : 133 Cecil Street # 12-03 Keck Seng Tower, Singapore
Tel: +65-6227 6365
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Email: contact@chemtradeasia.com

Recommended use of the chemical and restrictions on use
The product is used in:

- Manufacturing, Chemicals
- Manufacturing, Plastics

Section 2 – Composition/Information on Ingredients

The product contains 100 percent (%) Phosphorus Trichloride

Chemical Name	CAS No	Purity, %
Phosphorus Trichloride	7719-12-2	100

Section 3 – Hazards Identification

3.1 Emergency Overview

Corrosive and irritating to the eyes, skin, and mucous membranes. Inhalation may result in chemical pneumonitis and pulmonary edema.

3.2 Other hazards

Swallowed

This substance is commonly used as a component in food, vitamins and pharmaceutical tablets, and may be safely consumed in moderate amounts. Ingestion of large quantities may cause abdominal cramps, nausea, vomiting, diarrhea.

Eye

Corrosive and irritating to the eyes. Contact with the liquid or vapor causes painful burns and ulcerations. Burns to the eyes result in lesions and possible loss of vision.

Skin

Corrosive and irritating to the skin and all living tissue. Toxic level exposure to dermal tissue causes acid-like burns and skin lesions resulting in early necrosis and scarring. It hydrolyzes very rapidly with the liberation of heat yielding hydrochloric and phosphoric acid. Acid burns exhibit severe pain, redness, possible swelling and early necrosis.

Inhaled

Corrosive and irritating to the upper and lower respiratory tract and all mucosal tissue. Symptoms include lacrimation, cough, labored breathing, and excessive salivary and sputum formation. Excessive irritation causes chemical pneumonitis and pulmonary edema which could be fatal.

Chronic Health Effects

No information is available

Section 4 – First-Aid Measures

4.1. Description of first aid mesaures

Skin contact

Remove contaminated clothing as rapidly as possible. Flush affected area with copious quantities of water. Seek immediate medical attention.

Eye contact

PERSONS WITH POTENTIAL EXPOSURE SHOULD NOT WEAR CONTACT LENSES. Flush contaminated eyes with copious quantities of water. Part eyelids to assure complete flushing. Continue for a minimum of 15 minutes.
Seek immediate medical attention.

Ingestion

Not specified. Seek immediate medical attention.

Inhalation

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.
Victims should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, and if breathing has stopped, administer artificial resuscitation and supplemental oxygen. Keep victim warm and quiet. Assure that mucus or vomited material does not obstruct the airway by use of positional drainage. Delayed pulmonary edema may occur. Keep patient under medical observation for at least 24 hours.

Note to physicians

Treat symptomatically

4.2. Most important symptoms and effects, both acute and delayed

Treat symptomatically

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically

Section 5 – Fire Fighting Measures

General Information

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Substance is noncombustible. Contact with water can cause violent liberation of heat and splattering of the material. Vapors may be heavier than air.
They can spread along the ground and collect in low or confined areas. Containers may explode when heated.

5.1. Suitable Extinguishing media

Do NOT use water directly on fire. Use carbon dioxide or dry chemical.

5.2. Specific hazards arising from the chemical

None known

5.3. Special protective actions for fire-fighters

Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Flash Point

Not applicable

Section 6 – Accidental Release Measures

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

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

6.3. Methods and material for containment and cleaning up

Small Spill

Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation.

Large Spill

Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation.

Section 7 – Handling and Storage

7.1. Precautions for safe Handling

Wash thoroughly after handling. Wash hands before eating. Follow all MSDS and label precautions even after container is emptied because they may contain product residues. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Do not ingest or inhale.

Do not allow contact with water. Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

7.2. Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well-ventilated area away from incompatible substances. Corrosives area.

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Never allow product to get in contact with water during storage.

Store under inert gas. Light sensitive. Metals

7.3 Ventilation

NA

Section 8 – Exposure Controls/Personal Protection

8.1. Control parameters

Components	CAS-No.	Value	Control parameters	Basis
Phosphorus trichloride	7719-12-2	TWA	0.5 ppm 3 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
Remarks	The value in mg/m3 is approximate.			
		TWA	0.2 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Eye, skin, & Upper Respiratory Tract irritation			
		STEL	0.5 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Eye, skin, & Upper Respiratory Tract irritation			
		TWA	0.2 ppm 1.5 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		STEL	0.5 ppm 3 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		TWA	0.2 ppm 1.5 mg/m3	USA. NIOSH Recommended Exposure Limits
		ST	0.5 ppm 3 mg/m3	USA. NIOSH Recommended Exposure Limits

8.2. Appropriate engineering controls

Hood with forced ventilation. Use local exhaust ventilation to prevent accumulation above the exposure limit.

8.3. Individual protection measures, such as personal protective equipment (PPE)

Respiratory protection

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

Eyes and hands protection

Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in
accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Fluorinated rubber
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested:Vitoject® (KCL 890 / Aldrich Z677698, Size M)

Splash protection
Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 37 min
Material tested:Camatril® (KCL 730 / Aldrich Z677442, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374 If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Section 9 – Physical and Chemical Properties

9.1. Information on basic physical and chemical properties
Refers to TDS provided

Section 10 – Stability and Reactivity

10.1. Conditions Contribute to Instability
Reacts with water to form hydrogen chloride, a toxic and corrosive gas.
10.2 Storage Incompatibility
NA
10.3 Conditions to Avoid
Exposure to moisture
10.4 Materials to Avoid
Strong bases

Section 11 – Toxicological Information

11.1. Information on toxicological effect
NA
11.1.1. Substances
Acute toxicity[2]
Oral LD50
LD50 Oral - rat - 18 mg/kg
Remarks: Behavioral:Food intake (animal). Lungs, Thorax, or Respiration:Chronic pulmonary edema. Gastrointestinal:Peritonitis.

Inhalation LC50
LC50 Inhalation - rat - 4 h - 104 ppm
Remarks: Lungs, Thorax, or Respiration: Structural or functional change in trachea or bronchi. Lungs, Thorax, or Respiration:Other changes. Blood: Hemorrhage.
Dermal LD50
no data available
Other information on acute toxicity
no data available
Skin corrosion / irritation
Shall not be classified as corrosive/irritant to skin.
Serious eye damage/ irritation
Shall not be classified as seriously damaging to the eye or eye irritant.
Respiratory or skin sensitization
Shall not be classified as a respiratory or skin sensitiser.
Germcell mutagenicity
NA
Carcinogenicity
NA
Reproductive toxicity
No information available.
STOT-single exposure
Shall not be classified as a specific target organ toxicant (single exposure).
STOT-repeated exposure
Shall not be classified as a specific target organ toxicant (repeated exposure).
Aspiration Hazard
Shall not be classified as presenting an aspiration hazard.

Section 12 – Ecological Information

12.1.Toxicity
NA
12.2. Persistence and degradability
NA
12.3. Bioaccumulative potential
Data are not available.
12.4. Mobility in soil
Data are not available.
12.5. Other adverse effects
Data are not available.

Section 13 – Disposal Considerations

13.1. Disposal methods
Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 – Transport Information

IATA
Shipping Name: PHOSPHORUS TRICHLORIDE
Hazard Class: 6.1 (8)
UN Number: 1809
Packing Group: I
IMO
Shipping Name: PHOSPHORUS TRICHLORIDE
Hazard Class: 6.1 (8)

UN Number: 1809
Packing Group: I

RID/ADR

Shipping Name: PHOSPHORUS TRICHLORIDE
Hazard Class: 6.1+8
UN Number: 1809
Packing group: I
USA RQ: CAS# 7719-12-2: 1000 lb final RQ; 454 kg final RQ

Section 15 – Regulatory Information

15.1. Safety, health and environmental regulations

European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols: T+ C
Risk Phrases:
R 14 Reacts violently with water.
R 26/28 Very toxic by inhalation and if swallowed.
R 29 Contact with water liberates toxic gas.
R 35 Causes severe burns.
R 48/20 Harmful : danger of serious damage to health by prolonged exposure through inhalation.
Safety Phrases:
S 7/8 Keep container tightly closed and dry.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
WGK (Water Danger/Protection)
CAS# 7719-12-2: 1
Canada
CAS# 7719-12-2 is listed on Canada's DSL List.
CAS# 7719-12-2 is listed on Canada's Ingredient Disclosure List.
US FEDERAL
TSCA
CAS# 7719-12-2 is listed on the TSCA inventory.

Section 16 : Additional Information

16.1. Mainly changes made to the previous version of this Material Safety Data Sheet (MSDS):

• This MSDS complies with ISO 11014; the requirements of UN-GHS

Revision No	Revision content
05	• This SDS is updated in accordance with the GHS (Rev.6) (2015)-Guidance on the Compilation of Safety data Sheets.

16.2. List of abbreviation and acronyms used in this MSDS

SDS : Safety Data Sheets
Index N° : atomic number of the element most characteristic of the properties of the substance
CAS No : Chemical Abstracts Service number

EC No : EINECS Number : European Inventory of Existing Commercial Substances
Repr. Cat. 2 : Substance presumed human reproductive toxicant
Acute Oral Cat. 5 : Substance which is of relatively low acute oral toxicity.
GHS : Globally Harmonised System of Classification and Labelling
LD_{50} : Median Lethal Dose
LC_{50} : Lethal Concentration, 50%
N.A. : Not Applicable
OSHA : Occupational Safety & Health Administration
Cal OSHA : The State of California Division of Occupational Safety and Health (DOSH)
PEL : Permissible Exposure Limits
ACGIH : American Conference of Governmental Industrial Hygienists
TLV : Threshold Limit Value
Japanese MITI : Japanese Ministry of International Trade and Industry
EC_{50} : Half maximal effective concentration
UN : United Nations
U.S. EPA TSCA Inventory: Inventory of the chemical substances manufactured or processed in the United States according to Toxic Substances Control Act compiled and published under the autority of the Environmental Protection Agency
Canadian DSL: Canadian Domestic Substances List

16.3. List of relevant hazard statements and precautionary statements used in this MSDS

Hazard Statement
H361 d: Suspected of damaging the unborn child
H319: Causes serious eye irritation
H303: May be harmful if swallowed

Precautionary Statements

Prevention
P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P281: Use personal protective equipment as required.
P264: Wash eyes thoroughly after handling.
P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response
P308 + P313: If exposed or concerned: get medical advice/attention.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.

Storage
P405: Store locked up.

Disposal
P501: Dispose of contents/container to in accordance with local regulations.

16.4. References

16.5. Disclaimer of Liability

The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its accuracy, reliability or completeness. The conditions or methods of handling, storage use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. It is the user's responsibility to satisfy himself as to the suitableness and completeness of such information for his own particular use.

This MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable.