Infosafe No™ 1CH8Z Issue Date :August 2021 RE-ISSUED by CHEMSUPP

Product Name **PHOSPHORUS PENTOXIDE**

Classified as hazardous

1. Identification

GHS Product Identifier	PHOSPHORUS PENTOXIDE
Company Name	CHEMSUPPLY AUSTRALIA PTY LTD (ABN 19 008 264 211)
Address	38 - 50 Bedford Street GILLMAN SA 5013 Australia
Telephone/Fax Number	Tel: (08) 8440-2000
Emergency phone number	CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)
E-mail Address	www.chemsupply.com.au
Recommended use of the chemical and restrictions on use	Drying agent for compatible materials; for absorption of moisture in vacuum systems; as a dehydrating agent; as a condensing agent in organic synthesis; for the manufacture of phosphorus oxychloride and metaphosphoric acid; surfactants; acrylate esters; as an intermediate in the synthesis of phosphate esters subsequently used as flame retardants, solvents and diluents; as a catalyst in the air-blowing of asphalt; used in development of specialty glasses for vacuum tubes; in the production of ammonium polyphosphate for fireproofing; in sugar refining and laboratory reagent.

Other Names

Name	Product Code
PHOSPHORUS PENTOXIDE LR	PL121
Phosphoric anhydride	
Phosphoric acid, anhydrous	
Phosphoric oxide	
di-Phosphorus pentoxide	

Other Information

ChemSupply Australia Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon ChemSupply Australia Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of ChemSupply Australia Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

2. Hazard Identification

GHS classification of the substance/mixture	Skin Corrosion/Irritation: Category 1A
Signal Word (s)	DANGER
Hazard Statement (s)	H314 Causes severe skin burns and eye damage.
Pictogram (s)	Corrosion

Precautionary statement – Prevention	P260 Do not breathe dust/fume/gas/mist/vapours/spray. P264 Wash thoroughly after handling. P280 Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statement – Response	P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting. P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. P310 Immediately call a POISON CENTER or doctor/physician. P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P310 Immediately call a POISON CENTER or doctor/physician. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Precautionary statement – Storage	P405 Store locked up.
Precautionary statement – Disposal	P501 Dispose of contents/container to an approved waste disposal plant.

3. Composition/information on ingredients

Ingredients	Name	CAS	Proportion
	Phosphorus pentoxide	1314-56-3	100 %

4. First-aid measures

Inhalation	If inhaled, remove from contaminated area to fresh air immediately. Apply artificial respiration if not breathing. If breathing is difficult, give oxygen. Immediately medical attention is required.
Ingestion	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek immediate medical advice.
Skin	Wash affected areas with copious quantities of water (prefer bicarbonate solution) immediately. Remove contaminated clothing and wash before re-use. Seek immediate medical advice.
Eye contact	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Seek immediate medical assistance.
First Aid Facilities	Maintain eyewash fountain and drench facilities in work area.
Advice to Doctor	Treat symptomatically based on judgement of doctor and individual reactions of the patient.
Other Information	For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor.

5. Fire-fighting measures

Hazards from Combustion Products	Phosphorus oxide and/or phosphine.
Specific Methods	When material is not involved in fire: Do not use water on material itself. Small fire: Use CO2, dry chemical, dry sand or flooding quantities of water. If safe to do so, move undamaged containers from the fire area. Large fire: Flood fire with large quantities of water while knocking down vapours with water fog - If insufficient water supply, knock down vapours only. Cool containers with flooding quantities of water until well after the fire is out. Avoid getting water inside the containers.
Specific hazards arising from the chemical	Does not burn but may produce poisonous and/or corrosive fumes upon heating. Heat of reaction may be enough to ignite combustible materials. Will react with water releasing, poisonous and/or corrosive gases and runoff.
Hazchem Code	2X
Precautions in connection with Fire	Wear SCBA and acid-resistant chemical splash suit. Structural firefighter's uniform is NOT effective for these materials.

6. Accidental release measures

Spills & Disposal	Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas. DO

	NOT GET WATER INSIDE CONTAINERS. Small Spill: Cover with DRY earth, sand or other non-combustible material followed by a plastic sheet to minimize spreading or contact with rain. Use clean non-sparking tools to collect material and place it into loosely-covered plastic containers for later disposal.
Personal Precautions	Avoid substance contact. Avoid generation of dusts: do not inhale dusts. Ensure supply of fresh air in enclosed rooms.
Personal Protection	Wear protective clothing specified for normal operations (see Section 8)

7. Handling and storage

Precautions for Safe Handling	Avoid inhalation and ingestion. Avoid contact with skin, eyes and clothing. Avoid prolonged or repeated exposure. If ingested, seek medical advice immediately and show the container or the label. Ensure good ventilation/exhaustion at the workplace. In case of insufficient ventilation, wear suitable respiratory equipment. Wash thoroughly after handling. Remove contaminated clothing. Keep away from incompatibles such as alkalis, moisture. Never add water to this product. Do not allow water to get into the container because of violent reaction. Handle under dry protective gas. Minimise dust generation. Protect against physical damage. Mild steel is the preferred material of construction of process equipment when the product is kept dry. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.
Conditions for safe storage, including any incompatibilities	Keep in a tightly closed container, stored in a cool, dry, ventilated area away from incompatible substances. Protect against physical damage. Protect from humidity and water/moisture. Do not store together with oxidizing and acidic materials, alkalis (caustic solutions), reducing agents, water, metals, organic and combustible substances, flammable materials and animal feed. Keep away from sources of ignition. This product is moisture sensitive - reacts with moisture to evolve heat. Store under dry inert gas. Building must be waterproof, located on high ground and separated from other storage. This building should conform to that required for storage of hydrogen. If water or moisture is present, type 316LSS rubber-lined steel or FRP are the preferred materials of construction. Mild steel is the preferred material of construction of storage or shipping containers when the product is kept dry. Corrosives area - Store in a locked, separate safety cabinet/room or with access restricted to technical experts or their assistants. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.
Corrosiveness	Not corrosive to the common metals when dry. Corrosive to metals, such as steel, cast iron, copper and its alloys, and aluminium, in the presence of moisture because orthophosphoric acid is formed.
Storage Regulations	Refer Australian Standard AS 3780-1994 'The storage and handling of corrosive substances'.
Storage Temperatures	To be stored at dry condition in temperatures > 15 °C.
Recommended Materials	When water is present: 316LSS rubber-lined steel or FRP; when the product is kept dry: mild steel. Store in glass, other acid-resistant containers.
Unsuitable Materials	Avoid plastic materials.
Additional information on precautions for use	Avoid getting water inside containers.

8. Exposure controls/personal protection

Other Exposure Information	No exposure standards have been established for this product by Safe Work Australia, however, the TWA exposure standard for dusts/mists not otherwise specified is 10 mg/m3. All atmospheric contamination should be kept to as low a level as is workable. These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative

	toxicity.
Appropriate engineering controls	Maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods.
Respiratory Protection	Where ventilation is not adequate, respiratory protection may be required. Avoid breathing dust, vapours or mists. Respiratory protection should comply with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. Filter capacity and respirator type depends on exposure levels. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.
Eye Protection	The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.
Hand Protection	Wear gloves of impervious material conforming to AS/NZS 2161: Occupational protective gloves - Selection, use and maintenance. Final choice of appropriate glove type will vary according to individual circumstances. This can include methods of handling, and engineering controls as determined by appropriate risk assessments. Avoid skin contact when removing gloves from hands, do not touch the gloves outer surface. Dispose of gloves as hazardous waste.
Personal Protective Equipment	Personal protective equipment should not solely be relied upon to control risk and should only be used when all other reasonably practicable control measures do not eliminate or sufficiently minimise risk. Guidance in selecting personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.
Footwear	Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.
Body Protection	Clean impervious clothing should be worn. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.
Hygiene Measures	Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

9. Physical and chemical properties

Form	Solid
Appearance	White crystalline powder; very deliquescent.
Odour	Odourless or a slight phosphorus-like odour.
Melting Point	340 °C
Boiling Point	Sublimes at 360 °C
Solubility in Water	Very soluble (600 g/l (at 20 °C)). Reacts violently with water to form orthophosphoric acid, with the generation of heat. Absorbs moisture from the air with avidity, forming meta-, pyro-, or ortho-phosphoric acid, depending on the amount of water absorbed and upon conditions of absorption.
Solubility in Organic Solvents	Soluble in sulfuric acid; insoluble in acetone and ammonia. Reacts with ethanol with the generation of heat.
Specific Gravity	2.30; 2.39 (water = 1)
pH	Forms orthophosphoric acid, a strong acid, when dissolved in water (~ 1.0 at 5 g/L H2O).
Vapour Pressure	Essentially zero at normal temperatures; 0.133 kPa (1 mm Hg) at 384 °C (solid; stable form); 0.133 kPa (1 mm Hg) at 189 °C (metastable form).
Vapour Density (Air=1)	4.9 (air = 1)
Evaporation Rate	Very low at normal temperatures.

Partition Coefficient: n-octanol/water	Not applicable (reacts with water).
Flammability	Non combustible material.
Explosion Properties	Forms flammable and potentially explosive hydrogen gas with metals (e.g. ferrous metals, aluminum or zinc) in the presence of moisture. Reaction with calcium is explosive when heated. Reaction with ammonia, perchloric acid in chloroform, or methyl hydroperoxide is vigorous and may explode.
Molecular Weight	141.95 (monomer); 283.90 (dimer)
Other Information	Bulk density: 700 - 1000 kg/m³.

10. Stability and reactivity

Chemical Stability	Stable under normal storage and handling conditions. Strongly hygroscopic.
Conditions to Avoid	Water, humid conditions, high temperatures, incompatible materials and moisture.
Incompatible Materials	Water/moisture, alcohols, organic substances (e.g. wood, cotton, paper and straw), combustible substances, metals (e.g. ferrous metals, aluminium, magnesium or zinc) + moisture, strong oxidizing agents (e.g. bromine pentafluoride, chlorine trifluoride, oxygen difluoride or hydrogen peroxide), inorganic bases (e.g. calcium oxide or sodium oxide) + heat/moisture, formic acid, alkali or alkaline earth metals (calcium, sodium or potassium + heat), hydrogen fluoride (below 20 °C), hydrogen halides, ammonia, perchloric acid in chloroform, or methyl hydroperoxide, sodium carbonate (anhydrous conditions) + heat, propargyl alcohol, acids, bases, halogen-halogen compounds, halogen oxides, halogens, alkali salts, nitrates - chlorates, reducing agents, 3-propynol, iodides, sulfides.
Hazardous Decomposition Products	Orthophosphoric acid, toxic fumes of phosphorus oxides and/or phosphine.
Possibility of hazardous reactions	Reacts violently with ammonia, barium sulfide, hydrogen fluoride, hydrogen peroxide, iodides, water and organic materials such as wood, cotton or straw, generating heat. Ignition may occur on contact with chlorine trifluoride and oxygen difluoride. Reacts violently with inorganic bases if warmed or moistened. Reaction with formic acid rapidly evolves carbon monoxide. Reaction with calcium is explosive when heated. Reaction with warm sodium and potassium is incandescent (glowing hot). Contact with perchloric acid may form anhydrous perchloric acid if heated possibly leading to an explosion.
Hazardous Polymerization	Will not occur.

11. Toxicological Information

Ingestion	Corrosive. Causes burns to the mouth, throat, oesophagus and stomach, due to the formation of orthophosphoric acid. Causes severe pain, sore throat, abdominal pain, nausea, vomiting, diarrhoea, and shock. Brown or yellow stains will be found around the mouth. Suffocation may occur from swelling of the tongue. Aspiration into the lungs can cause chemical pneumonitis. Risk of perforation of the oesophagus and stomach. In severe cases, death may result. Ingestion is not a typical route of occupational exposure.
Inhalation	Inhalation produces damaging effects on the mucous membranes and upper respiratory tract. Symptoms may include severe irritation of the nose, eyes, throat and respiratory tract with sore throat, coughing, shortness of breath and labored breathing. May cause delayed lung oedema, a medical emergency. Causes chemical burns to the respiratory tract. May cause pulmonary oedema and severe respiratory disturbances.
Skin	Corrosive. Causes severe skin irritation, burns, redness and pain. Burns usually penetrate the skin with sharply defined edges and heal slowly with the formation of scar tissue.
Eye	Corrosive. Fumes and airborne powder cause eye irritation. Contact with substance can cause severe eye burns and permanent damage.
Respiratory sensitisation	Not classified based on available information.

Skin Sensitisation	Not classified based on available information.
Germ cell mutagenicity	Not classified based on available information.
Carcinogenicity	Not classified based on available information.
Reproductive Toxicity	Not classified based on available information.
STOT-single exposure	Not classified based on available information.
STOT-repeated exposure	Not classified based on available information.
Chronic Effects	Early symptoms of chronic phosphorous intoxication include gastrointestinal distress and possibly a garlic-like odour to the breath. Chronic exposure can lead to necrosis of the jaw, or 'phossy-jaw'.
Serious eye damage/irritation	Skin Corrosion/Irritation: Category 1A H314 Causes severe skin burns and eye damage.
Mutagenicity	Not classified based on available information.
Skin corrosion/irritation	Skin Corrosion/Irritation: Category 1A H314 Causes severe skin burns and eye damage.
Other Information	Potential for Accumulation: Phosphorus pentoxide reacts with water in the body to form orthophosphoric acid, which enters the phosphate pool. Inorganic phosphate ion is naturally found in the body. It is excreted mainly in the urine.

12. Ecological information

Ecotoxicity	Harmful effect due to pH shift. Hydrolysis leads to formation of: phosphoric acid. After hydrolysis acid effect on fish and plankton. Depending on the concentration, phosphorus and/or nitrogen compounds may contribute to the eutrophication of drinking- water supplies.
Persistence and degradability	Abiotic degradation: Product reacts with water. Hydrolysis leads to the formation of phosphoric acid (H3PO4).
Other Adverse Effects	Depending on the concentration, phosphorus compounds may contribute to the eutrophication of water supplies.
Other Precautions	Reacts violently with water to evolve heat; dangerous fire risk.
Environmental Protection	Do not allow to enter waters, waste water, or soil!

13. Disposal considerations

Disposal Considerations	Whatever cannot be saved for recovery or recycling should be disposed of according to relevant local, state and federal government regulations.

14. Transport information

Transport Information	Dangerous goods of Class 8 (Corrosive) are incompatible in a placard load with any of the following: Class 1, Class 4.3, Class 5, Class 6, if the Class 6 dangerous goods are cyanides and the Class 8 dangerous goods are acids, Class 7; and are incompatible with food and food packaging in any quantity.
U.N. Number	1807
UN proper shipping name	PHOSPHORUS PENTOXIDE
Transport hazard class(es)	8
Hazchem Code	2X
Packing Group	II
EPG Number	8A3
IERG Number	40

Environmental Hazards	Harmful effect due to pH shift. The following may develop after reaction of the product with water: phosphoric acid. After hydrolysis, acid effect on fish and plankton.

15. Regulatory information

Regulatory Information	All the constituents of this product are listed on the Australian Inventory of Chemical Substances (AICS), or exempted. Not listed under WHS Regulation 2011, Schedule 10 - Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.
Poisons Schedule	Not Scheduled

16. Other Information

Literature References	'Standard for the Uniform Scheduling of Medicines and Poisons .', Commonwealth of Australia. National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.'. Safe Work Australia, 'National Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals'. Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand. Safe Work Australia, 'Hazardous Chemical Information System'. Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances'. Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment'.
Contact Person/Point	Paul McCarthy Ph. (08) 8440 2000 DISCLAIMER STATEMENT: All information provided in this data sheet or by our technical representatives is compiled from the best knowledge available to us. However, since data, safety standards and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, we make no warranty either expressed or implied, with respect to the completeness or accuracy to the information contained herein. ChemSupply Australia Pty Ltd accepts no responsibility whatsoever for its accuracy or for any results that may be obtained by customers from using the data and disclaims all liability for reliance on information provided in this data sheet or by our technical representatives.
Empirical Formula & Structural Formula	Empirical Formula: P2 O5 (monomer). Structural Formula: P4 O10 (dimer).

...End Of MSDS...