



SAFETY DATA SHEET PHOSPHOROUS ACID REVISION 4, DATE 14 FEB 20

1. IDENTIFICATION

Product Name	Phosphorous acid
Other Names	Orthophosphorus acid; Phosphorus acid [CAS#13598-36-2]
Uses	Used as intermediates; water treatment; fertilisers and plant protection.
Chemical Family	No Data Available
Chemical Formula	H3O3P
Chemical Name	Phosphonic acid
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust)

Schedule 5



Globally Harmonised System

Hazard Classification Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)

Hazard Categories Corrosive to Metals - Category 1
Acute Toxicity (Oral) - Category 4
Skin Corrosion/Irritation - Category 1A
Serious Eye Damage/Irritation - Category 1

Pictograms

Signal Word Danger

Hazard Statements		H290	May be corrosive to metals.
		H302	Harmful if swallowed.
		H314	Causes severe skin burns and eye damage.
Precautionary Statements	Prevention	P260	Do not breathe dust/fume/gas/mist/vapours/spray.
		P270	Do not eat, drink or smoke when using this product.
		P280	Wear protective gloves/protective clothing/eye protection/face protection.
	Response	P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
		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 victim to fresh air and keep comfortable for breathing.
		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.
		P363	Wash contaminated clothing before reuse.
	Storage	P390	Absorb spillage to prevent material-damage.
		P405	Store locked up.
	Disposal	P406	Store in corrosive resistant container with a resistant inner liner.
		P501	Dispose of contents/container in accordance with local / regional / national / international regulations.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

3. COMPOSITION/INFORMATION ON INGREDIENTS**Ingredients**

Chemical Entity	Formula	CAS Number	Proportion
Phosphorous acid	H3O3P	10294-56-1	>=98.5 %

4. FIRST AID MEASURES*Description of necessary measures according to routes of exposure*

Swallowed	IF SWALLOWED: Rinse mouth, then drink a glass of water. Do NOT induce vomiting. Immediately call a Poison Centre or doctor/physician for advice. Never give anything by mouth to an unconscious person.
Eye	IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Immediately call a Poison Centre or doctor/physician for advice. Remove contact lenses if present and easy to do. Continue flushing until advised to stop by a Poisons Information Centre or a doctor, or for at least 15 minutes.
Skin	IF ON SKIN (or hair): Remove contaminated clothing and shoes immediately. Flush skin and hair with running water for at least 15 minutes. For minor skin contact, avoid spreading material on unaffected skin. Immediately call a Poison Centre or doctor/physician for advice. Wash contaminated clothing and shoes before reuse.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a Poison Centre or doctor/physician for advice. Apply resuscitation if victim is not breathing - Do not use direct mouth-to-mouth method if victim ingested or inhaled the substance; use alternative respiratory method or proper respiratory device - Administer oxygen if breathing is difficult.
Advice to Doctor	Treat symptomatically and supportively. Keep victim calm and warm - Obtain immediate medical care. Ensure that attending medical personnel are aware of the identity and nature of the product(s) involved, and take precautions to protect themselves.
Medical Conditions Aggravated by Exposure	Persons with pre-existing skin, eye or respiratory disease may be at increased risk from the irritant or allergic properties of this material.

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out. Avoid getting water inside containers.
Flammability Conditions	Non-combustible; Material itself does not burn.
Extinguishing Media	If material is involved in a fire, use dry chemical, Carbon dioxide (CO ₂), foam or water spray for extinction.
Fire and Explosion Hazard	Contact with metals may evolve flammable hydrogen gas. Corrosive solutions are formed in the presence of water.
Hazardous Products of Combustion	Fire or heat will produce irritating, toxic and/or corrosive gases, including oxides of phosphorus; phosphorus trihydride (phosphine).
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may be toxic and/or corrosive and may pollute waterways.
Personal Protective Equipment	Wear self-contained breathing apparatus (SCBA) and chemical splash suit. Fully-encapsulating, gas-tight suits should be worn for maximum protection. Structural firefighter's uniform is NOT effective for this material.
Flash Point	No Data Available
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	2X

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation - Ventilate enclosed spaces before entering. ELIMINATE all ignition sources. Do not touch or walk through spilled material. Clean up spills immediately. Do not breathe dust and prevent contact with eyes, skin and clothing.
Clean Up Procedures	Collect material (vacuum or sweep up) and place into a suitable container for disposal (see SECTION 13). Do NOT put the spilled material back into the original container for re-use.

Containment	Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas. Prevent dust cloud.
Decontamination	Wash the non-recoverable remainder with sodium carbonate solution (5% Na ₂ CO ₃).
Environmental Precautionary Measures	Spillages and decontamination runoff should be prevented from entering drains and watercourses.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away. Keep upwind and to higher ground. Large spill: Immediately contact Police or Fire Brigade; Consider initial downwind evacuation of areas within at least 250 m.
Personal Precautionary Measures	Do not touch damaged containers or spilled material unless wearing appropriate protective clothing (see SECTION 8). Large spill: Wear SCBA and chemical splash suit.

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Minimise dust generation and accumulation. Do not breathe dusts or mists and prevent contact with eyes, skin and clothing. Do not ingest. Wear protective gloves/protective clothing/eye protection/face protection (see SECTION 8). Avoid contact with metals. Avoid contact with hot surfaces.
Storage	Store in a cool, dry and well-ventilated place (corrosives area), out of direct sunlight. Keep container tightly closed. Hygroscopic: avoid exposure to air. Protect from moisture. Keep away from heat and sources of ignition - No smoking. Keep away from food/feedstuffs and incompatible materials (see SECTION 10). Store locked up.
Container	Keep only in original container or corrosive resistant container. Do not store in metal containers.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	No specific exposure standards are available for this product.
Exposure Limits	No Data Available
Biological Limits	No information available.
Engineering Measures	Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
Personal Protection Equipment	<ul style="list-style-type: none">- Respiratory protection: In case of inadequate ventilation, wear respiratory protection. Recommended: Supplied air respirator (refer to AS/NZS 1715 & 1716).- Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: Wear chemical splash goggles; If the face is at risk, a protective shield must also be worn.- Hand protection: Wear protective gloves. Recommended: Natural rubber/Natural latex; Polychloroprene; Nitrile rubber/Nitrile latex; Butyl rubber; Fluorocarbon rubber; Polyvinyl chloride.- Skin/body protection: Wear appropriate personal protective clothing to prevent skin contact. Recommended: Wear appropriate chemically protective (acid resistant) clothing (or thigh long apron) and acid-resistant boots.
Special Hazards Precautions	No information available.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Wash skin thoroughly with soap and water before breaks and at the end of work. Remove/take off immediately all contaminated clothing. Wash contaminated clothing before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	Crystalline
Odour	Odourless
Colour	White

pH	<1 @ 20 °C
Vapour Pressure	<1 hPa (@ 20 °C)
Relative Vapour Density	No Data Available
Boiling Point	200 (decomposes) °C
Melting Point	73.6 °C
Freezing Point	No Data Available
Solubility	Soluble in water
Specific Gravity	No Data Available
Flash Point	No Data Available
Auto Ignition Temp	No Data Available
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	180 °C
Density	1.651 g/cm ³
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	No information available.
Potential for Dust Explosion	Not explosive.
Fast or Intensely Burning Characteristics	No information available.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	Corrosive solutions are formed in the presence of water.
Properties That May Initiate or Contribute to Fire Intensity	Non-combustible; Material itself does not burn.
Reactions That Release Gases or Vapours	Fire or heat will produce irritating, toxic and/or corrosive gases, including oxides of phosphorus; phosphorus trihydride (phosphine).
Release of Invisible Flammable Vapours and Gases	Contact with metals may evolve flammable hydrogen gas.

10. STABILITY AND REACTIVITY

General Information	May be corrosive to metals. Contact with metals may evolve flammable hydrogen gas.
Chemical Stability	The product is chemically stable under standard ambient conditions (room temperature).
Conditions to Avoid	Avoid generating dust. Avoid exposure to air and moisture.
Materials to Avoid	Incompatible/reactive with strong bases, oxidising agents, metals.

Hazardous Decomposition Products	Fire or heat will produce irritating, toxic and/or corrosive gases, including oxides of phosphorus; phosphorus trihydride (phosphine).
Hazardous Polymerisation	Has not been reported.

11. TOXICOLOGICAL INFORMATION

General Information	<ul style="list-style-type: none">- Acute toxicity: Harmful if swallowed (corrosive effects on the gastrointestinal tract).- Skin corrosion/irritation: Causes severe skin burns. Corrosive to skin; Skin contact can produce inflammation and blistering. The amount of tissue damage depends on length of contact.- Eye damage/irritation: Causes serious eye damage. Corrosive to eyes; Eye contact can result in corneal damage or blindness.- Respiratory/skin sensitisation: No information available.- Germ cell mutagenicity: Not considered to have genotoxic potential.- Carcinogenicity: No information available.- Reproductive toxicity: Not a reproductive or developmental toxicant.- STOT (single exposure): Inhalation of dust will produce irritation to gastro-intestinal or respiratory tract, characterised by burning, sneezing and coughing. Severe over-exposure can produce lung damage, choking, unconsciousness or death.- STOT (repeated exposure): Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage.- Aspiration toxicity: No information available.
Acute	
Ingestion	Acute toxicity (Oral): <ul style="list-style-type: none">- LD50, Rat: 1,895 mg/kg
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	Aquatic toxicity: <ul style="list-style-type: none">- LC50, Fish (Brachydanio rerio): 6,980 - 9,784 mg/l (96 h) [Supplier's SDS (IUCLD)].
Persistence/Degradability	No information available.
Mobility	No information available.
Environmental Fate	Prevent entry into drains and waterways.
Bioaccumulation Potential	No information available.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of contents/container through a licensed professional waste disposal service and in accordance with local/regional/national regulations.
Special Precautions for Land Fill	Burn in a chemical incinerator equipped with an afterburner and scrubber, but exert extra care in igniting as this material is highly flammable.

14. TRANSPORT INFORMATION

Land Transport (Australia)

ADG Code

Proper Shipping Name	PHOSPHOROUS ACID
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
EPG	37 Toxic And/Or Corrosive Substances Non-Combustible
UN Number	2834
Hazchem	2X
Pack Group	III
Special Provision	No Data Available

Land Transport (Malaysia)

ADR Code

Proper Shipping Name	PHOSPHOROUS ACID
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
EPG	37 Toxic And/Or Corrosive Substances Non-Combustible
UN Number	2834
Hazchem	2X
Pack Group	III
Special Provision	No Data Available

Land Transport (New Zealand)

NZS5433

Proper Shipping Name	PHOSPHOROUS ACID
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
EPG	37 Toxic And/Or Corrosive Substances Non-Combustible
UN Number	2834
Hazchem	2X
Pack Group	III
Special Provision	No Data Available

Land Transport (United States of America)

US DOT

Proper Shipping Name	PHOSPHOROUS ACID
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
ERG	154 Substances - Toxic and/or Corrosive (Non-Combustible)
UN Number	2834
Hazchem	2X
Pack Group	III
Special Provision	No Data Available

Sea Transport

IMDG Code

Proper Shipping Name	PHOSPHOROUS ACID
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Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
UN Number	2834
Hazchem	2X
Pack Group	III
Special Provision	No Data Available
EMS	F-A, S-B
Marine Pollutant	No

Air Transport

IATA DGR

Proper Shipping Name	PHOSPHOROUS ACID
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
UN Number	2834
Hazchem	2X
Pack Group	III
Special Provision	No Data Available

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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15. REGULATORY INFORMATION

General Information	No Data Available
Poisons Schedule (Aust)	Schedule 5

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	Additives Process Chemicals and Raw Materials Corrosive Group Standard 2020 HSR002491 *HSR003414 (Revoked)
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National/Regional Inventories

Australia (AIC)	Listed
Canada (DSL)	Not Determined
Canada (NDSL)	Not Determined
China (IECSC)	Not Determined
Europe (EINECS)	233-663-1

Europe (REACH)	Not Determined
Japan (ENCS/METI)	Not Determined
Korea (KECI)	Not Determined
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Not Determined
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Not Determined
USA (TSCA)	Not Determined

16. OTHER INFORMATION

Related Product Codes	PHOACI0001, PHOACI0007, PHOACI0012, PHOACI0013, PHOACI0014, PHOACI0015, PHOACI0016, PHOACI0017, PHOACI0020, PHOACI0031, PHOACI0040, PHOACI0041, PHOACI0042, PHOACI0043, PHOACI1000, PHOACI1001, PHOACI1002, PHOACI1003, PHOACI1004, PHOACI1005, PHOACI1006, PHOACI1007, PHOACI1008, PHOACI1009, PHOACI1010, PHOACI1011, PHOACI1012, PHOACI1013, PHOACI1014, PHOACI1015, PHOACI1016, PHOACI1017, PHOACI1018, PHOACI1019, PHOACI1020, PHOACI1021, PHOACI1022, PHOACI1023, PHOACI1024, PHOACI1025, PHOACI1026, PHOACI1027, PHOACI1028, PHOACI1030, PHOACI1032, PHOACI1035, PHOACI1037, PHOACI1500, PHOACI1501, PHOACI1800, PHOACI1801, PHOACI1802, PHOACI1803, PHOACI1804, PHOACI1805, PHOACI1806, PHOACI1807, PHOACI1808, PHOACI1809, PHOACI2000, PHOACI2001, PHOACI2100, PHOACI2500, PHOACI2700, PHOACI3000, PHOACI3500, PHOACI4000, PHOACI4500, PHOACI5000, PHOACI5500, PHOACI6000, PHOACI6001, PHOACI6500, PHOACI6501, PHOACI7000, PHOACI7500, PHOACI7800, PHOACI8000, PHOACI8001, PHOACI8002, PHOACI8003, PHOACI8004, PHOACI8005, PHOACI8009, PHOACI8010, PHOACI8011, PHOACI8015, PHOACI8016, PHOACI8017, PHOACI8019, PHOACI8020, PHOACI8100, PHOACI9000, PHOACI9200, PHOACI9300, PHOACI9400, PHOACI9500
Revision	4
Revision Date	14 Feb 2020
Key/Legend	<p>< Less Than > Greater Than</p> <p>AICS Australian Inventory of Chemical Substances atm Atmosphere CAS Chemical Abstracts Service (Registry Number) cm² Square Centimetres CO₂ Carbon Dioxide COD Chemical Oxygen Demand deg C (°C) Degrees Celcius EPA (New Zealand) Environmental Protection Authority of New Zealand deg F (°F) Degrees Farenheit g Grams g/cm³ Grams per Cubic Centimetre g/l Grams per Litre HSNO Hazardous Substance and New Organism IDLH Immediately Dangerous to Life and Health immiscible Liquids are insoluable in each other. inHg Inch of Mercury inH₂O Inch of Water K Kelvin kg Kilogram kg/m³ Kilograms per Cubic Metre lb Pound</p>

LC50 LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.

LD50 LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.

ltr or **L** Litre

m³ Cubic Metre

mbar Millibar

mg Milligram

mg/24H Milligrams per 24 Hours

mg/kg Milligrams per Kilogram

mg/m³ Milligrams per Cubic Metre

Misc or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.

mm Millimetre

mmH₂O Millimetres of Water

mPa.s Millipascals per Second

N/A Not Applicable

NIOSH National Institute for Occupational Safety and Health

NOHSC National Occupational Health and Safety Commission

OECD Organisation for Economic Co-operation and Development

Oz Ounce

PEL Permissible Exposure Limit

Pa Pascal

ppb Parts per Billion

ppm Parts per Million

ppm/2h Parts per Million per 2 Hours

ppm/6h Parts per Million per 6 Hours

psi Pounds per Square Inch

R Rankine

RCP Reciprocal Calculation Procedure

STEL Short Term Exposure Limit

TLV Threshold Limit Value

tne Tonne

TWA Time Weighted Average

ug/24H Micrograms per 24 Hours

UN United Nations

wt Weight