



# SAFETY DATA SHEET

**PRODUCT NAME:** Phosphoric Acid 85%

Issue Date: October 22

## IDENTIFICATION

**Product Name:** Phosphoric Acid  
**Other Names:** Orthophosphoric Acid  
**Product Code:** CPA1, CPA21, ZPHOSA  
**Uses:** Manufacture of super phosphate fertilizers, phosphate salts, detergents. Used as an acid catalyst in ethylene and purifying hydrogen peroxide. Used in dental cement, process engraving and as an analytical agent. In food and soft drinks for sharp taste.  
**Supplier:** HamChem Hamilton Chemicals Ltd, 75 Ruffell Rd, Hamilton  
Phone: 079744971 Web: [www.hamchem.co.nz](http://www.hamchem.co.nz) Email: [info@hamchem.nz](mailto:info@hamchem.nz)

- In emergency dial 111, and then ask for Fire, Ambulance or Police as necessary.
- In case of poisoning phone National Poisons Centre – 0800 764 766

## HAZARD IDENTIFICATION



### GHS Classifications

Corrosive to Metals – Category 1  
Acute Toxicity (Oral) – Category 4  
Skin Corrosion – Category 1C  
Serious Eye Damage – Category 1

**Signal Word:** DANGER

### Hazard Statements

H290 – May be corrosive to metals  
H302 – Harmful if swallowed  
H314 – Causes severe skin burns and eye damage  
H318 – Causes serious eye damage

### Prevention

P234 – Keep only in original packaging  
P264 – Wash hands thoroughly after handling  
P270 – Do not eat, drink or smoke when using this product  
P260 – Do not breathe dusts or mists  
P280 – Wear protective gloves/clothing and eye/face protection

### Response

P390 – Absorb spillage to prevent material damage  
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.  
P363 – Wash contaminated clothing before reuse  
P304+P340 – IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P310 – Immediately call a POISON CENTRE or Doctor

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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 CENTRE or Doctor

#### Storage

P405 – Store locked up

#### Disposal

P501 - Dispose of contents/container to an approved waste facility in accordance with local regulations

<b>COMPOSITION &amp; INFORMATION ON INGREDIENTS</b>
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Chemical Entity	CAS No.	Proportion (%)
Phosphoric Acid	7664-38-2	85
Water	7732-18-5	Balance

<b>FIRST AID MEASURES</b>
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**For advice contact the National Poison Centre (0800 POISON or 0800 764 766) or a Doctor at once**

**If swallowed:** Urgent hospital treatment is likely to be needed. If swallowed do NOT induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. Observe the patient carefully. Never give liquid to a person showing signs of being sleepy or with reduced awareness e.g., losing consciousness. Give water to rinse out mouth, and then provide liquid slowly. Transport to hospital or Doctor without delay.

**If on skin:** Immediately flush body and clothes with large amounts of water, using safety shower if available. Quickly remove contaminated clothing, including footwear. Wash skin and hair with running water. Continue flushing with water until advised to stop by the National Poison Information Centre. Transport to a hospital, Doctor if irritation persists.

**If inhaled:** If fumes or combustion products are inhaled, remove from contaminated area. Lay patient down, keep warm, rested and in a position comfortable for breathing. Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. Transport to hospital or Doctor without delay.

**If in eyes:** Immediately hold eyelids apart and flush the eye continuously with running water. Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids (lifting the upper and lower lids) occasionally. Continue flushing for at least 15 minutes (as long as possible, preferably). Transport to hospital or Doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

**Note to Physician:** For acute or short-term repeated exposures to strong acids:

Airway problems may arise from laryngeal oedema and inhalation exposure. Treat with 100% oxygen initially. Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling. Strong acids produce a coagulation necrosis characterised by formation of a coagulum (eschar) as a result of the desiccating action of the acid on proteins in specific tissues.

**Ingestion:** Immediate dilution (milk or water) within 30 minutes post ingestion is recommended. DO NOT attempt to neutralize the acid since exothermic reaction may extend the corrosive injury. Be careful to avoid further vomit since re-exposure of the mucosa to the acid is harmful. Limit fluids to one or two glasses in an adult. Charcoal has no place in acid management. Some authors suggest the use of lavage within 1 hour of ingestion.

**Skin:** Skin lesions require copious saline irrigation. Treat chemical burns as thermal burns with non-adherent gauze and wrapping. Deep second-degree burns may benefit from topical silver sulfadiazine.

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**Eye:** Eye injuries require retraction of the eyelids to ensure thorough irrigation of the conjunctival cul-de-sacs. Irrigation should last at least 20-30 minutes. DO NOT use neutralising agents or any other additives. Several litres of saline are required. Cycloplegic drops, (1% cyclopentolate for short-term use or 5% homatropine for longer term use) antibiotic drops, vasoconstrictive agents or artificial tears may be indicated dependent on the severity of the injury. Steroid eye drops should only be administered with the approval of a consulting ophthalmologist). [Ellenhorn and Barceloux: Medical Toxicology].

**Long term effects:** Repeated or prolonged exposure to acids may result in the erosion of teeth, swelling and/or ulceration of the mouth lining. Irritation of airways to lung, with cough, and inflammation of lung tissue often occurs. Chronic exposure may inflame the skin or conjunctiva. Substance accumulation, in the human body, may occur and cause some concern following repeated or long-term occupational exposure. Sodium phosphate dibasic can cause stones in the kidney, loss of mineral from the bones and loss of thyroid gland function.

<b>FIRE FIGHTING MEASURES</b>
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**Extinguishing media:** Water spray or fog, foam, dry chemical powder, carbon dioxide.

**Fire fighting:** Alert Fire Brigade and tell them location and nature of hazard. Wear full body protective clothing with breathing apparatus. Use firefighting procedures suitable for surrounding area. Do not approach containers suspected to be hot. Cool fire exposed containers with water spray from a protected location. If safe to do so, remove containers from path of fire. Equipment should be thoroughly decontaminated after use. Spillage and decontamination run-off may be washed to drains with large quantities of water. Avoid unnecessary pollution of watercourses.

**Fire/explosion hazard:** Non-combustible, will not burn but may decompose to produce corrosive and/or toxic fumes. Not considered to be a significant fire risk. Acids may react with metals to produce hydrogen, a highly flammable and explosive gas. Heating may cause expansion or decomposition leading to violent rupture of containers.

**Hazards from combustion products:** May emit corrosive, poisonous fumes. May emit acrid smoke. Decomposition may produce toxic fumes of: phosphorus oxides (PO<sub>x</sub>).

**Fire incompatibility:** None known.

**Personal Protective Equipment:** Firefighters should wear full protective firefighting clothing (includes firefighting helmet, coat, trousers, boots and gloves). Liquid-tight chemical protective clothing in combination with breathing apparatus is required.

<b>ACCIDENTAL RELEASE MEASURES</b>
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**Minor spills:** Environmental hazard – contain spillage. Clean up all spills immediately. Avoid breathing vapours and contact with skin and eyes. Control personal contact by using protective equipment. Contain and absorb spill with sand, earth, inert material or vermiculite. Wipe up. Place in a suitable labeled container for waste disposal.

**Major spills:** Environmental hazard – contain spillage. Chemical class: acidic compounds, inorganic. For release onto land: recommended sorbents listed in order of priority. Clear area of personnel and move upwind. Alert Fire Brigade and tell them location and nature of hazard. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or water course. Stop leak if safe to do so. Contain spill with sand, earth and vermiculite. Collect recoverable product into labeled containers for recycling. Neutralize/decontaminate residue. Collect solid residues and seal in labeled drums for disposal. Wash area and prevent runoff into drains. After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using. If contamination of drains or waterways occurs, advise emergency services.

**EMERGENCY RESPONSE PLANNING GUIDELINE (ERPG)**

Chemical (CAS #)	ERPG-1	ERPG-2	ERPG-3	LEL
Phosphoric Acid	3	30	150	-

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**ERPG-3** is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing life-threatening health effects.

**ERPG-2** is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action.

**ERPG-1** is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing other than mild transient health effects or perceiving a clearly defined, objectionable odour.

**LEL** – Lower explosive limit warning.

<b>HANDLING &amp; STORAGE</b>
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**Procedure for handling:** DO NOT allow clothing wet with material to stay in contact with skin. Avoid all personal contact, including inhalation. Wear protective clothing when risk of exposure occurs. Use in a well-ventilated area. When handling, DO NOT eat, drink or smoke. Keep containers securely sealed when not in use. Avoid physical damage to containers. Always wash hands with soap and water after handling. Work clothes should be laundered separately. Launder contaminated clothing before re-use. Use good occupational work practice. Observe manufacturer's storing and handling recommendations. Atmosphere should be regularly checked against established exposure. Always add corrosive liquid to water while stirring to prevent release of heat, steam and fumes. DO NOT add water to corrosive liquids.

**Suitable packaging:** Original packaging. Corrosive resistant packaging with a resistant inner liner.

**Storage incompatibility:** Reacts vigorously with alkalis (bases). Reacts with mild steel, galvanized steel/zinc producing hydrogen gas which may form an explosive mixture with air.

**Storage requirements:** Store locked up. Store in original containers. Keep containers securely sealed. Store in a cool, dry, well-ventilated area. Store away from incompatible materials and foodstuff containers. Protect containers against physical damage and check regularly for leaks. Observe manufacturer's storing and handling recommendations.

<b>EXPOSURE CONTROLS &amp; PERSONAL PROTECTION</b>
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**Exposure standards:** WES – TWA 1mg/m<sup>3</sup>

**Material data:** ACGIH Threshold Limit Value (TLV) 2001: 1mg/m<sup>3</sup> TWA, 3mg/m<sup>3</sup> STEL.

The saturated vapour concentration of phosphoric acid exceeds the TLV. The TLV-TWA is based by analogy from comparable experience and data for sulfuric acid. Exposure at or below this limit is thought to prevent throat irritation amongst unacclimatised workers. Fumes of phosphorus pentoxide at concentrations between 0.8 and 5.4 mg/m<sup>3</sup> were reported to be noticeable but not uncomfortable whilst concentrations between 3.6 and 11.3 mg/m<sup>3</sup> produced coughing in unacclimatised workers but were tolerable. Concentrations of 100 mg/m<sup>3</sup> were unbearable except in injured workers.

## **ENGINEERING CONTROLS**

**Ventilation System** A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. 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. Refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

## **PERSONAL PROTECTION EQUIPMENT (PPE)**

**Personal Respirators** For conditions of use where exposure to vapours is apparent and engineering controls are not feasible, a particulate respirator may be worn. For exposure to vapour concentrations of 50mg/m<sup>3</sup> or less use a N100 respirator or better. For more information see Australian/New Zealand Standard, AS/NZS 1715:2009 and AS/NZS 1716:2003.

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**Skin Protection** Wear impervious protective clothing, including chemical resistant boots, rubber gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Refer to AS/NZS 2161.1:2000 Occupational Protective Gloves – Selection, use and maintenance; AS 2210 for Safety footwear; AS 3765 Clothing for protection against hazardous chemicals.

**Eye Protection** Use chemical safety goggles and a full-face shield where splashing is possible. Refer to Personal eye protection. Part 1: Eye and face protectors for occupational applications. Australian/New Zealand Standard: AS/NZS 1337.1:2010. Maintain eye wash fountain and quick-drench facilities in work area.

<b>PHYSICAL &amp; CHEMICAL PROPERTIES</b>
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<b>Appearance:</b>	Colourless, transparent and syrupy liquid
<b>State:</b>	Liquid
<b>Molecular Weight:</b>	98.00 (100%)
<b>Melting Range (°C):</b>	21(85%) – 17.5 (75%)
<b>Boiling Range (°C):</b>	154 (85%), 135 (75%)
<b>Solubility in water (g/L):</b>	Miscible
<b>pH (1% solution):</b>	1.5 (0.1 N aqueous solution)
<b>pH (as supplied):</b>	Not available
<b>Specific Gravity:</b>	1.69 @ 25°C
<b>Bulk Density:</b>	Not available
<b>Volatile Component (%vol): 1</b>	15-25 (water)
<b>Relative Vapour Density (air = 1):</b>	Not available
<b>Lower Explosive Limit (%):</b>	Not applicable
<b>Autoignition temperature (°C):</b>	Not available
<b>Vapour Pressure (kPa):</b>	0.75 75% @ 20°C
<b>Flash Point (°C):</b>	Non flammable
<b>Upper Explosive Limit (%):</b>	Not applicable
<b>Decomposition Temperature (°C):</b>	Not available
<b>Viscosity:</b>	Not available

<b>STABILITY &amp; REACTIVITY</b>
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**Chemical stability:** Product is stable under normal conditions of use, storage, and temperature.

**Conditions to avoid:** Avoid excessive heat, direct sunlight, static discharges, moisture, and temperature extremes. Keep containers dry and tightly closed to avoid moisture absorption and contamination.

**Incompatible materials:** Contact with alkaline material liberates heat. Reaction with metals such as aluminium and iron may release hydrogen. In the presence of chlorides, it may corrode steel to form explosive hydrogen gas. Reacts with cyanide compounds to release gaseous hydrogen cyanide. May generate flammable and or toxic gases in contact with dithiocarbonates, isocyanates, mercaptans, nitrides, nitriles, sulphides, and strong reducing agents. Reacts violently with sodium tetrahydro borate. Forms an explosive mixture with nitromethane.

**Hazardous decomposition products:** Thermal decomposition can lead to release of oxides of phosphorus.

**Hazardous reactions:** Hazardous polymerization will not occur. This product can initiate polymerization of certain classes of organic compounds.

<b>TOXICOLOGICAL INFORMATION</b>
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**ACUTE HEALTH EFFECTS**

The primary effects of this chemical are due to its corrosive nature. Absorption of this chemical can occur through inhalation, ingestion, and dermal contact.

**Swallowed:** Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual. The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion.

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**Eye:** The material can produce chemical burns to the eye following direct contact. Vapours or mists may be extremely irritating. If applied to the eyes, this material causes severe eye damage.

**Skin:** The material can produce chemical burns following direct contact with the skin. The material may cause moderate inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterised by redness, swelling and blistering.

Skin contact with the material may damage the health of the individual through entry into the blood-stream; systemic effects may result following absorption. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

**Inhaled:** Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may produce serious damage to the health of the individual. High concentrations cause inflamed airways and watery swelling of the lungs with oedema.

## **CHRONIC HEALTH EFFECTS**

Repeated or prolonged exposure to acids may result in the erosion of teeth, swelling and/or ulceration of mouth lining. Irritation of airways to lung, with cough, and inflammation of lung tissue often occurs. Chronic exposure may inflame the skin or conjunctiva. Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. Sodium phosphate dibasic can cause stones in the kidney, loss of mineral from the bones and loss of thyroid gland function.

## **TOXICITY**

Acute Oral Toxicity, Rat, LD50: 1530 mg/kg

Reference Source: Grande Paroisse SA Paris la Defense 5 TRGS 900 (1993) [IUCID 2000].

Acute Dermal Toxicity, Rabbit, LD50: 2740 mg/kg

Reference Source: Grande Paroisse SA Paris la Defense 5 TRGS 900 (1993) [IUCID 2000].

## **IRRITATION**

Eyes: Rabbit: Severely irritating.

Reference Source: Payne MP, Shillaker RO, Wilson AJ. Source: TA:HSE Toxicity Review PG:22 p YR:1993 IP: VI:30 [TOXLINE]

Skin: Rabbit: Corrosive.

Reference Source: Grande Paroisse SA Paris la Defense 5 Skin irritation tests on various concentrations of phosphoric acid, Randall, D.J., Robinson, E.C., Acute Tox. Data 1 (1), 68-9, 1990 [IUCID 2000].

**Carcinogenic effects:** Not classified or listed by IARC, NTP, OSHA, and ACGIH.

**Mutagenic effects:** No data available.

**Reproductive effects:** No data available.

**Aspiration hazard:** No data available.

**Specific target organ toxicity:** No data available.

**Sensitisation (respiratory/contact):** No data available.

<b>ECOLOGICAL INFORMATION</b>
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## **ECOTOXICITY**

Toxic to aquatic life. Harmful to terrestrial vertebrates.

## **ECOTOXICITY DATA**

Aquatic toxicity, Fish, 96hr, LC50: 138 mg/l

Oral (Rat) LD50: 1530 mg/kg

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Reference Source: Grande Paroisse SA Paris la Defense 5 TRGS 900 (1993) [IUCRID 2000]

**Persistence and Degradability:** No data available. The acidity of this material is expected to be readily reduced in natural water, however, phosphate may persist indefinitely or accumulate in biological systems. Phosphates in waterways accelerate algae and plant growth resulting in reduction in the water quality and depleting the water body of oxygen.

**Mobility:** Completely soluble in water at 20°C

**Bioaccumulation:** Bioaccumulation is not anticipated.

**BOD and COD:** Not applicable.

**Products of biodegradation:** Standard tests of biodegradation are not applicable to inorganic compounds.

The substance may cause a localised decrease in pH resulting in adverse effects on the aquatic environment.

<b>DISPOSAL CONSIDERATIONS</b>
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Disposal of Hazardous Substances is subject to the Resource Management Act and Council By-Laws in addition to HSNO requirements.

**Product:** Recycle wherever possible. The product may be treated so that it is no longer hazardous. This includes incineration at an approved site or burial in a landfill in such a manner that it will not lead to any adverse health effects to any person or exceed any TEL (tolerable exposure limit) set by the Authority for this substance. Treatment in a biological wastewater treatment system with prior approval and arrangement is also permissible providing that the substance is rendered non-hazardous and does not pose any adverse effects to human health or the environment. Alternatively consult an approved Waste Management company for disposal options.

**Packaging:** Packaging should be rendered incapable of containing any material. Bury at an authorised landfill. Alternatively consult an approved Waste Management company for disposal options. Containers may be recycled if they have been treated to remove residual traces of this substance or if any residual traces have been treated to render them non-hazardous. Observe all label safeguards until containers are cleaned and destroyed. Where possible retain label warnings and SDS and observe all notices pertaining to the product.

<b>TRANSPORT INFORMATION</b>
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<b>UN Number:</b>	1805
<b>Proper Shipping name:</b>	Phosphoric Acid, Solution
<b>Dangerous Goods Class:</b>	8 - Corrosive
<b>Packing group:</b>	III
<b>Hazchem Code:</b>	2R

<b>REGULATORY INFORMATION</b>
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**EPA Approval Code:** HSR001545 – Phosphoric Acid, >25% aqueous solution

**HSNO Classifications:** 8.1A, 6.1D (O), 8.2C, 8.3A

<b>OTHER INFORMATION</b>
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**End of SDS.**