SAFETY DATA SHEET

o-Phosphoric Acid (85 %) — Laboratory Reagent, Analytical Reagent and Ultrapure PPB grades

Prepared in accordance with 29 CFR 1910.1200 (OSHA Hazard Communication Standard, 2024 amendment / GHS Rev. 7), UN GHS, US DOT 49 CFR Parts 171–180 and Canada HPR (SOR/2015-17)

SDS number	**HP-SDS-26800-US-01**
Version / Revision	Version 1.0
Issue date	01 November 2026
Supersedes	Not applicable (first issue)
Review due	01 November 2029, or earlier if new hazard information becomes available
Companion sheet	A GB/EU sheet for supply by Highpuris Ltd will be issued separately. Do not substitute one sheet for the other — the classification is the same but the exposure limits, supply restrictions and legal references are not.

1 SECTION 1: IDENTIFICATION

1.1 Product identifier

Product name	**o-Phosphoric Acid (85 %)**
Product description	Concentrated aqueous solution of orthophosphoric acid, nominal 85 % w/w (≥ 85.0 % w/w for Laboratory Reagent and Analytical Reagent grades; 84.0 – 86.0 % w/w for Ultrapure PPB grade). A clear, colourless, viscous liquid. All grades carry the same hazard classification and transport description.
Synonyms	Orthophosphoric acid; Phosphoric(V) acid; Hydrogen phosphate; Acide phosphorique
CAS number	7664-38-2
EC (EINECS) number	231-633-2
EU Index number	015-011-00-6
REACH registration number	Not applicable to supply in the United States. A REACH registration (or coverage under a registrant's supply chain) is required before placement in the EU/EEA or Northern Ireland; UK REACH applies to Great Britain.
Molecular formula	H_3PO_4 (aq)
Molecular weight	98.00 g/mol
Highpuris product code	**26800** — the 9-digit catalogue SKUs below are built as product code · grade · pack
Pack sizes covered	500 mL, 1 L and 2.5 L glass bottles (GL45), in UN-certified multi-unit shipping cases

Catalogue SKUs covered by this SDS

Grade	HPO assay	Pack size and SKU
Laboratory Reagent	≥ 85.0 %	500 mL **268000123** · 1 L **268000141** · 2.5 L **268000142**
Analytical Reagent	≥ 85.0 %	500 mL **268000223** · 1 L **268000241** · 2.5 L **268000242**
Ultrapure PPB	84.0–86.0 %	500 mL **268000423** · 1 L **268000441** · 2.5 L **268000442**

1.2 Relevant identified uses of the substance and uses advised against

- **Identified uses:** laboratory analytical reagent; acidification and pH adjustment, buffer and HPLC mobile-phase preparation, sample digestion, titration, extraction, etching and cleaning; trace-metal (ppb) applications in semiconductor, photovoltaic and ICP-MS laboratories; further formulation and repackaging by professional users.

- **Uses advised against:** not for food, drug, pesticide, biocidal, cosmetic, medicinal, household or consumer use. Not supplied as a food-grade, FCC or USP material. Not intended for use by the general public. Not to be used in any application resulting in human ingestion or direct dermal application.

1.3 Details of the supplier of the safety data sheet

Supplier	**Highpuris LLC** 9920 Pacific Heights Blvd, Suite 150 San Diego, CA 92121-4361 United States of America
Telephone	+1 (401) 288-1196
E-mail (SDS contact)	admin@highpuris.com · noreply@highpuris.com
Website	www.highpuris.com

1.4 Emergency telephone number

24-hour emergency (USA / Canada)	**CHEMTREC 1-800-424-9300**
24-hour emergency (international)	**CHEMTREC +1 703-527-3887** (collect calls accepted)
CHEMTREC contract number	**CCN 1024800** — Highpuris LLC, registered August 2026. Quote this number when calling; it must appear with the emergency telephone number on shipping papers under 49 CFR 172.604
Non-emergency (business hours)	+1 (401) 288-1196, 09:00 – 17:00 Pacific Time, Monday to Friday

2 SECTION 2: HAZARD(S) IDENTIFICATION

2.1 Classification of the substance or mixture

Classification under 29 CFR 1910.1200 (OSHA HCS 2024), UN GHS Rev. 7, EU CLP (EC) No 1272/2008 and Canada HPR:

Hazard class	Category	Hazard statement
Corrosive to metals	Category 1	H290 — May be corrosive to metals
Acute toxicity, oral	Category 4	H302 — Harmful if swallowed
Skin corrosion / irritation	Category 1B	H314 — Causes severe skin burns and eye damage
Serious eye damage / eye irritation	Category 1	H318 — Causes serious eye damage
Specific target organ toxicity, single exposure (respiratory tract irritation)	Category 3	H335 — May cause respiratory irritation

H318 is not required on the label where H314 is assigned (GHS labelling precedence rules). The harmonised EU classification for phosphoric acid (Index No. 015-011-00-6; phosphoric acid … %) is Skin Corr. 1B, H314, with specific concentration limits: Skin Corr. 1B at C ≥ 25 %; Skin Irrit. 2 / Eye Irrit. 2 at 10 % ≤ C < 25 %. The classification for corrosivity to metals (H290), acute oral toxicity (H302) and respiratory tract irritation (H335) follows the OSHA HCS classification of the manufacturer's safety data sheet and is not part of the harmonised entry.

2.2 GHS label elements

Hazard pictograms — required on the label and on every shipped container:



GHS05 — Corrosion



GHS07 — Exclamation mark

Pictograms must be a square set on a point, with a black symbol on a white ground and a red border wide enough to be clearly visible. Minimum size is one-fifteenth of the label surface area and never smaller than 10 mm × 10 mm (16 mm × 16 mm where the package holds more than 3 L). Where the corresponding DOT transport label is displayed on the outer packaging, the duplicate GHS pictogram may be omitted from that outer packaging under 29 CFR 1910.1200(f)(5); all pictograms remain required on the inner container label.

Signal word	**DANGER**
Hazard statements	H290 — May be corrosive to metals. H302 — Harmful if swallowed. H314 — Causes severe skin burns and eye damage. H335 — May cause respiratory irritation.

Precautionary statements — Prevention

- P234 — Keep only in original packaging.
- P260 — Do not breathe mist, vapours or spray.
- P264 — Wash hands and exposed skin thoroughly after handling.
- P270 — Do not eat, drink or smoke when using this product.
- P271 — Use only outdoors or in a well-ventilated area.
- P280 — Wear protective gloves, protective clothing, eye protection and face protection.

Precautionary statements — 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 person 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.
- P390 — Absorb spillage to prevent material damage.

Precautionary statements — Storage and disposal

- P403 + P233 — Store in a well-ventilated place. Keep container tightly closed.
- P402 — Store in a dry place.
- P405 — Store locked up.
- P406 — Store in a corrosive-resistant polypropylene container with a resistant inner liner.
- P501 — Dispose of contents and container in accordance with federal, state, provincial and local regulations.

2.3 Other hazards which do not result in classification

- Viscous and hygroscopic liquid. The 85 % solution freezes / crystallises at approximately 21 °C (70 °F): crystals or a solid mass may form in a cool store room. This is not a hazard in itself, but the product should be kept warm and re-liquefied gently before use — never with direct heat or in a sealed container.
- Corrosive to many common metals (aluminium, zinc, iron, carbon steel, brass, copper), liberating flammable hydrogen gas which can accumulate in container headspace or confined spaces.
- Reacts exothermically with bases and alkaline materials, and dilution with water generates heat. Always add acid to water, never water to acid.
- Contact with nitromethane or with chlorides or sulfides can liberate hazardous products (including hydrogen chloride and hydrogen sulfide gases); reacts with strong oxidising agents, alcohols, amines and halogenated agents (see Section 10).
- Thermal decomposition produces oxides of phosphorus. At ambient temperature the vapour pressure is low (2 hPa at 20 °C) and an inhalation hazard arises mainly from mist or heated material.
- The substance does not meet PBT or vPvB criteria under REACH Annex XIII and is not an identified endocrine disruptor.

2.4 Unknown acute toxicity

Not applicable. Acute toxicity data are available for the substance; no component of unknown acute toxicity is present.

3 SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Mixture — concentrated aqueous solution (85 % w/w).

Chemical name	CAS No.	EC No.	Conc. (% w/w)	GHS classification of the ingredient
Orthophosphoric acid	7664-38-2	231-633-2	84 – 86	Met. Corr. 1, H290; Skin Corr. 1B, H314; Eye Dam. 1, H318
Water	7732-18-5	231-791-2	14 – 16	Not classified

EU Index number for phosphoric acid: 015-011-00-6. Specific concentration limits in EU CLP Annex VI: Skin Corr. 1B / H314 at C ≥ 25 %; Skin Irrit. 2 / H315 and Eye Irrit. 2 / H319 at 10 % ≤ C < 25 %. The product classification in Section 2 additionally carries Acute Tox. 4 (H302) and STOT SE 3 (H335) from the OSHA classification of the manufacturer's safety data sheet.

Impurities and stabilising additives: none deliberately added. Trace impurities are controlled to the grade specification and are not present at levels that alter the classification.

4 SECTION 4: FIRST-AID MEASURES

4.1 Description of first-aid measures

General. Move the casualty out of the danger area. Rescuers must protect themselves — wear eye/face protection, gloves and, where mist is present, respiratory protection. Remove all contaminated clothing and footwear immediately while flushing. Never give anything by mouth to an unconscious or convulsing person. Show this Safety Data Sheet to the attending physician. Immediate medical attention is required for all exposures.
Inhalation. Move the casualty to fresh air at once, lie down and keep at rest in a position comfortable for breathing. If breathing is difficult, trained personnel should give oxygen. If breathing has stopped, give artificial respiration — do not use mouth-to-mouth; use a pocket mask with a one-way valve, a bag-valve mask or other proper respiratory medical device. Call a physician immediately. Pulmonary oedema may be delayed; keep the casualty under medical observation.
Skin contact. Immediately flush the affected area with copious quantities of lukewarm, gently flowing water for at least 15 minutes, removing contaminated clothing, shoes, gloves and jewellery while flushing. Do not attempt to neutralise the acid. Call a physician immediately. Wash contaminated clothing and gloves, including the inside, before re-use.
Eye contact. Immediately flush the eyes with lukewarm, gently flowing water for at least 15 minutes, also under the eyelids, holding the eyelids wide open. Remove contact lenses if present and if it can be done without delay; do not interrupt flushing to do so. Obtain immediate medical attention from an ophthalmologist. Continue irrigation en route to medical care.
Ingestion. Do NOT induce vomiting — re-exposure of the oesophagus and the risk of aspiration make vomiting dangerous. Clean the mouth with water. Never give anything by mouth to an unconscious person. Do not give sodium bicarbonate or other neutralising agents. Gastric lavage and emesis are contraindicated. Call a physician immediately.

4.2 Most important symptoms and effects, both acute and delayed

- Skin: causes burns — immediate pain, redness, blistering and deep chemical burns with tissue destruction.
- Eyes: corrosive to the eyes — severe pain, lacrimation, corneal burns and opacification; risk of severe damage including blindness.
- Inhalation: mist irritates the nose, throat and respiratory tract (cough, burning, chest tightness, dyspnoea); high exposure may cause chemical pneumonitis and delayed pulmonary oedema.
- Ingestion: harmful if swallowed. Causes severe swelling, severe damage to the delicate tissue and danger of perforation; burns of the mouth, throat, oesophagus and stomach.
- The product is a corrosive material and causes burns by all exposure routes.

4.3 Indication of any immediate medical attention and special treatment needed

- Treat as a severe acid burn. Symptomatic and supportive treatment.
- Following ingestion, possible perforation of the stomach or oesophagus should be investigated; endoscopy within 12 – 24 hours may be indicated to assess the extent of injury. Use of gastric lavage or emesis is contraindicated. Activated charcoal is of no value and obscures the endoscopic view.
- Monitor the airway closely after inhalation of mist; laryngeal oedema and bronchospasm may require early intubation. Observe for delayed-onset pulmonary oedema.
- Do not use chemical neutralising agents on burns or in the gastrointestinal tract.

5 SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media

- Suitable: the substance is non-flammable; use the extinguishing agent most appropriate to the surrounding fire — carbon dioxide, dry chemical, dry sand, alcohol-resistant foam or water spray/fog. Water spray may be used to cool fire-exposed containers.
- Unsuitable: no restriction is specified by the manufacturer. Do not direct a solid water jet into hot or concentrated acid — it may spatter the liquid and generate corrosive mist.

5.2 Special hazards arising from the substance or mixture

- Non-combustible; the material itself does not burn. No flash point, auto-ignition temperature or explosion limits are available for the aqueous solution. Not an oxidiser.
- Contact with metals produces hydrogen gas, which is highly flammable and forms explosive mixtures with air (4 – 75 vol %). Hydrogen may accumulate in the headspace of damaged containers.
- Thermal decomposition produces irritating gases and vapours; the hazardous combustion products are oxides of phosphorus.
- Containers may rupture violently when heated owing to internal pressure.
- The product causes severe burns of the eyes, skin and mucous membranes; fire-fighting water run-off is acidic and corrosive.

5.3 Advice for fire-fighters

- Wear a positive-pressure, pressure-demand self-contained breathing apparatus (MSHA/NIOSH-approved or equivalent) and full acid-resistant protective clothing. Structural fire-fighting turnout gear alone provides only limited protection against this material.
- Evacuate and isolate the area. Approach from upwind. Stay out of low areas where vapour may collect.
- Use water spray to cool fire-exposed containers; withdraw immediately if a rising sound from a venting safety device or discolouration of a container occurs.
- Prevent run-off water from entering drains and watercourses; collect contaminated fire-fighting water separately for disposal.
- Refer to ERG 2024 Guide 154 (Substances — toxic and/or corrosive, non-combustible).

6 SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel. Use personal protective equipment as required. Evacuate personnel to safe areas. Move upwind and keep people away from the spill or leak. Ensure adequate ventilation. Restrict access. Do not walk through spilled material — the viscous liquid is slippery. Avoid all contact with liquid and mist. Alert the site emergency response team.

For emergency responders. Do not attempt response without suitable PPE: chemical splash goggles with full face shield, acid-resistant suit and boots, butyl rubber or neoprene gloves, and a NIOSH-approved acid-gas/P100 respirator or SCBA where mist concentrations are unknown or exceed exposure limits. Ventilate confined spaces before entry. Initial isolation of at least 50 m (150 ft) in all directions for a small liquid spill is recommended; increase the distance for large spills and consult ERG Guide 154.

6.2 Environmental precautions

- Prevent entry into drains, sewers, surface water, groundwater and soil. Dyke or bund the spill. The product should not be released into the environment.
- Large amounts will affect pH and harm aquatic organisms; the phosphate released is also a plant nutrient. The acid will corrode concrete and metal drainage infrastructure.
- Report releases as required by law. Under CERCLA, a release of 5,000 lb (2,270 kg) or more of phosphoric acid in a 24-hour period must be reported immediately to the National Response Center (1-800-424-8802); for this product, 5,000 lb of phosphoric acid corresponds to approximately 5,900 lb (about 2,670 kg, roughly 420 US gal) of the 85 % solution.

6.3 Methods and material for containment and cleaning up

- Stop the leak if it can be done without risk. Upright leaking containers and transfer the contents to a sound, labelled, acid-resistant container.
- Soak up with inert absorbent material — dry sand, earth, vermiculite, diatomaceous earth or a proprietary acid absorbent — and absorb spillage to prevent material damage. Do NOT use combustible absorbents such as sawdust, paper or cloth.
- Small spills may be carefully neutralised with a dry alkaline material such as soda ash, sodium bicarbonate or lime, added slowly from a distance. Neutralisation liberates carbon dioxide, heat and spray — never confine the reaction.
- Collect the absorbed or neutralised material into a labelled, sealed, corrosion-resistant container (suitable closed container) for disposal.
- Flush the residual area with large volumes of water only after the bulk has been removed, collecting the wash water for pH adjustment and disposal. Take care: wet residue is slippery.
- Ventilate the area thoroughly and, where metals were contacted, monitor for hydrogen before releasing the area.

6.4 Reference to other sections

See Section 8 for exposure controls and personal protection, and Section 13 for disposal considerations.

7 SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

- Handle only under a chemical fume hood or with local exhaust ventilation. Open and dispense with the sash lowered.
- Wear personal protective equipment and face protection as specified in Section 8 at all times when handling. Do not get in eyes, on skin or on clothing. Do not breathe mist, vapours or spray.
- Open containers slowly to relieve any internal pressure; point the opening away from the face and body. Crystallised product may seal the closure — re-liquefy gently before opening.
- When diluting, ALWAYS add the acid slowly to water with stirring and cooling — never add water to the acid.
- Use only acid-resistant transfer equipment (PTFE, PP, HDPE, PVDF, glass). Do not use aluminium, zinc, galvanised or carbon-steel equipment — hydrogen is liberated.
- Do not eat, drink or smoke in the handling area. Wash hands and exposed skin thoroughly after handling. Do not ingest; if swallowed seek immediate medical assistance.
- Keep the container tightly closed when not in use — the product is hygroscopic and absorbs moisture from the air. Do not return unused material to the original container.

- Ensure an emergency eyewash station and safety shower are within 10 seconds' unobstructed travel of the work area.
- Empty containers retain product residue and remain corrosive — do not cut, weld, drill or reuse.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions	Keep containers tightly closed in a dry, cool, well-ventilated place in a corrosives area, away from direct sunlight and sources of heat. Keep locked up or in an area accessible only to authorised, trained personnel. The manufacturer describes the product as air- and moisture-sensitive (hygroscopic); store under an inert atmosphere where the highest purity must be preserved.
Recommended temperature	Cool ambient storage. The 85 % solution crystallises at approximately 21 °C (70 °F) and may solidify in an unheated store; this does not affect the hazard classification. Re-liquefy gently in a warm room or warm-water bath — never with direct heat, and never in a tightly sealed container that is being heated.
Containment	Store on an acid-resistant, bunded or kerbed floor with secondary containment of at least 110 % of the largest container. Segregate from other chemical classes.
Suitable materials	Original supplier packaging: borosilicate glass with PTFE-faced closures; corrosive-resistant polypropylene with a resistant inner liner, HDPE, PTFE, PVDF.
Unsuitable materials	Common metals — carbon steel, aluminium, zinc, galvanised surfaces, copper, brass and bronze (hydrogen evolution; corrosion). Concrete and limestone are attacked.
Incompatible storage	Segregate from strong oxidising agents, metals, bases (alkalis), alcohols, amines and halogenated agents; also from cyanides, sulfides and chlorides. Do not store with flammable liquids in the same cabinet.
Shelf life	Indefinite when stored as specified in unopened original packaging; ultrapure grades should be opened only in a clean environment, after which trace-metal levels can no longer be guaranteed against the released specification. Opened containers absorb water from the air, so the assay can slowly fall.

7.3 Specific end use(s)

Laboratory reagent and industrial process chemical. No further specific guidance beyond the identified uses in Section 1.2.

8 SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Occupational exposure limits — phosphoric acid (CAS 7664-38-2)

Source	Type	Value
OSHA PEL (29 CFR 1910.1000, Table Z-1)	8-hour TWA	1 mg/m³
NIOSH REL	TWA / 15-minute STEL	1 mg/m³ / 3 mg/m³
ACGIH TLV	8-hour TWA / STEL	1 mg/m³ / 3 mg/m³
NIOSH IDLH	Immediately dangerous to life or health	1,000 mg/m³
Cal/OSHA PEL (8 CCR 5155)	8-hour TWA / STEL	1 mg/m³ / 3 mg/m³
Mexico OEL (NOM-010-STPS)	TWA / STEL	1 mg/m³ / 3 mg/m³
EU IOELV (Directive 2017/164/EU and earlier)	8-hour TWA / STEL	None established
Great Britain WEL (EH40/2005)	8-hour TWA / 15-minute STEL	1 mg/m³ / 2 mg/m³
Germany AGW (TRGS 900)	8-hour TWA (inhalable fraction)	2 mg/m³

Derived No-Effect Levels (DNELs) and Predicted No-Effect Concentrations (PNECs) are not quoted in this sheet; for EU/UK use, obtain them from the registrant's extended safety data sheet. Environmental effects of the acid are governed by pH change in the receiving water.

8.2 Exposure controls

Appropriate engineering controls

- Use only under a chemical fume hood with a minimum face velocity of 0.5 m/s (100 ft/min), or under equivalent local exhaust ventilation captured at the point of generation. Ensure adequate ventilation, especially in confined areas.
- Provide general dilution ventilation sufficient to keep airborne mist well below the exposure limits. Exhaust ducting and fans must be of corrosion-resistant construction.
- Ensure that safety shower and eyewash station are close to the workstation and immediately available (ANSI/ISEA Z358.1).

Eye and face protection

- Chemical splash goggles conforming to OSHA 29 CFR 1910.133, ANSI/ISEA Z87.1 or EN 166, worn together with a full face shield whenever there is any risk of splashing, pouring or pressurised release. Ordinary safety spectacles are not adequate.

Skin and body protection

- Gloves: appropriate protective gloves to prevent skin exposure. Butyl rubber, neoprene, nitrile rubber and PVC are generally resistant to concentrated phosphoric acid; choose the thickness and material from the glove manufacturer's permeation data for the task, use heavier gloves for prolonged contact, and change gloves immediately when contaminated. Natural rubber latex is not recommended.
- Body: acid-resistant apron or coveralls over a laboratory coat for small-scale work; a full chemically resistant suit (Type 3/4, EN 14605) with hood for bulk transfer and spill response.
- Feet: closed, chemically resistant boots or overboots. Trouser legs worn outside the boots.

Respiratory protection

- Not normally required where work is carried out in an effective fume hood. Where the exposure limits may be exceeded, or if irritation or other symptoms are experienced, use a NIOSH/MSHA- or EN 149-approved respirator with an acid-gas filter (EN 14387 type E) combined with a P100/P3 particulate filter, within its assigned protection factor.
- For unknown concentrations, oxygen-deficient atmospheres, emergency response or concentrations at or above 1,000 mg/m³ (IDLH), use a positive-pressure self-contained breathing apparatus or a supplied-air respirator with escape bottle.
- Respirator use requires a written programme under 29 CFR 1910.134, including medical evaluation, fit testing and training.

Environmental exposure controls

- Do not discharge to the environment. Neutralise aqueous effluent to the pH range permitted by the receiving authority before discharge, and observe any local limit on phosphorus in effluent. Hygiene measures: handle in accordance with good industrial hygiene and safety practice.

9 SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Property	Value
Physical state	Liquid (viscous; crystallises below approximately 21 °C)
Colour	Colourless, clear, viscous
Odour	Odourless
Odour threshold	No information available
Melting point / freezing point	21 °C (69.8 °F)
Boiling point / initial boiling point	158 °C (316.4 °F)
Flammability	Not flammable (aqueous solution). No data available. Contact with metals liberates flammable hydrogen gas
Lower / upper explosion limit	Not applicable
Flash point	No information available (non-combustible aqueous solution)
Auto-ignition temperature	No data available
Decomposition temperature	300 °C
pH	< 2
Kinematic / dynamic viscosity	Dynamic viscosity 32 mPa·s at 30 °C
Solubility (water)	Miscible with water in all proportions, with evolution of heat
Solubility (other)	No information available
Partition coefficient n-octanol/water (log Kow)	Not applicable — inorganic substance, ionised in water
Vapour pressure	2 hPa (1.5 mmHg) at 20 °C
Density / relative density	1.680 g/cm³ (relative density 1.680)
Relative vapour density	3.4 (air = 1)
Particle characteristics	Not applicable (liquid)
Molecular weight	98.00 g/mol (H_3PO_4)
Evaporation rate	Not applicable

Property	Value
Oxidising properties	Not applicable (not an oxidiser)
Explosive properties	Not applicable
Surface tension	Not determined
Concentration	≥ 85.0 % w/w H_3PO_4 (Laboratory Reagent, Analytical Reagent); 84.0 – 86.0 % w/w H_3PO_4 (Ultrapure PPB)

9.2 Other information

Molecular formula H_3O_4P. Bulk density not applicable (liquid). No additional physical or chemical hazard information. Test data above relate to the concentrated aqueous solution unless otherwise stated.

10 SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

A strong, non-oxidising mineral acid that is highly corrosive in the concentrated form. Reacts exothermically with bases and with many metals, and with the other materials detailed below. Reactive hazard: none known under normal conditions of use, based on information available.

10.2 Chemical stability

Stable under the recommended storage and handling conditions. Hygroscopic — absorbs moisture from the air. Hazardous polymerisation does not occur.

10.3 Possibility of hazardous reactions

- Violent, heat-generating reaction with strong alkalis and other bases; can cause boiling and spattering. None under normal processing.
- Reaction with most common metals (aluminium, zinc, iron, steel) releases flammable hydrogen gas, which may form an explosive atmosphere in enclosed spaces or container headspace.
- Reaction with strong oxidising agents; reaction with alcohols, amines and halogenated agents.
- Contact with nitromethane is hazardous; contact with sulfides can liberate toxic hydrogen sulfide, and with chlorides (particularly on heating) hydrogen chloride.
- Dilution with water is strongly exothermic — always add acid to water.

10.4 Conditions to avoid

Incompatible products; excess heat; exposure to moisture, moist air or water (hygroscopic); contact with metals; confinement of evolved gas in closed systems; direct heating of crystallised product.

10.5 Incompatible materials

Class	Examples
Oxidising agents	Strong oxidising agents — nitrates, chlorates, perchlorates, permanganates, peroxides
Bases and amines	Sodium and potassium hydroxide, ammonia and ammonium hydroxide, organic amines
Metals and alloys	Aluminium, zinc, iron and carbon steel, galvanised surfaces, copper, brass, bronze, metal powders
Alcohols and halogenated agents	Alcohols; halogenated agents
Salts liberating hazardous gas	Sulfides (hydrogen sulfide); chlorides (hydrogen chloride on heating); nitromethane
Construction materials	Concrete, marble, limestone, unlined mild steel

10.6 Hazardous decomposition products

Oxides of phosphorus on thermal decomposition (decomposition temperature 300 °C) or in a fire. Hydrogen gas on contact with metals.

11 SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on hazard classes as defined in 29 CFR 1910.1200(c) / GHS

Likely routes of exposure: skin and eye contact, accidental ingestion, and inhalation of mist (inhalation is not an expected route of exposure for the liquid at ambient temperature).

Endpoint	Data and conclusion
Acute toxicity — oral	LD_{50} (rat): 1,530 mg/kg bw. May be harmful if swallowed; local corrosion of the gastrointestinal tract. Classified Acute Toxicity Category 4 (H302).
Acute toxicity — dermal	LD_{50} (rabbit): 2,740 mg/kg bw. Above the Category 4 cut-off of 2,000 mg/kg; local corrosion governs. Not classified.
Acute toxicity — inhalation	LC_{50} (rat, 1 h): 850 mg/m^3. Not classified for acute inhalation toxicity in the manufacturer's OSHA classification; inhalation is not an expected route at ambient temperature (vapour pressure 2 hPa at 20 °C). Respiratory irritation governs (see STOT SE).
Skin corrosion / irritation	Corrosive. Causes burns. Classified Skin Corrosion Category 1B (H314), consistent with the harmonised EU classification for phosphoric acid at C ≥ 25 %.
Serious eye damage / irritation	Corrosive to the eyes and may cause severe damage including blindness. Classified Eye Damage Category 1.
Respiratory or skin sensitisation	No data available. Not classified.
Germ cell mutagenicity	No data available. Not classified.
Carcinogenicity	Not listed by IARC, NTP, ACGIH, OSHA or Mexico as a carcinogen. Not classified.
Reproductive toxicity	No data available. Not classified.
STOT — single exposure	Category 3 — may cause respiratory irritation (target organ: respiratory system). Classified H335.
STOT — repeated exposure	No data available. Target organs: none known. Not classified.
Aspiration hazard	Based on available data, the classification criteria are not met.

11.2 Other information

Target organs: eyes, skin, mucous membranes, respiratory system and gastrointestinal tract. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation; use of gastric lavage or emesis is contraindicated and possible perforation of the stomach or oesophagus should be investigated. Toxicologically synergistic products: no information available. Endocrine disrupting properties: this product does not contain any known or suspected endocrine disruptors.

The toxicological properties have not been fully investigated. The assessment above is based on the manufacturer's data for phosphoric acid; corrosivity and pH are the determining factors for local effects.

12 SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Endpoint	Value
Fish — acute	LC_{50} (freshwater fish, 96 h): 98 – 106 mg/L.
Aquatic invertebrates — acute	EC_{50} (water flea, 48 h): > 100 mg/L.
Algae	EC_{50} (freshwater algae, 72 h): > 100 mg/L.
Microorganisms	No data available (Microtox: not listed). Activated sludge may be inhibited at pH values outside the tolerance range of the biomass.

Do not empty into drains. Large amounts will affect pH and harm aquatic organisms. The ecotoxicity is governed almost entirely by the pH depression the acid causes in the receiving water; in adequately buffered water phosphoric acid is neutralised to phosphate. Phosphate is a plant nutrient and can contribute to eutrophication of nutrient-limited waters.

12.2 Persistence and degradability

Miscible with water. Persistence is unlikely based on information available. As an inorganic acid, biodegradation testing is not applicable; the substance dissociates to hydronium and phosphate ions.

12.3 Bioaccumulative potential

Bioaccumulation is unlikely. log Kow not applicable (inorganic substance).

12.4 Mobility in soil

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

12.5 Results of PBT and vPvB assessment

The substance does not meet the criteria for PBT or vPvB under REACH Annex XIII.

12.6 Other adverse effects

Germany water hazard class WGK 1 (slightly hazardous to water). Not an ozone-depleting substance; not a persistent organic pollutant; global warming potential not applicable.

13 SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

- Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste under 40 CFR 261 and must consult federal, state and local hazardous waste regulations to ensure complete and accurate classification.
- Dispose of surplus and non-recyclable material via a licensed hazardous-waste contractor at an approved waste disposal plant. Do not discharge to sewers, drains or watercourses.
- Small laboratory quantities may be diluted with a large excess of water (acid into water) and neutralised with dilute alkali (sodium carbonate, sodium bicarbonate or lime) by trained personnel before disposal in accordance with the receiving authority's permit and any local limit on phosphorus; neutralisation is exothermic — never carry it out in a closed container.
- Empty containers retain product residue and remain hazardous. Do not cut, weld, braze, drill or grind them.
- Triple-rinse containers with water, collecting the rinsate for neutralisation and permitted disposal, before offering for recycling or reconditioning; otherwise dispose of the container as unused product. Deface or remove the label from a properly cleaned container.
- Dispose of the container in accordance with local regulations. RCRA "empty" criteria are set out in 40 CFR 261.7.

13.2 Waste codes

RCRA (40 CFR 261): discarded unused product exhibits the corrosivity characteristic (aqueous solutions of pH ≤ 2) — EPA hazardous waste number D002. Not a P- or U-listed commercial chemical product. European waste catalogue: EWC code 06 01 04* (phosphoric and phosphorous acid) from the manufacture, formulation, supply and use of acids. Final code allocation is the responsibility of the waste producer.

14 SECTION 14: TRANSPORT INFORMATION

This product is a regulated dangerous good in all modes of transport.

14.1 Common transport classification (all modes)

UN number / UN ID number	UN 1805
UN proper shipping name	Phosphoric acid solution
Transport hazard class	Class 8 — Corrosive substances
Subsidiary hazard	None
Packing group	III
Label(s) required	Class 8 "Corrosive" (white upper half / black lower half)
Environmental hazards	Not classified as a marine pollutant under the IMDG Code and not an environmentally hazardous substance under ADR/RID.
Special precautions for user	Transport upright, secured against movement, away from foodstuffs. Segregate from bases, oxidisers and metals. Vehicles and containers must be of, or lined with, acid-resistant material. Keep warm enough to remain liquid where practicable — the 85 % solution crystallises at approximately 21 °C.
Transport in bulk (MARPOL Annex II / IBC Code)	Phosphoric acid is listed in Chapter 17 of the IBC Code. Not applicable to packaged goods; consult the ship's Certificate of Fitness for bulk carriage.

Transport hazard label(s) required on the package:



Class 8 — Corrosive

Minimum 100 mm × 100 mm on each side, set on a point, with a solid inner line 5 mm inside the edge (49 CFR 172.407). Reduced-size labels are permitted only where the package is too small to bear a full-size label. Where a subsidiary hazard label is required, it is displayed next to the primary label.

14.2 US DOT — 49 CFR (road, rail and domestic transport)

Hazardous materials table entry	Phosphoric acid solution — 8, UN1805, PG III
Label codes	8
Special provisions (49 CFR 172.102)	A7, IB3, N34, T4, TP1
Packaging — exceptions	49 CFR 173.154
Packaging — non-bulk	49 CFR 173.203
Packaging — bulk	49 CFR 173.241
Quantity limitation — passenger aircraft/rail	5 L
Quantity limitation — cargo aircraft only	60 L
Vessel stowage	Location A
Limited quantity	Authorised under 49 CFR 173.154(b): PG III inner packagings not exceeding 5.0 L, package gross mass not exceeding 30 kg. Limited quantity marking required in place of labels.
Reportable quantity (RQ)	5,000 lb (2,270 kg) of phosphoric acid — approximately 5,900 lb (2,670 kg) of the 85 % product. Where a single package contains an RQ or more, the letters "RQ" must appear on the shipping paper and package marking.
ERG 2024 guide number	154 — Substances — toxic and/or corrosive (non-combustible)
Emergency response telephone	Required on the shipping paper under 49 CFR 172.604 — see Section 1.4
Placarding	CORROSIVE placard required for bulk packagings and for non-bulk shipments where the aggregate gross weight of Table 2 materials is 454 kg (1,001 lb) or more.

14.3 IMDG Code (sea)

UN number / class / PG	UN 1805, Class 8, PG III
Proper shipping name	PHOSPHORIC ACID SOLUTION
EmS (emergency schedules)	F-A (fire) and S-B (spillage)
Segregation group	Group 1 — Acids
Marine pollutant	No
Limited quantity	5 L
Excepted quantity	E1
Stowage and segregation	Stowage category A. Segregate from alkalis and cyanides. Refer to the IMDG Code edition in force for the stowage category and segregation table.

14.4 IATA DGR / ICAO Technical Instructions (air)

UN number / class / PG	UN 1805, Class 8, PG III
Proper shipping name	Phosphoric acid, solution
Passenger and cargo aircraft	Packing Instruction 852 — maximum net quantity 5 L per package
Cargo aircraft only	Packing Instruction 856 — maximum net quantity 60 L per package
Limited quantity (passenger aircraft)	Packing Instruction Y841 — maximum net quantity 1 L per package
Excepted quantity code	E1
ERG code (ICAO)	8L
Note	Packing instruction numbers change between editions of the IATA Dangerous Goods Regulations. Verify against the edition in force on the date of shipment before completing the Shipper's Declaration.

14.5 ADR / RID / ADN (European road, rail and inland waterway)

UN number / class / PG	UN 1805, Class 8, PG III
Classification code	C1 — corrosive substances, acidic, inorganic, liquid

Labels	8
Tunnel restriction code	(E)
Hazard identification number (Kemler)	80
Transport category / limited quantity	Transport category 3; limited quantity 5 L
Packing instructions	P001, IBC03, LP01
Note	Verify against the ADR/RID edition in force before shipment.

14.6 Shipping documentation example

UN1805, Phosphoric acid solution, 8, PG III — followed by the number and type of packages, total quantity, packaging authorisation, emergency response telephone number and, where applicable, the "RQ" designation and limited-quantity marking.

The shipper is responsible for confirming that packaging is UN-performance tested and marked to the required standard, that all personnel involved are trained and certified under 49 CFR 172 Subpart H (and IATA/IMDG equivalents), and that the classification remains valid under the regulatory edition in force on the date of shipment.

15 SECTION 15: REGULATORY INFORMATION

15.1 United States federal regulations

Regulation	Status
TSCA (15 U.S.C. §2601 et seq.)	Orthophosphoric acid (CAS 7664-38-2) and water are listed on the TSCA Chemical Substance Inventory with an "active" designation. No TSCA section 12(b) export notification requirement applies. Not a TSCA 6(h) PBT substance.
OSHA Hazard Communication (29 CFR 1910.1200)	Classified as a hazardous chemical. This SDS is prepared to the HCS 2024 amendment (GHS Rev. 7), for which the compliance date for substances was 19 May 2026.
OSHA flammable liquids (29 CFR 1910.106)	Not applicable — the product is non-combustible and is not a flammable or combustible liquid.
OSHA PSM (29 CFR 1910.119, App. A)	Not a listed highly hazardous chemical.
CERCLA section 103 (40 CFR 302.4)	Hazardous substance. Reportable quantity 5,000 lb (2,270 kg) of phosphoric acid (approximately 5,900 lb of 85 % product). Releases at or above the RQ in any 24-hour period must be reported immediately to the National Response Center, 1-800-424-8802.
EPCRA section 302 (40 CFR 355, App. A)	Not an extremely hazardous substance; section 302 emergency planning notification is not triggered by this product.
EPCRA sections 311 / 312 (40 CFR 370)	Reportable. Applicable hazard classes: skin corrosion or irritation (Category 1B), serious eye damage or eye irritation (Category 1) and corrosive to metals. Reporting threshold 10,000 lb on site at any one time.
EPCRA section 313 (TRI, 40 CFR 372)	Not listed (phosphoric acid was delisted in 2000). No Toxics Release Inventory reporting requirement.
Clean Air Act section 112 / 112(r)	Not a listed hazardous air pollutant and not a regulated substance under 40 CFR 68.130.
Clean Water Act section 311 (40 CFR 116/117)	Designated hazardous substance; reportable quantity 5,000 lb. Not a section 307 priority pollutant or toxic pollutant.
RCRA (40 CFR 261)	Discarded unused product exhibits the corrosivity characteristic (D002). Not P- or U-listed.
DEA / Chemical Diversion and Trafficking Act (21 CFR 1310)	Not a List I or List II regulated chemical.
FDA / USDA	Not supplied as a food-grade, USP, FCC or NF material. Not for use in food, drug or cosmetic applications.
US Department of Homeland Security (6 CFR 27, App. A)	Not a chemical of interest.

15.2 United States state regulations

State list	Status
California Proposition 65	Phosphoric acid is not listed under the Safe Drinking Water and Toxic Enforcement Act of 1986. No Proposition 65 warning is required for this product.

State list	Status
California — other	Cal/OSHA PEL 1 mg/m³ TWA / 3 mg/m³ STEL.
Massachusetts Right-to-Know	Listed (Substance List, 105 CMR 670).
New Jersey Right-to-Know	Listed (Hazardous Substance List; substance list). Special Health Hazard Substance — corrosive.
Pennsylvania Right-to-Know	Listed (Hazardous Substance List).
Rhode Island, Minnesota, Texas	Rhode Island and Minnesota: listed on the respective state hazardous substance / right-to-know lists. Texas: no listing recorded. Not listed: Illinois.

15.3 International regulations

Jurisdiction	Status
Canada	Classified under the Hazardous Products Regulations (SOR/2015-17) consistently with Section 2. Listed on the Domestic Substances List (DSL). Not NPRI-listed.
European Union — CLP	Harmonised classification, Annex VI to Regulation (EC) No 1272/2008, Index No. 015-011-00-6: Skin Corr. 1B, H314, with the specific concentration limits given in Section 3.
European Union — REACH	Registered substance. Not on the Candidate List of substances of very high concern and not subject to authorisation (Annex XIV). Annex XVII restriction entry 75 (tattoo inks and permanent make-up) applies to that use only. Supplier REACH registration number to be inserted before EU/EEA placement.
Seveso III (Directive 2012/18/EU)	Not named individually and not captured by a generic hazard category (the product is corrosive only); no qualifying quantities apply.
Rotterdam / Stockholm / Montreal Conventions	Not listed under the PIC procedure, not a persistent organic pollutant and not an ozone-depleting substance.
Basel Convention	Annex I — Y34 (acidic solutions or acids in solid form) when exported as waste.
Chemical Weapons Convention	Not a scheduled chemical.
Chemical inventories	Listed on TSCA (USA), DSL (Canada), EC Inventory / REACH (EU), AICS/AIIC (Australia), IECSC (China), ENCS and ISHL (Japan), KECI (Korea), PICCS (Philippines), NZIoC (New Zealand), TCSI (Taiwan) and the Indian Chemical Inventory.
Mexico	Hazard grade (NOM-018-STPS): no information available. OEL (NOM-010-STPS): TWA 1 mg/m³; STEL 3 mg/m³.
Germany	Water Hazard Class WGK 1 (slightly hazardous to water).

15.4 Chemical safety assessment

A chemical safety assessment has been carried out for phosphoric acid under REACH by the registrant(s). No exposure scenarios are annexed to this SDS; users placing the substance on the EU/EEA market should obtain the extended SDS from the registrant.

16 SECTION 16: OTHER INFORMATION

16.1 Hazard rating systems

System	Rating	Notes
NFPA 704	Health 3 · Flammability 0 · Instability 1 · Special: none	Corrosive; commonly also marked ACID or COR
HMIS® III	Health 3 · Flammability 0 · Physical hazard 1 · PPE: X	PPE code to be assigned by the employer based on the task



Rating scale 0 = minimal, 4 = severe. These ratings are supplementary and are not a substitute for the GHS classification in Section 2.

16.2 Full text of hazard statements referred to in this SDS

- H290 — May be corrosive to metals.
- H302 — Harmful if swallowed.
- H314 — Causes severe skin burns and eye damage.
- H315 — Causes skin irritation.
- H318 — Causes serious eye damage.
- H319 — Causes serious eye irritation.

- H335 — May cause respiratory irritation.

16.3 Abbreviations and acronyms

Abbreviation	Meaning
ACGIH	American Conference of Governmental Industrial Hygienists
ADR / RID / ADN	European agreements concerning the international carriage of dangerous goods by road / rail / inland waterway
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging
DNEL / PNEC	Derived no-effect level / predicted no-effect concentration
EmS	Emergency schedule (IMDG Code)
EPCRA	Emergency Planning and Community Right-to-Know Act
ERG	Emergency Response Guidebook (PHMSA / Transport Canada / SCT)
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
HCS	Hazard Communication Standard, 29 CFR 1910.1200
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
IATA DGR	International Air Transport Association Dangerous Goods Regulations
IDLH	Immediately dangerous to life or health
IMDG	International Maritime Dangerous Goods Code
LC_{50} / LD_{50} / EC_{50}	Concentration / dose / effective concentration lethal or effective to 50 % of a test population
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PBT / vPvB	Persistent, bioaccumulative and toxic / very persistent and very bioaccumulative
PEL / REL / TLV	Permissible exposure limit / recommended exposure limit / threshold limit value
PG	Packing group
RCRA	Resource Conservation and Recovery Act
RQ / TPQ / TQ	Reportable quantity / threshold planning quantity / threshold quantity
SCBA	Self-contained breathing apparatus
STOT SE / RE	Specific target organ toxicity — single exposure / repeated exposure
TSCA	Toxic Substances Control Act
TWA / STEL	Time-weighted average / short-term exposure limit
WGK	Wassergefährdungsklasse (German water hazard class)

16.4 Key references

- 29 CFR 1910.1200, OSHA Hazard Communication Standard, as amended by the final rule of 19 July 2024 (89 FR 44144), aligning with GHS Revision 7.
- 49 CFR Parts 171–180, US DOT Hazardous Materials Regulations; Hazardous Materials Table, 49 CFR 172.101.
- 2024 Emergency Response Guidebook, Guide 154.
- IMDG Code and IATA Dangerous Goods Regulations, editions in force.
- 40 CFR 302.4, 40 CFR 355 Appendix A, 40 CFR 370, 40 CFR 372, 40 CFR 68.130 and 40 CFR 261.
- Regulation (EC) No 1272/2008 Annex VI, Index No. 015-011-00-6; Regulation (EC) No 1907/2006 Annex II.
- NIOSH Pocket Guide to Chemical Hazards, phosphoric acid; ACGIH TLVs and BEIs, current edition.
- Manufacturer safety data sheet for phosphoric acid (US OSHA HCS 2024 format, revision 11, 18 December 2025) — source of the physical, toxicological and ecotoxicological test values reproduced here.

- ECHA registered substance dossier and PubChem CID 1004, phosphoric acid.

16.5 Revision information

Version	1.0
Date of issue	01 November 2026
Reason for revision	First issue under Highpuris LLC. Content prepared in the 16-section format of 29 CFR 1910.1200, Appendix D, with full US DOT 49 CFR transport detail, IMDG / IATA / ADR classification, and the complete Highpuris catalogue SKU list for o-Phosphoric Acid (85 %).
Sections revised	All — first issue
Prepared by	Regulatory Affairs, Highpuris LLC

16.6 Disclaimer

The information in this Safety Data Sheet is provided in good faith and is believed to be accurate as at the date of issue. It has been compiled from data on o-phosphoric acid (85 %) published by regulatory authorities, manufacturers and recognised technical sources, and relates only to the specific material identified in Section 1. It does not constitute a warranty, express or implied, of merchantability, fitness for a particular purpose or of any other kind, and Highpuris LLC accepts no liability for loss or damage arising from the handling or use of the product. The material may present hazards in combination with other substances or in processes not described here. It is the responsibility of the user to determine the suitability of this information for their own particular purpose, to comply with all applicable laws and regulations, and to ensure that the material is handled only by adequately trained personnel. Transport classifications, exposure limits and regulatory listings change. This document must be reviewed against the regulatory editions in force at the date of each shipment.

— END OF SAFETY DATA SHEET —

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