Manufacturers of ACS Reagents and Semiconductor Grade Chemicals

SAFETY DATA SHEET

PHOSPHORIC ACID 85%

1. Identification

Product identifier: Phosphoric acid
Product Code Number: P900
Trade Name: PHOSPHORIC ACID
Synonyms: Ortho-phosphoric Acid, White Phosphoric Acid
Chemical Formula: H3PO4 in H2O

Product Use: Process chemical, Laboratory reagent and scientific research and Development
Restrictions on use: None known.

Company Identification: Corco Chemical Corporation
299 Cedar Lane
Fairless Hills, PA 19030
Phone: 215-295-5006
Fax: 215-295-0781

24 Hour Emergency Telephone Number:
CHEMTREC (U.S.): 1-800-424-9300
CHEMTREC (Outside U.S.): 1-703-527-3887

SDS Date of Preparation: 07/31/2024

2. Hazard(s) identification

Classification of the Substance or Mixture:
Corrosive to Metals Category 1
Acute Oral Toxicity Category 4
Eye Damage Category 1
Skin Corrosion Category 1B

Label Elements:
Danger!

Hazard Statements:
H290 May be corrosive to metals.
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.

Precautionary Statements:
P234 Keep only in original container.
P260 Do not breathe mist or vapors.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves, protective clothing, eye protection and face protection.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P310 Immediately call POISON CENTER or doctor.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P310 Immediately call POISON CENTER or doctor.
P363 Wash contaminated clothing before reuse.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
P310 Immediately call POISON CENTER or doctor.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P310 Immediately call POISON CENTER or doctor.
P390 Absorb spillage to prevent material damage.
P405 Store locked up.
P406 Store in corrosive resistant container with a resistant inner liner.
P501 Dispose of contents and container in accordance with local and national regulations.

Other Hazards: None known

3. Composition/information on ingredients

Ingredient	CAS Number	Percent	Hazardous Chemical
Phosphoric Acid	7664-38-2	55-95%	Yes
Water	7732-18-5	5-45%	No

The specific identity and/or exact percentage of the composition has been withheld as a trade secret.

4. First-aid measures

Inhalation: Immediately remove victim to fresh air. If breathing is difficult, oxygen should be administered by qualified personnel. If breathing has stopped, administer artificial respiration. Get immediate medical attention.

Skin contact: Immediately flush skin with plenty of water for 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Launder clothing before re-use. (Discard contaminated shoes).

Eye contact: Immediately flush thoroughly with water for at least 20 minutes, while holding the eye lids open to be sure the material is washed out. Remove contact lenses if present and easy to do. Get immediate medical attention.

Ingestion: Do NOT induce vomiting. Rinse mouth with water. Never give anything by mouth to an unconscious or convulsing person. Keep the victim calm and warm. Get immediate medical attention.

Most important symptoms/effects, acute and delayed: Corrosive effects. May cause severe eye, skin, respiratory tract irritation and burns. May cause temporary blindness and severe eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Harmful if swallowed.

Indication of immediate medical attention and special treatment, if necessary: Immediate medical attention is required for all routes of exposure.

5. Fire-fighting measures

Suitable (and unsuitable) extinguishing media: Use any means suitable for extinguishing surrounding fire. Water spray may be used to keep fire exposed containers cool.

Specific hazards arising from the chemical: Not considered to be a fire hazard. Irritating, corrosive and/or toxic gases or fumes will be released during a fire. Contact with most metals causes formation of flammable and explosive Hydrogen gas.

Special protective equipment and precautions for fire-Fighters: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8.

Methods and materials for containment and cleaning up: Contain and recover liquid when possible. Residues from spills can be diluted with water, neutralized with lime or soda ash. Absorb neutralized caustic residue on clay, vermiculite or other inert substance and package in a suitable container for disposal. Do not let product enter drains. Do not flush caustic residues to the sewer. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and storage

Precautions for safe handling: Do not breathe mist or vapor. Use with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Prevent contact with eye, skin, and clothing. Always wear impervious gloves, chemical safety goggles and protective clothing when handling this material. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Keep containers closed when not in use.

When diluting, always add acid to water- not water to acid. Adding water to acid generates heat and will cause dangerous boiling and splashing.

Conditions for safe storage, including any incompatibilities: Store in a cool, dry, well ventilated location out of direct sunlight. Store in corrosive resistant container with a resistant inner liner. Keep container tightly closed. Keep out of the reach of children.

8. Exposure controls/personal protection

Chemical Name	Exposure Limits
Phosphoric Acid	1 mg/m3 TWA, 3 mg/m3 STEL ACGIH TLV 1 mg/m3 TWA OSHA PEL
Water	None Established

Appropriate Engineering Controls: A system of local and / or general exhaust is recommended to keep employee exposures below the Airborne 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. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.

Personal Protective Equipment:

Respiratory Protection: If the exposure limit is exceeded, a full face piece respirator with high efficiency dust / mist filter may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full face piece positive-pressure, air-supplied respirator. WARNING: Air purifying respirators do not protect workers in Oxygen-deficient atmospheres.

Eye Protection: Use chemical safety goggles and full face shield where splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

9. Physical and chemical properties

Physical data below refers to concentrated phosphoric acid.

Appearance: Clear, colorless, syrupy liquid
Odor: Odorless
Odor Threshold: Not determined
pH: 1.5 (0.1 N aqueous solution)
% Volatiles by volume @ 21C (70F): 100
Melting Point/Freezing Point: 21°C (70°F) – 85% solution
Boiling point / Boiling range: 158°C (316°F)
Flash Point: Not applicable
Evaporation Rate (BuAc=1): No information found
Flammability (solid, gas): Not applicable
Upper / Lower Flammability or Explosive Limits: Not applicable
Vapor Pressure (mm Hg): 0.3 kPa (@ 20°C)
Vapor Density (Air=1): 3.4 (Air = 1)
Relative Density: 1.685 g/cm3
Solubility(ies): Miscible in all proportions in water
Partition Coefficient: n-octanol / water: No data available
Auto-ignition Temperature: No data available
Decomposition Temperature: No data available
Viscosity: No data available

10. Stability and reactivity

Reactivity: Not available.

Chemical stability: Stable under ordinary conditions of use and storage. Substance can super-cool without crystallizing.

Possibility of hazardous reactions: Hazardous polymerization does not occur. Hydrochloric acid may react with metals to liberate flammable hydrogen gas. Hydrochloric acid may also corrode some metals.

Conditions to avoid: None under normal conditions.

Incompatible materials: Liberates explosive Hydrogen gas when reacting with chlorides and stainless steel. Can react violently with Sodium Tetrahydroborate. Exothermic reactions with aldehydes, amines, amides, alcohols and glycols, azo-compounds, carbamates, esters, caustics, phenols and cresols, ketones, organophosphates, epoxides, explosives, combustible materials, unsaturated halides, and organic peroxides. Phosphoric Acid forms flammable gases with sulfides, mercaptans, cyanides and aldehydes. It also forms toxic fumes with cyanides, sulfide, fluorides, organic peroxides, and halogenated organics. Mixtures with Nitromethane are explosive.

Hazardous decomposition products: Phosphorus oxides may form when heated to decomposition.

11. Toxicological information

Potential Health Effects:

Inhalation: Inhalation of mists or vapors may cause severe irritation and burns of the nose, throat and upper respiratory tract. Higher concentrations can cause burns, pulmonary edema and death.

Skin Contact: Causes severe skin irritation and burns with redness, ulceration, pain, dermatitis, and scarring. Concentrated solutions cause deep ulcers and discolor skin.

Eye Contact: Vapors cause irritation. Splashes cause severe pain, eye damage, and permanent blindness.

Ingestion: Corrosive. Harmful if swallowed. May cause sore throat, abdominal pain, nausea, and severe burns of the mouth, throat, and stomach. Severe exposures can lead to shock, circulatory collapse, and death.

Chronic Exposure: Prolonged inhalation may cause lung damage. Repeated exposure may cause damage to the tissues of the mucous membranes, upper respiratory tract, eyes and skin.

Aggravation of Pre-existing Conditions: Persons with pre-existing skin disorders or eye problems, or impaired respiratory function may be more susceptible to the effects of the substance.

Carcinogenicity: None of the components of this product are listed as a carcinogen or suspected carcinogen by OSHA, IARC, and NTP.

Reproductive Effects: Reproductive harm is not expected from this product.

Mutagenic Effects: Not expected to cause mutagenic activity.

Acute Toxicity:
Phosphoric Acid: Oral rat LD50- 1530 mg/kg; Inhalation rat LC50- >850 mg/m3/1Hr; Skin rabbit LD50- 2740 mg/kg

12. Ecological information

Exotoxicity:

Product	**Species**	**Test Results**
Phosphoric Acid:	Mosquitofish	138 mg/L 96 hr LC50

This product may be hazardous for the environment due to its low pH. Releases to the environment should be avoided.

Persistence and Degradability: This material is not expected to biodegrade.

Bioaccumulative Potential: No further relevant information available.

Mobility in Soil: When spilled onto soil, phosphoric acid will infiltrate downward, the rate being greater with lower concentration because of reduced viscosity. During transport through the soil, phosphoric acid will dissolve some of the soil material, in particular, carbonate-based materials. The acid will be neutralized to some degree with adsorption of the proton and phosphate ions also possible. However, significant amounts of acid will remain for transport down toward the groundwater table. Upon reaching the groundwater table, the acid will continue to move in the direction of groundwater flow. Information obtained from US National Library of Medicine.

Other adverse effects: None known.

13. Disposal considerations

Disposal instructions: Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous

waste. Neutralize with soda ash/slaked lime and discharge to sewer with lots of water. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazardous waste code D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel] Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see:
Disposal instructions).

Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transportation Information

	UN Number	Proper shipping name	Hazard Class	Packing Group	Environmental Hazard
US DOT	UN1805	Phosphoric Acid Solution*	8	III	Not applicable
IMDG	UN1805	Phosphoric Acid Solution	8	III	Not applicable
IATA	UN1805	Phosphoric Acid Solution	8	III	Not applicable

*** Hazardous Substance (49CFR172.101):** Phosphoric Acid (RQ5,000 lbs)- (5,263 lbs. product)

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

Special Precautions for User: Not applicable

15. Regulatory information

US federal regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not on regulatory list.

CERCLA Hazardous Substance List (40 CFR 302.4)

This product has a Reportable Quantity (RQ) of 5,263 lbs. (based on the RQ for Phosphoric Acid of 5,000 lbs present at 55-95%). Releases above the RQ must be reported to the National Response Center. Many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard categories:
SARA 311/312
Refer to Section 2 for OSHA Hazard Classification.

Section 313 Toxic Chemicals: This product contains the following chemicals subject to SARA Title III Section 313 Reporting requirements: None

SARA 302 Extremely hazardous substance
None

Other federal regulations:

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.
Clean Water Act (CWA) Section 112(r) (40 CFR68.130)
Hazardous substance
Safe Drinking Water Act (SDWA)
Not regulated.
Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number
Not listed.
Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))
Not regulated.
DEA Exempt Chemical Mixtures Code Number
Not regulated.
Food and Drug Administration (FDA)
Not regulated.
US state regulations - California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This product does not contain chemicals known in the State of California to cause cancer and/or reproductive harm.

US. Massachusetts RTK - Substance List:
PHOSPHORIC ACID (CAS 7664-38-2)
US. New Jersey Worker and Community Right-to-Know Act:
Not regulated.
US. Pennsylvania RTK - Hazardous Substances:

PHOSPHORIC ACID CAS 7664-38-2
US. Rhode Island RTK:
PHOSPHORIC ACID (CAS 7664-38-2)

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance
Not listed

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s)

16. Other information

Date of Current Revision: 07/31/2024
Revision Summary: Updated all sections.
Date of Previous Revision: 12/4/19

Disclaimer - The information in the SDS is based on the data available at the time. While believed to be accurate, Corco does not claim it to be all inclusive. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. It is not intended to provide product performance or applicability information, and no express or implied warranty of any kind is made with respect to the product, the underlying product data, or the information contained herein. We will not provide advice on such matters, or be responsible for any injury or damage resulting from the use of the product described herein.