CORCO CHEMICAL CORPORATION

Manufacturers of ACS Reagents and Semiconductor Grade Chemicals

SAFETY DATA SHEET

PHOSPHORIC ACID

1. IDENTIFICATION

Product identifier: PHOSPHORIC ACID

Product Code Number: P900

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

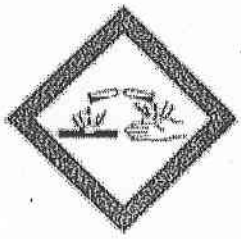
Trade Name: PHOSPHORIC ACID
Synonyms: Ortho-phosphoric Acid, White Phosphoric Acid
Chemical Formula: H_3PO_4 in H_2O
Product Use: Process chemical, Laboratory and scientific research and development

2. HAZARD(S) IDENTIFICATION

Physical hazards	Corrosive to metals	Category 1
Health hazards	Acute toxicity, oral	Category 4
	Skin corrosion/irritation	Category 1A
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation

OSHA hazard(s) Not classified.

Label elements



Signal word **Danger**

Hazard statement - May be corrosive to metals. Harmful if swallowed. Causes severe skin burns and eye damage. Causes serious eye damage. May cause respiratory irritation.

Precautionary statement - Prevention Use in a well-ventilated area. Keep only in original container. Do not breathe mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection.

Response - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Rinse mouth. Absorb spillage to prevent material damage.

Storage - Store in a well-ventilated place. Keep container tightly closed. Store locked up. Store in corrosive resistant container with a resistant inner liner.

Disposal - Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

3. Composition/information on ingredients

CAS No.: 7664-38-2
EC Number: 231-633-2
Index Number: 015-011-00-6
Molecular Weight: 98 g/mol

Ingredient	CAS Number	EC Number	Percent	Hazardous	Chemical Characterization
Phosphoric Acid	7664-38-2	231-633-2	55 - 95%	Yes	Substance
Water	7732-18-5	231-791-2	5 45%	No	Mixture

4. First-aid measures

In all cases, call a Physician immediately.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give Oxygen. CALL A PHYSICIAN IMMEDIATELY.

Ingestion: DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. CALL A PHYSICIAN IMMEDIATELY.

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician, immediately. Wash clothing before reuse. CALL A PHYSICIAN IMMEDIATELY.

Eye Contact: Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. CALL A PHYSICIAN IMMEDIATELY.

5. Fire-fighting measures

Fire: Not considered to be a fire hazard. Contact with most metals causes formation of flammable and explosive Hydrogen gas.

Explosion: Not considered to be an explosion hazard.

Fire Extinguishing Media: Use any means suitable for extinguishing surrounding fire. Water spray may be used to keep fire exposed containers cool. If water is used, use in abundance to control heat and acid build-up.

Special Information: 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.

General information: Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Show this safety data sheet to the doctor in attendance.

6. Accidental Release Measures

Suitable extinguishing media - Use extinguishing agent suitable for type of surrounding fire. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media - Do not use water jet as an extinguisher, as this will spread the fire. Specific hazards arising from the chemical None known.

Special protective equipment and precautions for firefighters - Wear suitable protective equipment.

7. Handling and storage

Precautions for safe handling - Do not breathe mist or vapor. Do not get this material in contact with eyes. Do not get this material in contact with skin. Do not taste or swallow. Do not get this material on clothing. Avoid prolonged exposure. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Avoid release to the environment.

Conditions for safe storage, including any incompatibilities - Store in corrosive resistant container with a resistant inner liner. Store locked up. Store in a closed container away from incompatible materials. Keep only in the original container. Keep out of the reach of children. Store in a cool, dry place out of direct sunlight.

8. Exposure controls/personal protection

Airborne Exposure Limits: OSHA Permissible Exposure Limit (PEL): 1 mg/m3 (TWA) ACGIH Threshold Limit Value (TLV): 1 mg/m3 (TWA), 3 mg/m3 (STEL).

Ventilation System: 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 Respirators (NIOSH Approved): 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.

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

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

General hygiene considerations: When using, do not eat, drink or smoke. Avoid contact with eyes. Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice.

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: 21C (70F) – 85% solution
Boiling Point / Boiling Range: 158C (316F)
Flash Point: Not applicable
Evaporation Rate (BuAc=1): No information found
Flammability: 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: 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 and / or Chemical Stability: Stable under ordinary conditions of use and storage. Substance can super-cool without crystallizing.

Possibility of Hazardous Reactions and Conditions to Avoid: Incompatibles.

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

Emergency Overview: DANGER! CORROSIVE. CAUSES SEVERE IRRITATION AND BURNS TO EVERY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED.

Potential Health Effects

Inhalation: Inhalation is not an expected hazard unless misted or heated to high temperatures. Mist or vapor inhalation can cause irritation to the nose, throat, and upper respiratory tract. Severe exposures can lead to a chemical pneumonitis.

Ingestion: Corrosive. 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.

Skin Contact: Corrosive. May cause redness, pain, and severe skin burns.

Eye Contact: Corrosive. May cause irritation and serious eye damage.

Chronic Exposure: No information found.

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.

Specific Target Organ Toxicity - Single Exposure (Globally Harmonized System:) No data available.

Specific Target Organ Toxicity - Repeated Exposure (Globally Harmonized System:) No data available.

Numerical Measures of Toxicity: Cancer Lists: NTP Carcinogen

Ingredient	known	Anticipated	IARC Category
Phosphoric Acid (7664-38-2)	No	No	None
Water (7732-18-5)	No	No	None

Acute Toxicity: - Oral rat LD50: 1530 mg/kg; investigated as a mutagen.

12. Ecological information

Ecotoxicity: May be harmful to aquatic organisms due to the shift of the pH.

Persistence and Degradability: Expected to be readily biodegradable.

Bioaccumulative Potential: No data 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: 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.

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: UN1805
UN Proper Shipping Name: PHOSPHORIC ACID SOLUTION
Packing Group: III

DOT / IMDG / IATA

Land Transport ADR/RID and GGVS/GGVE (Cross Border / Domestic)
Transport Hazard Class(es): 8

Maritime Transport IMDG/GGVSea
Transport Hazard Class(es): 8

Marine Pollutant: No

Air Transport ICAO-TI and IATA-DGR
Transport Hazard Class(es): 8

Transport in Bulk (According to Annex II of MARPOL 73/78 and the IBC Code.

Special Precautions for User: No additional information

15. Regulatory information

US federal regulations All components are on the U.S. EPA TSCA Inventory List.
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)
PHOSPHORIC ACID (CAS 7664-38-2) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard categories Immediate Hazard – Yes

Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No
SARA 302 Extremely hazardous substance – No
SARA 311/312 Hazardous chemical - No

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 material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

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
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
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

Disclaimer - The information in the sheet was written based on the best knowledge and experience currently available. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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