

Praxair™ Material Safety Data Sheet

1. Chemical Product and Company Identification

Product Name: Phosphoric Acid (MSDS No. P-6208)	Trade Name: Phosphoric Acid
Chemical Name: Phosphoric Acid	Synonyms: Ortho-phosphoric acid
Formula: H ₃ PO ₄	Chemical Family: Not Applicable
Telephone:	Company Name: Praxair, Inc.
Emergencies: 1-800-645-4633*	39 Old Ridgebury Road
CHEMTREC: 1-800-424-9300*	Danbury CT 06810-5113
Routine: 1-800-PRAXAIR	

*Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information contact your supplier, Praxair sales representative, or call 1-800-PRAXAIR (1-800-772-9247).

2. Composition / Information on Ingredients

INGREDIENT NAME	CAS NUMBER	PERCENTAGE	OSHA PEL	ACGIH TLV-TWA
Phosphoric Acid	7664-38-2	>99*	1 mg/m ³	1 mg/m ³ , 3 mg/m ³ (STEL)

*The symbol ">" means "greater than."

3. Hazards Identification

EMERGENCY OVERVIEW

DANGER! Corrosive liquid and vapor.

Harmful if inhaled or swallowed.

Causes eye, skin, and respiratory tract burns.

Self-contained breathing apparatus may be required by rescue workers.

Odor: None

THRESHOLD LIMIT VALUE: 1 mg/m³, 3 mg/m³ (15 min. STEL), ACGIH 1995-96

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

INHALATION—Vapor irritates the lungs and upper respiratory tract, producing coughing, sneezing, salivation, and breathing difficulty. Severe exposures may produce chemical pneumonia.

SKIN CONTACT—Irritates the skin and causes chemical burns. Burns may not occur immediately on contact.

SWALLOWING—Irritates and causes chemical burns of the mouth, esophagus and stomach. Causes vomiting, abdominal pain, bloody diarrhea, and severe damage to the gastrointestinal tract. Victim may go into shock. Full effects may be delayed for months or years. In severe cases, death may occur within a short time or may be delayed.

EYE CONTACT—Irritates the eyes and conjunctival tissue. Chemical burns may result in permanent eye injury and blindness. Full effects may be delayed for up to several weeks.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE: Dermatitis; chronic respiratory disease.

OTHER EFFECTS OF OVEREXPOSURE: None known.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: None known.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION: See section 11.

CARCINOGENICITY: Phosphoric Acid is not listed by NTP, OSHA, or IARC.

4. First Aid Measures

INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may give oxygen. Call a physician.

SKIN CONTACT: Immediately remove contaminated clothing. Shower with plenty of water, rinsing away all material, then wash thoroughly with soap and water. See a physician for treatment of reddened or blistered skin.

SWALLOWING: Have a conscious and alert victim drink several glasses of water or milk to dilute solution. Follow with appropriate dosages of milk of magnesia or aluminum hydroxide gel. *Never induce vomiting.* If patient vomits, give more milk. Never give anything by mouth to an unconscious, convulsive, or unresponsive person. Call a physician.

EYE CONTACT: Immediately flush eyes thoroughly with warm water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. See a physician, preferably an ophthalmologist, immediately.

NOTES TO PHYSICIAN: *Gastric lavage is not a routine choice for treatment. Consider the risks and benefits in light of the amount ingested, time passed since ingestion, and patient's history, before prescribing it. Monitor victims of inhalation closely for systemic complications. monitor arterial blood gases while maintaining oxygenation and ventilation. Patients who develop dermal reactions may require treatment with antihistamines or topical cortocosteroids.*

5. Fire Fighting Measures

FLASH POINT (test method)	Not applicable	AUTOIGNITION TEMPERATURE	Not applicable
FLAMMABLE LIMITS IN AIR, % by volume	LOWER	Not applicable	UPPER Not applicable

EXTINGUISHING MEDIA: Phosphoric Acid will not burn, but contact with metals may liberate flammable hydrogen gas. If product is involved in fire, use water to extinguish it. Otherwise, use media appropriate for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES:

DANGER! Corrosive liquid and vapor. Immediately evacuate all personnel from danger area. Flammable, explosive vapors and toxic fumes may be given off when phosphoric acid is heated in the presence of other materials. Wear self-contained breathing apparatus with full facepiece, operated in the pressure demand mode, and full protective clothing when participating in firefighting and rescue activities. Cool containers with water spray to avoid rupture from pressure generated by heat. Do not allow runoff to drain into sewers and waterways. On-site fire brigades must comply with OSHA 29 CFR 1910.156.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Release of flammable hydrogen gas on contact with metals.

HAZARDOUS COMBUSTION PRODUCTS: Not applicable.

6. Accidental Release Measures**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**

DANGER! Corrosive liquid and vapor. Immediately evacuate all personnel from danger area. Wear suitable respiratory protection and protective clothing. (See section 8.) Stop leak if without risk. Avoid spreading dust or mist during cleanup. Cover spilled liquid with soda ash or sodium bicarbonate. Scoop up slurry and place in a suitable disposal container. Flush spill area with water; do not allow to drain into sewers or waterways.

WASTE DISPOSAL METHOD: Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state, and local regulations. If necessary, call your local supplier for assistance.

7. Handling and Storage

PRECAUTIONS TO BE TAKEN IN STORAGE: Store in a dry, well ventilated area in moisture-tight containers resistant to acid corrosion. Store away from flammables, combustibles, reactive materials, and metal powders. Store highly concentrated solutions at temperatures above 70°F (21.1°C) to prevent crystallization. Keep containers tightly closed.

PRECAUTIONS TO BE TAKEN IN HANDLING: Handle and use only with appropriate personal protective equipment. (See section 8.) Keep containers tightly closed when not in use.

8. Exposure Controls/Personal Protection**VENTILATION/ENGINEERING CONTROLS:**

LOCAL EXHAUST—Use a local or general exhaust system to keep concentrations below the TLV in the worker's breathing zone. Local ventilation is preferred to control contamination at its source.

MECHANICAL (general)—Acceptable.

SPECIAL—Not applicable

OTHER—Not applicable

RESPIRATORY PROTECTION: None required under normal conditions if ventilation is adequate. If airborne concentrations are high wear suitable respiratory protection. The respiratory protection used must conform with OSHA rules as specified in 29 CFR 1910.134.

SKIN PROTECTION: Wear chemically protective gloves, gauntlets, boots, and aprons, as appropriate, to prevent prolonged or repeated skin contact. Neoprene gloves are recommended. Select in accordance with OSHA 29 CFR 1910.132 and 1910.133

EYE PROTECTION: Safety glasses or protective goggles. Select in accordance with OSHA 29 CFR 1910.133.

OTHER PROTECTIVE EQUIPMENT: Select in accordance with OSHA 29 CFR 1910.132 and 1910.133. Regardless of protective equipment, never touch live electrical parts.

9. Physical and Chemical Properties

MOLECULAR WEIGHT: 98.0	EXPANSION RATIO: Not applicable
SPECIFIC GRAVITY (H₂O=1): At 64.4°F (18°C) and 1 atm: 1.834	SOLUBILITY IN WATER: Complete
VAPOR DENSITY (Air = 1): At 70°F (21.1°C) and 1 atm: 0.2548 lb/ft ³ (4.082 kg/m ³)	VAPOR PRESSURE: AT 70°F (21.1°C): 2.16 mm Hg (0.02425 psig, 0.2933 kPa)
PERCENT VOLATILES BY VOLUME: 0	EVAPORATION RATE (Butyl Acetate=1): Not applicable
BOILING POINT (1 atm): 316°F (158°C)	pH: 1.5
MELTING POINT (1 atm): 70°F (21.1°C)	
APPEARANCE, ODOR, AND STATE: Colorless, odorless, syrupy liquid.	

10. Stability and Reactivity

STABILITY:	Unstable		Stable	X
INCOMPATIBILITY (materials to avoid): Most common metals, strong bases				
HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen and other flammable or explosive gases; toxic gases and fumes, esp. phosphorous oxide (PO ₃) fumes.				
HAZARDOUS POLYMERIZATION:	May Occur	X	Will Not Occur	
CONDITIONS TO AVOID: Presence of epoxides, azo and polymerizable compounds				

11. Toxicological Information

LD₅₀, oral, rat—1530 mg/kg.

12. Ecological Information

Phosphoric Acid does not contain any Class I or Class II ozone-depleting chemicals. Phosphoric Acid is not listed as a marine pollutant by DOT.

13. Disposal Considerations

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused quantities. Contact your supplier. Also see section 6 for disposal following spills.

14. Transport Information

DOT/IMO SHIPPING NAME: Phosphoric Acid

HAZARD CLASS: 8

IDENTIFICATION NUMBER: UN 1805

PRODUCT RQ: 5000 lbs (2270 kg)

SHIPPING LABEL(s): Corrosive

PLACARD (When required): Corrosive

SPECIAL SHIPPING INFORMATION: None

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, state, and local regulations.

U.S. FEDERAL REGULATIONS:

EPA (Environmental Protection Agency)

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (40 CFR Parts 117 and 302):

Reportable Quantity (RQ): 5000 lbs (2270 kg)

SARA: Superfund Amendment and Reauthorization Act:

- **SECTIONS 302/304:** Require emergency planning based on Threshold Planning Quantity (TPQ) and release reporting based on Reportable Quantities (RQ) of extremely hazardous substances (40 CFR Part 355):

Threshold Planning Quantity (TPQ): None

Extremely Hazardous Substances (40 CFR 355): None

- **SECTIONS 311/312:** Require submission of Material Safety Data Sheets (MSDSs) and chemical inventory reporting with identification of EPA hazard categories. The hazard categories for this products are as follows:

IMMEDIATE: Yes

PRESSURE: Yes

DELAYED: Yes

REACTIVITY: Yes

FIRE: No

- **SECTION 313:** Requires submission of annual reports of release of toxic chemicals that appear in 40 CFR Part 372.

Phosphoric Acid does not require reporting under this section.

40 CFR 68: Risk Management Program for Chemical Accidental Release Prevention: Requires development and implementation of risk management programs at facilities that manufacture, use, store, or otherwise handle regulated substances in quantities that exceed specified thresholds.

Phosphoric Acid is not listed as a regulated substance.

TSCA: Toxic Substances Control Act: Phosphoric Acid is listed on the TSCA inventory.

OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION):

29 CFR 1910.119 : Process Safety Management of Highly Hazardous Chemicals: Requires facilities to develop a process safety management program based on Threshold Quantities (TQ) of highly hazardous chemicals.

Phosphoric Acid is not listed in Appendix A as a highly hazardous chemical.

STATE REGULATIONS:

CALIFORNIA: This product is not listed by California under the Safe Drinking Water Toxic Enforcement Act of 1986 (Proposition 65).

PENNSYLVANIA: This product is subject to the Pennsylvania Worker and Community Right-To-Know Act (35 P.S. Sections 7301-7320).

16. Other Information

Be sure to read and understand all labels and instructions supplied with all containers of this product.

SPECIAL PRECAUTIONS: *Corrosive Liquid and Vapor.* Use only with adequate ventilation or respiratory protection. (See section 8.) Have safety showers and eyewash fountains immediately available to exposed workers. Use only with materials compatible with phosphoric acid. (See section 10.) If possible, use only in a closed system. **Do not eat, drink, or smoke** in areas where phosphoric acid is used or stored. Wash hands and face thoroughly to clean them of any residual phosphoric acid before eating, drinking, smoking, using the toilet, or applying cosmetics.

NOTE: *Prior to using any plastics, confirm their compatibility with Phosphoric Acid.*

MIXTURES: When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist, or other trained person when you evaluate the end product. Remember, gases and liquids have properties that can cause serious injury or death.

HAZARD RATING SYSTEMS:

NFPA RATINGS:

HEALTH	= 2
FLAMMABILITY	= 0
REACTIVITY	= 1
SPECIAL	None

HMIS RATINGS:

HEALTH	= 2
FLAMMABILITY	= 0
REACTIVITY	= 1

Praxair asks users of this product to study this Material Safety Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents and contractors of the information on this MSDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Praxair, Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair, Inc., it is the user's obligation to determine the conditions of safe use of the product.

Praxair MSDSs are furnished on sale or delivery by Praxair or the independent distributors and suppliers who package and sell our products. To obtain current Praxair MSDSs for these products, contact your Praxair sales representative or local distributor or supplier. If you have questions regarding Praxair MSDSs, would like the form number and date of the latest MSDS, or would like the names of the Praxair suppliers in your area, phone the Praxair Inquiry Hotline (1-800-PRAXAIR) or write the Inquiry Coordinator, Praxair, Inc., PO Box 44, Tonawanda, NY 14151-0044. **You may also obtain Praxair MSDSs by phoning or writing the Praxair Inquiry Coordinator.**

Praxair™ is a trademark of Praxair Technology, Inc.

Praxair, Inc.
39 Old Ridgebury Road
Danbury CT 06810-5113

