



# MATERIAL SAFETY DATA SHEET

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## PHOSPHORIC ACID

### SECTION 1.0 PRODUCT AND COMPANY INFORMATION

**PRODUCT NAME:** PHOSPHORIC ACID (36-85%)      MSDS Number: P007664382  
**Chemical Name:** Phosphoric acid      MSDS Origination Date: 10/01/2000  
**Synonyms:** Phos acid, orthophosphoric acid      MSDS Revision Date: 01/05/2006

#### IN THE EVENT OF A CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT

**Call CHEMTREC: 1-800-424-9300.** Toll free in the continental U.S., Hawaii, Puerto Rico, Canada, Alaska, or U.S. Virgin Islands. For calls originating elsewhere dial 703-527-3887 (collect calls accepted).

For additional non-emergency information call: 706-798-4346

### SECTION 2.0 COMPOSITION / INGREDIENTS INFORMATION

<u>Component</u>	<u>CAS No.</u>	<u>% By Weight</u>	<u>OSHA PEL*</u>	<u>ACGIH TLV*</u>
Phosphoric acid	7664-38-2	36-85	1 mg/m <sup>3</sup>	1 mg/ m <sup>3</sup>
Water	7732-18-5	15-64	N/A	N/A

\*Based on 8-hour time weighted averages

### SECTION 3.0 HAZARD IDENTIFICATION

#### WARNING STATEMENTS:

DANGER:  
CAUSES EYE AND SKIN BURNS  
MAY BE HARMFUL IF SWALLOWED  
CORROSIVE TO MILD STEEL

#### EMERGENCY OVERVIEW:

APPEARANCE AND ODOR: Slightly viscous, clear liquid with no odor

#### POTENTIAL HEALTH EFFECTS:

Likely Routes of Entry: Skin & Eye contact  
EYE CONTACT: This product can cause serious eye burns. Damage may be permanent.  
SKIN CONTACT: Corrosive to the skin. Causes burns. Burning may be delayed.  
INHALATION: Breathing of vapor or mist may be irritating to the respiratory tract. Serious cases of inhalation may cause respiratory problems and late pulmonary edema.  
INGESTION: May be harmful if swallowed. May cause burns or irritation to the linings of the mouth and superior gastrointestinal tract. May include nausea, vomiting, abdominal pain, and a burning sensation.  
TARGET ORGANS: Eyes and Skin

Refer to Section 11.0 for toxicological information.

### SECTION 4.0 FIRST AID MEASURES

IF IN EYES: Hold open eyelids and rinse immediately with flowing clean water for at least 15 minutes. If easy to do, remove contact lenses. Seek medical attention if irritation persists or problems develop.

IF ON SKIN: Remove contaminated clothing and shoes and then flush contaminated area with copious amounts of water. Contaminated clothing should be laundered before reuse. Contaminated shoes may need to be discarded. Seek medical attention if irritation persists or problems develop.

IF INHALED: If inhaled, removed to fresh air. If breathing is difficult; administer oxygen. In case of respiratory arrest, administer artificial respiration. Seek medical attention if problems continue or develop.

IF SWALLOWED: If conscious, rinse mouth with water. Do not induce vomiting. Dilute with several glasses of water, if person can swallow. Seek medical attention or contact the Poison Control Center at 1-800-222-1222 (inside the United States) if problems develop.

**SECTION 5.0 FIRE FIGHTING MEASURES**

FLASHPOINT:	Not flammable or combustible
EXTINGUISHING MEDIA:	Not applicable
HAZARDOUS PRODUCTS OF COMPOSITION:	Exposure to high temperatures may cause decomposition into toxic gases
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Contact with some metals produces hydrogen which may form explosive mixtures (hydrogen) with air.

**SECTION 6.0 INCIDENTAL RELEASE MEASURES**

	Spills should be handled by trained personnel with appropriate protective clothing & equipment.
IN CASE OF SPILL:	Contain, Absorb, sweep, scoop, or vacuum up material and place into containers. Neutralize remaining residual with appropriate materials. Flush spill area with water.
	Do not allow material or run-off to enter sewers and public waters, or to come in contact with public.
	<i>Refer to Section 13 for disposal considerations. Refer to Section 14 &amp; 15 for regulatory information.</i>

**SECTION 7.0 PHYSICAL & CHEMICAL PROPERTIES**

Chemical Formula:	H <sub>3</sub> PO <sub>4</sub>
Appearance:	Slightly viscous, clear liquid
Odor:	None
Solubility in Water:	complete
pH (as a 1% soln @25°C)	1.5 s.u.
Vapor Pressure:	0.0285 mmHg @ 20 °C (100% acid)

Concentration:	75%	80%	85%
% Equivalent H <sub>3</sub> PO <sub>4</sub> :	75.1	80.3	85.5
Boiling Point:	135 °C	144 °C	154 °C
Freezing Point:	-17.5 °C	4.6 °C	21.1 °C
Viscosity (centistokes)	12 (@25 °C)	17 (@25 °C)	23 (@25 °C)
Specific Gravity:	1.575 g/cm <sup>3</sup> @ 25/15.5 °C	1.633 g/cm <sup>3</sup> @ 25/15.5 °C	1.692 g/cm <sup>3</sup> @ 25/15.5 °C
Weight per Gallon:	13.17 lbs./gal. @ 25 °C	13.66 lbs./gal. @ 25 °C	14.15 lbs./gal. @ 25 °C

*NOTE: The physical data reported above are typical values based on material testing, but may vary from product sample to sample. Typical values should not be considered as a guaranteed analysis of any specific lot or as specifications for this product.*

**SECTION 8.0 STABILITY & REACTIVITY INFORMATION**

STABILITY:	Product is stable under normal conditions of storage and handling.
MATERIALS/CONDITIONS TO AVOID:	Avoid contact with metals, which may liberate flammable hydrogen gas. Avoid contact with materials such as sulfides and sulfites, which could release toxic gases. Be cautious in mixing with strong bases because a high heat of reaction can generate steam.
HAZARDOUS DECOMPOSITION PRODUCTS:	Reactions with other materials may liberate toxic and/or explosive gases.
HAZARDOUS POLYMERIZATION:	Will not occur

**SECTION 9.0 EXPOSURE CONTROL / PERSONAL PROTECTION**

EYE PROTECTION:	Recommend the use of approved safety glasses with side shields. Goggles or face shield should be used if potential for splash. Have eyewash/shower facilities immediately available. Use good industrial hygiene practices to avoid eye contact.
SKIN PROTECTION:	Recommend using appropriate chemical resistant clothing, footwear and gloves when handling raw product. Follow good industrial hygiene practices to minimize skin exposure. Wash hands and contaminated skin thoroughly after handling. Have safety shower facilities immediately available. Consult manufacturer guidelines for proper selection.

**RESPIRATORY PROTECTION:** Avoid breathing vapor and mists. Use NIOSH/MSHA approved respiratory protection equipment when airborne concentration exceeds required limits. Consult the respirator manufacturer to determine the appropriate type of equipment needed for a given application. Observe all respirator use limitations specified by NIOSH/MSHA or the manufacturer. Respiratory protection programs must comply with 29 CFR 1910.134.

**VENTILATION:** Provide natural or mechanical ventilation to control exposure levels below airborne exposure limits. The use of local mechanical exhaust ventilation is preferred at sources of air contamination such as open process equipment.

**AIRBORNE EXPOSURE LIMITS:** OSHA and ACGIH has established specific exposure limits for this material as listed below.

<u>SUBSTANCE</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
PHOSPHORIC ACID	1 mg/m <sup>3</sup>	1 mg/m <sup>3</sup> 3 mg/m <sup>3</sup> (STEL)

## SECTION 10.0 HANDLING AND STORAGE INFORMATION

**HANDLING:** Avoid contact with liquid. Keep container closed. Use with adequate ventilation. Handle in accordance with good hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of material from eyes, skin, and clothing immediately upon contact. Wash hands and exposed skin when finished handling.

Emptied container retains product residue. Observe all labeled safeguards until container is cleaned, reconditioned, or destroyed.

**STORAGE:** Store product in sealed containers at room temperature and above freezing (crystallization) point to maintain product performance. Storage area should be well ventilated. Preferred storage containers includes stainless steel or certain reinforced plastics. Keep away from alkalis, sulfides, cyanides and metal powders.

## SECTION 11.0 TOXICOLOGICAL INFORMATION

Due to its acidity, this product is corrosive to the eyes and skin. This material may not produce an immediate burning sensation upon initial contact, delaying the awareness of the worker that contact has occurred with.

<i>Data from single-dose (acute) animal studies with this material are given below:</i>			
<i>Acid Concentration:</i>	<i>75%</i>	<i>80%</i>	<i>85%</i>
Oral (Rat, LD <sub>50</sub> ):	4,400 mg/kg Slightly toxic	4,200 mg/kg Slightly toxic	3,500 mg/kg Slightly toxic
Dermal (Rabbit, LD <sub>50</sub> ):	> 3,160 mg/kg Slightly toxic	> 3,160 mg/kg Slightly toxic	> 1,260 mg/kg Slightly toxic
Eye Irritation (24 hr. Rabbit):	Corrosive	Corrosive	Corrosive
Skin Irritation (24 hr. Rabbit):	Corrosive	Corrosive	Corrosive
DOT Skin (4hr. Rabbit):	Non-corrosive	Non-corrosive	Corrosive

Phosphoric acid has produced no genetic changes in standard tests using bacterial cells.

This material is severely corrosive to steel based on DOT, 49 CFR criteria.

Phosphoric acid has a low vapor pressure at room temperature and is not expected to present a significant inhalation hazard under ambient conditions. Phosphoric acid can, however, be irritating to the respiratory tract if inhaled as a mist or if the material is vaporized.

## SECTION 12.0 ECOLOGICAL INFORMATION

The following data has been classified using the criteria adopted by the European Economic Community (EEC) for aquatic organism toxicity. The classification values can be found in the *Journal of the European Communities*, Annex VIIA, Section 5.2.1.

96-hr. LC <sub>50</sub> (Mosquito fish):	138 mg/L	Practically Non-toxic
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No other toxicity data was located for other freshwater species of fish, algae, or *Daphnia magna*. Prayon Inc. has not conducted any biodegradation studies with this material.

Phosphates are plant nutrients and may contribute to the growth of phytoplankton in water.

## SECTION 13.0 DISPOSAL CONSIDERATIONS

This material when discarded is a hazardous waste as defined by 40 CFR 261, the Resource Conservation and Recovery Act (RCRA). Materials are to be disposed of in accordance with local, state, and federal regulations. Consult with appropriate regulatory affairs officials for information and instruction on disposal.

**SECTION 14.0 TRANSPORTATION INFORMATION**

The information in this section is provided as reference only. Refer to appropriate regulations to appropriately classify your shipment for transportation.

U.S. DOT (Non-bulk): Phosphoric acid, 8, UN1805, PG III  
 U.S. DOT (Bulk): Phosphoric acid, 8, UN1805, PG III  
 ICAO/IATA: Phosphoric acid, 8, UN1805, PG III  
 IMDG: Phosphoric acid, 8, UN1805, PG III  
 Canadian TDG: Phosphoric acid, 8, UN1805, PG III

**SECTION 15.0 REGULATORY INFORMATION**

CAS Registry Number:	7664-38-2	SARA 311/312:	Acute Health Hazard
TSCA Inventory:	Listed	SARA 302 – ESH:	Not applicable
Canadian DSL/NDSL:	DSL Listed	SARA 313 – Toxic:	Not applicable
CERCLA Reportable Qt.	5,000 lbs.	RTECS/NIOSH Number:	TB6300000

**Hazardous chemical under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200), Appendix A**

<u>Material Name</u>	<u>Health Hazard Definitions under Appendix A</u>					
Phosphoric Acid (50-85%)	<input type="checkbox"/> N/A	<input type="checkbox"/> Irritant	<input checked="" type="checkbox"/> Corrosive	<input type="checkbox"/> Sensitizer	<input type="checkbox"/> Toxic	<input type="checkbox"/> Carcinogen

*The information in this section is provided as reference only. Refer to appropriate regulations/sources to appropriately classify material for regulatory purposes.*

**SECTION 16.0 OTHER INFORMATION**

**ANSI/NSF Standard 60:** Certified for use in potable water systems.  
**US Food & Drug Admin:** Recognized as Generally Recognized as Safe (GRAS), 21 CFR 182.1073.

WHIMS	EU Directive 67/548/EEC Annex II			HMIS	NFPA
Class E - Corrosive	EINECS Number:	231-633-2		Health	2
	Hazard Symbol(s):	Corrosive	Flammability	0	0
	Risk (R) Phrase(s):	R34	Reactivity	0	0
	Safety (S) Phrase(s):	S24, S26, S28, S36/37/39, S45	Additional Info.	Select PPE based on intended use.	None

**SECTION 17.0 LATEST REVISION CHANGES**

01/06/2006 Entire MSDS format was revised and content expanded.  
 06/19/2003 The information contained in this MSDS was reviewed and no revisions were made.

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**END OF MSDS**