

# Material Safety Data Sheet



## Martrex, Inc.

### Section 1: Chemical Product and Company Information

**Product name:** Phosphoric Acid (85%)

**Reference Number:** PhosAcid\_H85

**Supplier/ Further Information:** Martrex, Inc.

**Web:** [www.martrexinc.com](http://www.martrexinc.com)

P. O. Box 1709

**Phone:** 952/933-5000

14525 Highway 7

**Toll Free:** 800/328-3627

Minnetonka, Minnesota 55345-3793

**FAX:** 952/933-1889

**EPA Registration Number:** n/a

**CAS#:** 7664-38-4 7732-18-5

**Chemical Name:** Phosphoric Acid (85%)

**Synonyms:** Phos Acid; Ortho-phosphoric Acid; Mono-phosphoric Acid

**Chemical Family:** Mineral Acid

**MSDS Number:** n/a

**24 Hour Emergency Phone - Chemtrec Transport: 1-800-424-9300; Medical: 1-800-441-3637**

### Section 2: Composition/Information on Ingredients

Component	SARA Listed Hazardous?	CAS#	%	RTECS#	Other Limits
1. Phosphoric Acid	Yes	7664-38-4	85%	no data	See Section 15
2. Water	No	7732-18-5	15%	no data	no data

Comp.	OSHA PEL	OSHA STEL	OSHA CEIL	ACGIH TLV	ACGIH STEL	ACGIH CEIL
1. (above)	1 mg/m <sup>3</sup> 8-hr. TWA	no data	no data	1 mg/m <sup>3</sup> 8-hr. TWA	3 mg/m <sup>3</sup>	no data
2. (above)	no data	no data	no data	no data	no data	no data

### Section 3: Hazards Identification

**WARNING: DANGER!** This is a **Clear, Odorless, Colorless**, syrupy liquid with no odor that **Causes Eye and Skin Burns**. May be harmful if swallowed. Corrosive to mild steel.

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

**NFPA:** Health: **3** Flammability: **0** Reactivity: **0**

**Potential Health Effects:**

**Primary Routes of Exposure / Entry:** Skin contact, Inhalation, Eye contact.

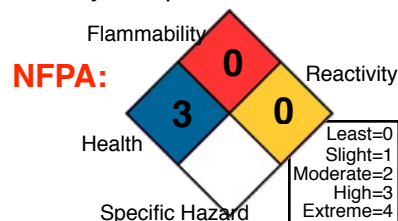
**Target Organs:** liver, blood

**Acute Exposure Symptoms**

**Inhalation:** Inhalation of vapors or mist may be irritating to the respiratory tract.

**Eye Contact:** This product causes eye burns. Injury may be permanent.

**Skin Contact:** This product causes skin burns, based on physical properties. It may not produce an immediate burning sensation upon skin contact, delaying the awareness of the worker that contact has occurred.



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**Ingestion:** This product may be harmful if swallowed; it may cause nausea, vomiting abdominal discomfort, burns and a burning sensation (burning behind the breast bone) based on physical properties.

**Chronic Exposure Symptoms:**

**Inhalation:** Long-term exposure may cause upper respiratory disease and irritation of the skin.

**Skin:** Long-term exposure may cause irritation of the skin.

**Medical Conditions Aggravated By Long-Term Exposure:** Respiratory Disease and Dermal related medical conditions.

**Carcinogenicity Data:**

NTP: No OSHA: No IARC Monograph: No Not Listed:

**Also See:** Section 11 for more Toxicological information

#### Section 4: First Aid Measures

**Inhalation:** Remove to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. Observe for possible delayed reaction. **Get Medical Attention.**

**Eye Exposure:** Immediately flush eyes with plenty of water for at least 15 minutes, while removing contaminated clothing and shoes. If easy to do, remove contact lenses. **Get Medical Attention.**

**Skin Exposure:** Immediately flush skin with plenty of water for at least 15 minutes, while removing contaminated clothing and shoes. **Get Medical Attention.** Wash clothing and thoroughly clean shoes before reuse.

**Ingestion: Do not induce vomiting.** Drink large amounts of water to dilute acid. **Get Medical Attention Immediately. Contact a poison control center. Never give anything by mouth to an unconscious person**

**NOTE TO THE PHYSICIAN:** no data

#### Section 5: Fire Fighting Measures

**Flammability Classification:**

**A Flash Point:** Non-flammable

**Auto-ignition Temperature:** no data

**Lower explosion limit (LEL):** no data

**Upper explosion limit (UEL):** no data

**Extinguishing Media:** Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

**Unusual Fire and Explosive Hazards:** Although Phosphoric Acid does not meet the parameters for flammability, **The following hazards can occur** during a fire: release of phosphorus oxides and / or phosphine (PH<sub>3</sub>) from (thermal decomposition), and hydrogen (a flammable gas) from reaction with metals.

**Hazardous Decomposition Materials:** phosphorus oxides, phosphine (PH<sub>3</sub>)

**Special Procedures:**

**Fire-Fighting Instructions:** Keep personnel removed from and upwind of fire. Wear full fire-fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA).

**Personal Protective Equipment:** Wear full fire-fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA).

#### Section 6: Accidental Release Measures

**Procedure to be Followed in Case of Leak or Spill:** Evacuate Area

**Spill and Leak Personal Procedures:** Wear appropriate protective chemical resistant clothing and chemical resistant gloves to prevent skin contact. Consult the glove/clothing manufacturer to determine the appropriate type glove/ clothing for a given application. Wear chemical goggles, and a face shield; use of a NIOSH/MSHA approved respiratory protection equipment with full face piece (use of a full face piece replaces the need for face shield and/or goggles).

**Containment of Spill:**

**Small Spills:** Neutralize acid spill with alkali (a base) such as soda ash or lime. Absorb material with an inert and place in chemical waste container to be disposed at an appropriate waste disposal facility according to current applicable laws and regulations and product characteristics at time of disposal. Adequate ventilation is required for soda ash due to the release of carbon dioxide gas. **No Smoking In Spill Area.**

**Large Spills:** Contain large spills with dikes and transfer the material to appropriate containers for reclamation or disposal. Absorb remaining spill material with an inert material and place in a chemical waste container to be disposed at an appropriate waste disposal facility according to current applicable laws and regulations and product characteristics at time of disposal. Neutralize residue and washings with alkali (a base) such as soda ash or lime. Flush residual spill area with large amounts of water. Adequate ventilation is required for soda ash due to the release of carbon dioxide gas. **No Smoking In Spill Area.**

**Cleanup and Disposal of Spill:** Dispose at an appropriate waste disposal facility according to current applicable laws and regulations and product characteristics at time of disposal.

**Environmental and Regulatory Reporting:** See Section 13 for disposal information and Sections 14 and 15 for regulatory requirements. Large and small spills may have a broad definition depending on the user's handling system. Therefore, the spill category must be defined at the point of release by technically qualified personnel.

**Section 7: Handling and Storage**

**Minimum/maximum Storage Temperature:** no data

**Handling:** \*Do not get in eyes, on skin or on clothing.

\*Avoid breathing mist or vapor.

\*Do not taste or swallow.

\*Keep container closed.

\*Use only with adequate ventilation.

\*Wash thoroughly after handling.

\*Empty container retains vapor and residue.

\*Observe all label safeguards until container is cleaned, reconditioned or destroyed.

Transfer product from drums to process in closed system (hermetically) if not possible use effective local exhaust ventilation. Empty drums as thoroughly as possible to facilitate disposal. For bulk transfer, purge lines with nitrogen to remove residual liquid before disconnect. When unloading bulk vehicles, personnel should wear chemical goggles and rubber or neoprene gloves. All fittings should be properly secured prior to energizing unloading system. Care should be taken to avoid acid contact when disconnecting lines/hoses after unloading.

**Bulk Storage:** For bulk storage **TYPE 316L STAINLESS is recommended.** Glass, polyethylene and FRP (depending on resin used) are satisfactory. **Steel, aluminum and type 304 stainless are not recommended** because of rapid or potential corrosion. Vessels should be vented and operated at ambient conditions. Maintenance heat (hot water preferred) may be used to prevent freezing. Dike area around storage tank with sufficient volume to hold entire tank contents.

**Storage:** Store in plastic, rubber-lined, or 316 stainless tanks designed for H<sub>3</sub>PO<sub>4</sub>. Store drums away from heat and out of direct sunlight. Store in a well ventilated, dry area away from Alkalis and most metals. Store above freezing point. **Contact with reactive metals, i.e. mild steel and aluminum may generate hydrogen that may form an explosive mixture in storage vessels.**

**REGULATORY REQUIREMENTS:** See Section 8 for employee exposure controls and Section 14 and 15 for other regulatory requirements.

**Section 8: Exposure Controls / Personal Protection**

**Ventilation Protection:** Provide natural or mechanical ventilation to minimize exposure. The use of local mechanical exhaust ventilation is preferred at sources of air contamination, such as open process equipment. Consult NFPA<sub>s</sub>z standard 91 for design of exhaust systems.

**Respiratory Protection (specify type):** Avoid breathing vapor or mist. Wear NIOSH/MSHA approved respiratory protective equipment (full face piece recommended) when airborne exposure limits are exceeded (**see Section 2 for OSHA-PEL and ACGIH-TLV-STEL limits**). If used, full face piece replaces the need for face

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shield and/or chemical goggles. Consult the respirator manufacturer to determine the appropriate type of equipment for a given application. Observe respiratory use limitations specified by NIOSH/MSHA or the manufacturer. Respiratory protection programs must comply with 2.9 C.F.R. 1910.134.

**Eye Protection:** Wear chemical goggles, face shield and chemical resistant clothing (if used, full face piece replaces the need for face shield and/or chemical goggles). **Have Eye Flushing Equipment Immediately Available.**

**Skin Protection:** Wear appropriate protective clothing and chemical-resistant gloves to prevent skin contact. Consult the glove/clothing manufacturer to determine the appropriate type glove/clothing for a given application. Wear chemical goggles, a face shield, and chemical resistant clothing. Wash immediately if skin is contaminated. Remove contaminated clothing promptly and launder before reuse. Clean all protective equipment before reuse. **Have a Safety Shower Immediately Available.**

**Other Protective Clothing and Equipment:** Provide a Safety Shower and Eye Wash Facility where skin or eye contact may occur.

**Hygienic Work Practices:** Clean protective equipment before reuse. Wash thoroughly after handling. Wash clothing and thoroughly clean shoes before reuse.

### Section 9: Physical and Chemical Properties

**Chemical Name:** Phosphoric Acid (85%)  
**Percent Equivalent H<sub>3</sub>PO<sub>4</sub>:** 85.5%  
**Physical State:** Liquid.  
**Color and Appearance:** Clear, Colorless, Syrupy Liquid  
**Odor:** none  
**Odor Threshold:** no data  
**pH:** no data  
**Specific Gravity (@ 25°C/15.5°C):** 1.692  
**Vapor Pressure(100% acid):** 0.0285 mm Hg at 20° C  
**Vapor Density:** no data  
**Density (@ 25°C):** 14.15 lb./gal.  
**Bulk Density:** no data  
**Volatiles by Volume:** no data  
**Boiling Point (°C):** 154°C  
**Softening Point:** no data  
**Freezing Point (°C):** 21.1°C  
**Evaporation Rate:** no data  
**Solubility in water:** complete  
**Viscosity (@ 25°C):** 23  
**Other Solubilities:** no data  
**Chemical Formula:** H<sub>3</sub>PO<sub>4</sub>  
**Formula Wt:** 98

**NOTE:** These physical data are typical values, based on material tested, and may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as a specification for the product.

### Section 10: Stability and Reactivity

**Chemical Stability** (under normal conditions of storage, handling, use): Stable  Unstable

**Hazardous Polymerization:** May Occur   
Will Not Occur

**Conditions to Avoid:** High temperatures.

**Chemical Incompatibility:** Aluminum, Copper, Mild Steel, Brass and Bronze. Avoid contact with materials such as sulfides and sulfites which could release toxic gases. Be cautious in mixing with strong bases because the high heat of reaction can generate steam.

**Hazardous Decomposition Products:** phosphorus oxides and/or phosphine (PH<sub>3</sub>) from thermal decomposition

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**Section 11: Toxicological Information**

**Acute Data:** Data from ASTAIS single dose (acute) animal studies with this material are given below:

**Eye Effects:** (Rabbit: 24 hr exp.): Corrosive

**Skin Effects:** (Rabbit: 24 hr exp.): Corrosive

**Acute Oral LD<sub>50</sub>:** (Rat): = 3,500 mg/kg; slightly toxic

**Acute Dermal LD<sub>50</sub>:** (Rabbit): >1,260 mg/kg; slightly toxic

**ADOT Skin Corrosion:** (Rabbit: 4 hr exp.): non-corrosive

**Additional Information:** The results of single exposure tests indicate that these concentrations of phosphoric acid are slightly toxic orally and no more than slightly toxic after skin application. Following a 24-hour exposure, irreversible eye and skin damage occurred at all tested concentrations of phosphoric acid.

**Chronic Data**

**Chronic Effects:** See Section 3

**Chronic Toxicity Studies:** no data

**Mutagenicity Data:**

**Bacterial Genetic Toxicity:** Phosphoric Acid has produced no genetic changes in standard tests using bacterial cells.

**Non-Bacterial Genetic:** no data

**Developmental Toxicity/Teratological Data:** no data

**Toxicity to Reproduction:** no data

**Carcinogenicity Data:** See NIOSH, RTECS BO 0875000 for additional information.

**NTP:** No **OSHA:** No **IARC Monograph:** No **Not Listed:**

**Other Effects on Humans:** no data

**Section 12: Ecological Information****Eco-acute Toxicity:**

**EPA Ecological Toxicity rating:** no data

**Acute Toxicity to Fish:** Phosphoric Acid is practically nontoxic to one species of freshwater. No toxicity data was located for other freshwater species, algae, or daphnia magna in a search of the available scientific literature.

**Aquatic Organism Toxicity** (European Economic Community (ECC): 96 hr. LC50 Mosquito Fish: 138 mg/L: Practically nontoxic.

**Chronic Toxicity to Fish:** no data

**Acute Toxicity to Aquatic Invertebrates:** no data

**Acute Toxicity to Aquatic Plants:** no data

**Toxicity to Bacteria:** no data

**Toxicity to Soil Dwelling Organisms:** no data

**Toxicity to Terrestrial Plants:** no data

**Environmental Fate:**

**Stability in Water:** no data

**Stability in Soil:** no data

**Transport and Distribution:** Under acidic soil conditions, sparsely soluble phosphates tend to solubilize and may migrate to water.

**Toxicity:** Inorganic phosphates have the potential to increase the growth of freshwater algae, whose eventual death will reduce the available oxygen for aquatic life.

**Degradation Products:**

**Biodegradation:** No specific biodegradation test data was located in a search of the available scientific literature. It was reported in the literature that while acidity of this material may be reduced readily in natural waters, the phosphate may persist indefinitely.

**Photo-degradation:** no data

### Section 13: Disposal Considerations

**Disposal Procedures:** Due to its characteristic of corrosivity, this material, when discarded, is a hazardous waste as defined by the Resources Conservation and Recovery Act (RCRA).

**RCRA Hazardous Waste Number:** D002

**Best demonstrated available treatment:** BDAT-as defined by RCRA for D002 characteristic wastes:

Deactivation plus must meet S277.48 (universal treatment standards) for **NON-CWA/NON/CWA Equivalent/ Non-Class 1 SDWA Systems**.

**Container Cleaning And Disposal:** Dispose of in accordance with local, state and federal regulations.

**Disposal Regulatory Requirements:** Dispose of in accordance with local, state and federal regulations.

Consult your attorney or appropriate regulatory officials for information on such disposal.

### Section 14: Transport Information

	USDOT	TDG - Canada
<b>Proper Shipping Name:</b>	Phosphoric Acid	Phosphoric Acid
<b>Hazard Class:</b>	8	8, 9.2
<b>Hazard Identification Number:</b>	UN1805	UN1805
<b>Packing Group:</b>	III	III
<b>Transport Labeling/Placarding:</b>	Corrosive	Corrosive
<b>Reportable Quantity/ Reportable Limit:</b>	Packages of >5,000 lb. containing a 5,000 RQ of Phosphoric Acid	Packages of <230 kg containing a 230 kg RL of Phosphoric Acid
<b>Notes:</b>	TDG Note (Canada): If product exceeds the CERCLA Reportable Quantity, the notation "RQ" shall be added before or after the basic shipping description	

### Section 15: Regulatory Information

**TSCA:** Listed

**DSL (Canadian):** Listed

**WHMIS Classification D2(b) - (Material Causing Other Toxic Effects):** E - Corrosive Material

**EPA Regulations:**

**TSCA 8(b) inventory:** Phosphoric Acid; Water

**RCRA Hazardous Waste Number:** D002

**CERCLA Hazardous Substance:** Yes

**CERCLA Reportable Quantity (RQ):** 5,000 lb. of Phosphoric Acid. Release of more than 5,000 lb. into the environment in a 24 hour period requires notification to the National Response Center (800-424-8802 or 202-426-2675). Since state and local laws vary, consult your attorney or appropriate regulatory officials for information relating to spill reporting.

**SARA 311/312 Codes:** No.

**SARA (Hazard Categories Title III rules):** Immediate

**SARA 313 Toxic Chemical:** Yes, Phosphoric Acid

**SARA 302 EHS (Extremely Hazardous Substance):** not applicable

**SARA 302 EHS Threshold Planning Quantity:** no data

**OSHA Regulations:**

**OSHA: TWA** = 1 mg/m<sup>3</sup> 8-hr. TWA

**ACGIH: TWA** = 1 mg/m<sup>3</sup> 8-hr. TWA, **STEL** = 3 mg/m<sup>3</sup>

**State Regulations:** Since state and local laws vary, consult your attorney or appropriate regulatory officials for information relating to spill reporting.

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**Section 16: Other Information**

**ACGIH** - American Conference of Governmental Industrial Hygienists  
**ANSI** - American National Standards Institute  
**CAS** - Chemical Abstracts Service  
**CERCLA** - Comprehensive Environmental Response, Compensation & Liability Act of 1980  
**CFR** - Code of Federal Regulations  
**CHEMTREC** - Chemical Transportation Emergency Center  
**DOT** - U.S. Department of Transportation  
**DSL** - Canadian Domestic Substance List  
**EHS** - Extremely Hazardous Substance  
**EPA** - U.S. Environmental Protection Agency  
**HMIS** - Hazardous Material Identification System  
**IARC** - International Agency for Research on Cancer  
**LEL/UEL** - Lower and Upper Explosive Limit  
**mg/m<sup>3</sup>** - Milligrams per cubic meter  
**MSDS** - Material Safety Data Sheet  
**NAERG** - North American Emergency Response Guidebook  
**NIOSH** - National Institute of Occupational Safety and Health  
**NFPA** - National Fire Protection Association NTP - National Toxicology Program  
**OSHA** - Occupational Safety and Health Administration  
**PEL** - Permissible Exposure Limit (set by OSHA)  
**PPE** - Personal Protective Equipment  
**RCRA** -  
**SARA** - Superfund Amendments and Reauthorization Act  
**TDG (Canadian)**: Transport of Dangerous Goods Regulations  
**TLV** - Threshold Limit Value (set by ACGIH)  
**TWA** - Time weighted average  
**TSCA** - US Toxic Substance Control Act  
**WHMIS** - US Workplace Hazardous Material Information System

**MSDS Issue Date:** n/a

**Revised Date:** 5-21-09

**Supersedes:** n/a

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