Safety Data Sheet

Martrex, Inc.

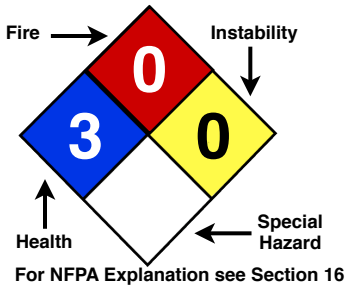
Section 1: Chemical Product and Company Information

Product name: Phosphoric Acid (95%-118%)
Reference Number: PhosAcid_H95-118
Supplier/ Further Information: Martrex, Inc.

1107 Hazeltine Blvd,
Suite 535 MD 27,
Chaska, Minnesota 55318

Phone: 952/933-5000
Toll Free: 800/328-3627
FAX: 952/933-1889

Web: www.martrexinc.com



For NFPA Explanation see Section 16

EPA Registration Number: n/a
CAS#: 7664-38-4 7732-18-5
Chemical Name: Phosphoric Acid (95%-118%)
Synonyms: Phos Acid; Ortho-phosphoric Acid; Poly-phosphoric Acid
Chemical Family: Mineral Acid
SDS Number: n/a

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

Section 2: Hazards Identification

Emergency Overview

Danger! This is a Clear, Odorless, Colorless, syrupy liquid with no odor that causes Eye and Skin Burns. May be Fatal if Inhaled and harmful if swallowed. This material may not produce an immediate burning sensation upon skin contact, delaying the awareness of the worker that contact has occurred.

GHS Classification (Global Harmonized Classification see Section 16):

Acute toxicity, Inhalation	**Category 2**	(H330)
Serious Eye Damage/Eye Irritation	**Category 1**	(H318)
Skin corrosion/irritation	**Category 1B**	(H314)
Acute toxicity, Oral	**Category 4**	(H302)
Corrosive to metals	**Category 1**	(H290)

GHS Label, Hazards and Precautionary Statements

GHS Pictogram:

(GHS Pictogram Hazards Definitions See Section 16)

Label Signal Word: **Danger**

Hazard Statements:

Fatal if inhaled	(H330)
Causes severe skin burns and eye damage	(H314)
Harmful if swallowed	(H302)
May be corrosive to metals	(H290)

Precautionary Statements:

Prevention:

Do not breathe dust/fume/gas/mist/vapors/spray. (P260)
Use only outdoors or in well-ventilated area. (P271)
In case of inadequate ventilation wear respiratory protection. (P284)
Wash skin thoroughly after handling. (P264)
Do not eat, drink or smoke when using this product. (P270)
Wear protective gloves, protective clothing, eye protection, face protection. (P280)
Keep in original packaging. (P234)

Response:

IF INHALED: Remove person to fresh air and keep comfortable for breathing (P304+P340)
Immediately call a POISON CENTER / doctor. (P310)
Specific Treatment is URGENT: see Section 4: First Aid Measures, Inhalation. (P320)
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. (P301+P330+P331)
Immediately call a POISON CENTER / doctor. (P310)
Specific Treatment see Section 4: First Aid Measures, Ingestion. (P321)
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse.(P303+P361+P353+P363)
Specific Treatment see Section 4: First Aid Measures, Skin Exposure. (P321)
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. (P305+P351+P338)
Immediately call a POISON CENTER / doctor. (P310)
Specific Treatment see Section 4: First Aid Measures, Inhalation. (P321)
Absorb spillage to prevent material damage. (P390)

Storage:

Store locked up. (P405)
Store in well-ventilated place. P403)
Store in a corrosion resistant container with a resistant inner liner. (P406)
Keep container tightly closed. (P233)

Disposal Considerations:

Dispose of content/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation. (P501)

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.

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

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

Also See: Section 11 for more Toxicological information

Section 3: Composition/Information on Ingredients

Component	SARA Listed Hazardous?	CAS#	%	RTECS#	Other Limits
1. Phosphoric Acid	Yes	7664-38-4	95(+)%	no data	See Section 15
2. Water	No	7732-18-5	5(-)%	no data	no data

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

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_3) from (thermal decomposition), and hydrogen (a flammable gas) from reaction with metals.

Hazardous Decomposition Materials: phosphorus oxides, phosphine (PH_3)

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_3PO_4. 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$_{SZX}$** 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 3 for OSHA-PEL and ACGIH-TLV-STEL limits)**. If used, full face piece replaces the need for face

shield and/or chemical goggles. Consult the respirator manufacturer to determine the appropriate type of equipment for a given application. Observe respiratory use limitations specifies 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 (95%-118%)
Percent Equivalent H_3PO_4: 95%-118%
Physical State: Liquid.
Color and Appearance: Clear, Colorless, Syrupy Liquid
Odor: none
Odor Threshold: no data
pH: no data
Specific Gravity (@ 25ºC/15.5ºC): 1.692
Vapor Pressure(100% acid): 0.0285 mm Hg at 20º C
Vapor Density: no data
Density (@ 25ºC): 14.15 lb./gal.
Bulk Density: no data
Volatiles by Volume: no data
Boiling Point (ºC): 154ºC
Softening Point: no data
Freezing Point (ºC): 21.1ºC
Evaporation Rate: no data
Solubility in water: complete
Viscosity (@ 25ºC): 23
Other Solubilities: no data
Chemical Formula: H_3PO_4
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__X__ Unstable____
Hazardous Polymerization: May Occur____
Will Not Occur__X__
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_3) from thermal decomposition

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_{50}: (Rat): = 4,400 mg/kg; slightly toxic
Acute Dermal LD_{50}: (Rabbit): >3,160 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 2
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
Proper Shipping Name:	Phosphoric Acid	Phosphoric Acid
Hazard Class:	8	8, 9.2
Hazard Identification Number:	UN1805	UN1805
Packing Group:	III	III
Transport Labeling/Placarding:	Corrosive	Corrosive
Reportable Quantity/ Reportable Limit:	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
Notes:	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^3 8-hr. TWA
ACGIH: TWA = 1 mg/m^3 8-hr. TWA, **STEL** = 3 mg/m^3

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

Section 16: Other Information

Acronyms

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
CPR - Controlled Products Regulations
CWC - Chemical Weapons Convention
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/m³ - Milligrams per cubic meter
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 - Resource Conservation and Recovery Act of 1976

GHS Pictograms and Hazards

Health Hazard	Flame	Exclamation Mark
		
• Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity	• Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides	• Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder	**Corrosion**	**Exploding Bomb**
		
• Gases Under Pressure	• Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals	• Explosives • Self-Reactives • Organic Peroxides
Flame Over Circle	**Environment** (Non-Mandatory)	**Skull and Crossbones**
		
• Oxidizers	• Aquatic Toxicity	• Acute Toxicity (fatal or toxic)

NFPA Rating Explanation Guide

Rating Number	Health Hazard	Flammability Hazard	Instability Hazard
4	Can be lethal	Will vaporize and readily burn at normal temperatures	May explode at normal temperatures and pressures
3	Can cause serious or permanent injury	Can be ignited under almost all ambient temperatures	May explode at high temperature or shock
2	Can cause temporary incapacitation or residual injury	Must be heated or high ambient temperature to burn	Violent chemical change at high temperatures or pressures
1	Can cause significant irritation	Must be preheated before ignition can occur	Normally stable. High temperatures make unstable
0	No Hazard	Will not burn	Stable

Rating Symbol	Special Hazard
ALK	Alkaline
ACID	Acidic
BIO	BioHazard
COR	Strong Corrosive
CRYO	Cryogenic
OXY	Oxidizer
	Radioactive
W	Reacts violently or explosively with water
W OX	Reacts violently or explosively with water or oxidizer

This chart for reference only - For complete specifications consult the NFPA Standard

24 Hour Emergency Phone - Chemtrec: 1-800-424-9300 Transportation
1-800-441-3637 Medical

SARA - Superfund Amendments and Reauthorization Act
SDS - Safety Data Sheet
STEL - Concentration to which workers can be exposed continuously for a **short** period of time without suffering from irritation, irreversible tissue damage or narcosis of sufficient degree to increase the likelihood of accidental injury, impair self-rescue or materially reduce work efficiency.
TDG (Canadian)**:** Transport of Dangerous Goods Regulations
TLV - Threshold Limit Value (set by ACGIH)
TWA - 8-hour Time Weighted Average
TSCA - US Toxic Substance Control Act
WHMIS - Workplace Hazardous Material Information System

SDS Issue Date: n/a
Revised Date: 6-25-14
Supersedes: 10-25-11

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