



TULSTAR PRODUCTS, INC.

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MATERIAL DATA SAFETY SHEET

Company Information

Company Information: **TULSTAR PRODUCTS, INC.**
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Product Information

Product Name: Phosphoric Acid (70-85%)
Synonyms: Orthophosphoric Acid, Monophosphoric Acid
CAS Number: 7664-38-2
Formula: H_3PO_4

Hazard Identification

Emergency Overview: Liquid is corrosive (causes burns) to eyes and skin. Mist produces irritation to eyes, nose, throat and lungs. Use water to keep fire exposed containers cool. Oxides of Phosphorus are formed during thermal decomposition.

Health Effects: Causes sensory irritation; contact of the tissues with phosphoric acid also causes corrosive burns. The mist causes mild irritation of eyes, throat, and skin.

First Aid Measures

Eyes: Immediately flush with large amounts of water for at least 15 minutes. Lifting upper and lower lids intermittently. See a physician or ophthalmologist.

Skin: Immediately remove contaminated clothing and wash with soap and water. If irritation persists, obtain medical attention.

Inhalation: Remove to fresh air. If breathing discomfort occurs, call a physician.

Ingestion: Rinse mouth with water. Do not induce vomiting. See a physician immediately.

Notes to physician: Phosphoric acid at concentrations of 70-85% has low oral toxicity but may be corrosive to the eyes, skin and mucous membranes. Consideration should be given to careful endoscopy as stomach or esophageal burns, perforations or strictures may occur. Careful gastric lavage with an endotracheal tube in place should be considered. Observation may be warranted. Treatment is controlled removal of exposure followed by symptomatic and supportive care.

Fire Fighting Measures

Extinguishing Media: Use water spray to keep fire-exposed containers cool. Extinguish fire using agent suitable for surrounding fire.

Special Firefighting Procedures: Not combustible. Evolves Hydrogen on contact with most metals.
Degree of Fire and Explosion Hazard: Not applicable.
Hazardous Decomposition Products: Oxides of Phosphorus.

Accidental Release Measures

Procedure for Release or Spill: Approach release from upwind. Stop or control leak using special protective clothing and positive pressure self-contained breathing apparatus. Control runoff and isolate discharged material for proper disposal.

Handling and Storage

Handling: Transfer product from drums to process in closed system (hermitized) and if not possible use effective local exhaust ventilation. Empty drum 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.

For bulk storage type 316L stainless is recommended. Glass, polyethylene and FRP (depending on resin use) 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.

Ventilation: Provide mechanical local exhaust ventilation to prevent release of mist into work environment. If ventilation is inadequate or not available use acid gas cartridge or canister with full facepiece.

Storage: Store in cool dry well ventilated area away from alkalis and most metals. Do not store in direct sunlight. Do not double stack. Store about freezing point. Contact with reactive metals i.e. mild steel and aluminum may generate hydrogen that may form an explosive mixture in storage vessels.

Exposure Controls/Personal Protection

Control Measures: Provide mechanical local exhaust ventilation to prevent release of mist into work area. If release is expected use respiratory protection as indicated below.

Recommended Personal Protective Equipment:

Eyes- Use cup type chemical goggles. Full face shield may be used.

Gloves- Rubber or neoprene gloves.

Special Clothing and Equipment- Rubber or neoprene aprons or full protective clothing depending on degree of exposure.

Footwear: Rubber or neoprene footwear.

Physical and Chemical Properties

Melting/Freezing Point: -17.5°C (75%); +32°C (85%)

Boiling Point: 130-158°C

Vapor Pressure: 8-2 NM HG @25°C

Vapor Density (Air=1): Non Volatile

Room Temperature Appearance and State: Clear Colorless liquid

Odor: None

Specific Gravity (H₂O=1): 1.5-1.7

Solubility in H₂O % by WT: Infinite

% Volatile: Non-Volatile

Evaporation Rate: None-Volatile

(Butyl Acetate=1)

pH (as is): About 1.5

pH (1% Solution): 1.7

Odor Threshold: Not Available

Density (G/ML): 1.3-1.7 Depending on concentration

Partition Coefficient: Not Available
N-Octanol/Water
Flash Point: Non Combustible
Autoignition temperature: Non Applicable
Flammable Limits: Upper- Non Combustible
Lower- Non Combustible
Explosive Properties: Not Applicable
Oxidizing Properties: Not Applicable
Solubility: No Data

Stability and Reactivity

Stability: Stable
Hazardous Polymerization: Will Not Occur
Conditions to Avoid: Contact with alkaline materials. Reactive metal.
Material to Avoid: See Above
Major Contaminants That Contribute to Instability: Mild steel and aluminum may react to produce hydrogen gas that can produce an explosive in confined vessels.
Incompatibility: See Above
Hazardous Decomposition Products: Oxides of Phosphorus. Contact with reactive metals (e.g. mild steel and aluminum) may produce flammable/explosive hydrogen - air mixtures. Reacts violently with strong bases.
Sensitivity to Mechanical Impact: None
Sensitivity to Static Discharge: None

Toxicological Information

Eye Contact: (75%, 80%, 85%) Corrosive (Rabbit)
Ref: J. Amer. Coll. of Toxicol., 1990
Skin Contact: (75%) Non-Corrosive (4HR) (Rabbit)
(80%) Non-Corrosive (4HR)
(85%) Corrosive (4HR)
Skin Absorption: (75%) LD50 > 3160 MG/KG (RAT)
(80%) LD50 > 3160 MG/KG (RAT)
(85%) LD50 > 1260 MG/KG (RAT)
Ref: Amer. Coll of Toxicol., 1990
Inhalation: No Data Available
Ingestion: (75%) LD50 = 4400 MG/KG (RAT)
(80%) LD50 = 4200 MG/KG (RAT)
(85%) LD50 = 3500 MG/KG (RAT)
Acute Effects From: Phosphoric Acid has low acute oral. Overexposure and moderate dermal toxicity. It is corrosive to eyes. Slightly toxic when inhaled.
Chronic Effect: Slightly toxic with repeated inhalation from overexposure or ingestion for concentrations 70-80%.
* Effects Considered Include: Sensitivities, Carcinogenicity, Teratogenicity, Mutagenicity, Synergistic Products, and any medical conditions generally recognized as being aggravated by exposure.
* Carcinogenicity, Teratogenicity, Mutagenicity, Synergistic Products, Reproductive Toxicity, and any medical conditions generally recognized as being aggravated by exposure were examined and no information was found or is available.

Ecological Information

Environmental Fate: Inorganic Phosphates in contact with the soil, sub-surface or surface water may be taken up by plants and utilized as essential nutrients. Phosphates may also form precipitates, usually with calcium or magnesium. The resultant compounds are insoluble in water and become a part of the soil or sediment. The term biodegradability, as such, is not applicable to inorganic compounds.
Environmental Effects: Aquatic toxicity data (for Sodium Phosphates) 96 HR LC50>100 MG/L, Non-toxic (Rainbow trout, Inland Silversides and Myrid Shrimp). 48 HR LC50>100 MG/L, Non-toxic (Daphnia Magna)

Disposal Considerations

Waste Disposal Method: If Phosphoric Acid is to be used in water reactions, triple rinse drum with water and put into process (reduce water volume equal to rinsing). Soda Ash and Lime may be used as neutralizing agents for material that cannot be salvaged. Neutralized liquid may be discharged to treatment in accordance with regulatory procedures.

Transport Information

DOT Proper Shipping Name: Phosphoric Acid
IATA : Phosphoric Acid
IMDG : Phosphoric Acid
DOT Classification : 8 Corrosive
DOT Labels : Corrosive
DOT Marking : Phosphoric Acid UN 1805
DOT Placard : Corrosive
UN Number : 1805
Hazardous Substance/RQ : 5000 LBS.
49 STCC Number : 4930248
Precautions To Be Taken : Dike any spills. Protect against
In Transportation damage.
Other Shipping Info. : None

16. Regulatory Information

OSHA

Exposure Limits

Substance(s) : Phosphoric Acid
OSHA PEL-TWA : 1 MG/CUM
STEL : 3 MG/CUM
Ceiling : Not Applicable
Skin Designation : Not Applicable
ACGIH TLV-TAW : 1 MG/CUM
STEL : 3 MG/CUM
Ceiling : Not Applicable
Skin Designation : Not Applicable

Target organ Effects : Eyes, Skin and Lungs.

Carcinogenic Potential : Phosphoric Acid

Regulated By OSHA : No

Listed On NTP Report : No

IARC Group 1, 2A, 2B : No

U.S. EPA Requirements

Release Reporting

CERCLA (40 CFR 302) : Phosphoric Acid

Listed Substance(s) : Yes

RQ : 5000 LBS

Category : D

RCRA Waste No : Not Applicable

Unlisted Substances(s) : Yes

RQ : 100 LBS

Characteristic : Corrosivity

RCRA Waste No : D002

SARA Title III Sec 313

(40 CFR 372) : Phosphoric Acid

Listed Toxic Chemical : Listed

Inventory Reporting

SARA Title III SEC 311/312

(40 CFR 370)

Substance(s) : Phosphoric Acid
Hazard Category : Immediate (Acute) Health Hazard

Planning Threshold : 10,000 lbs.

Emergency Planning

SARA Title III SEC 302-303

(40 CFR 355)

Listed Substance(s) : Not Listed

RQ : 5000 lbs

Planning Threshold : Not Applicable

U.S. TSCA Status : Listed

Canada

Ingredient Disclosure List

Substance(s) : Yes

Controlled Product : Yes

Hazard Symbols : Materials causing other toxic effects: corrosive material

Class & Division : Class D Div.

Product Identification No: 1805

Domestic Substance List : Listed

CEPA Priority List : Not Listed

Carcinogenicity

ACGIH Appendix A : Not Listed

A1-Confirmed Human : Not Applicable

A1-Suspected Human : Not Applicable

IARC Group 1 or 2 : No

Label Language (US/Canada)

Health : Liquid is corrosive to eyes and skin. Mist produces irritation to eyes, nose, and lungs.

Physical : Not Applicable

Handling and Storage : Store in dry cool area away from alkalis and most metals. Use goggles and/or face shields. Rubber aprons and boots where splashing or liquid contact is expected. For mist generation use cartridge or canister acid gas respirator with full facepiece.

First Aid : Immediately flush eyes and skin with plenty of water. If irritation occurs and persists, obtain medical attention.

State Regulations : Phosphoric Acid contains traces of listed chemicals from California's proposition 65: 3 PPM Arsenic, 2PPM Cadmium & 0.5 PPM Lead. Maximums for food grade and 90, 2 and 7 respectively for technical grade.

17. Other Information

Product Uses : Phosphates and fertilizers, acid cleaners, aluminum brighteners and metal phosphatizing, leather tanning, varnish, synthetic rubber, boiler water treatment. Food grade is used as an acidulant for cola drinks, yeast nutrients, etc.

NFPA 704

Health : 2

Flammability : 0

Reactivity : 0

Special Hazard: None

(Degree of Hazard

0 = No Hazard

4 = Severe Hazard)

The contents and format of this MSDS are in accordance with
OSHA Hazard Communication and Canada's Workplace Hazardous
Material Information System (WHMIS)