Phosphoric Acid - MSDS

1. Product Name and Identification

Product Name: Phosphoric Acid
Chemical Formula: H3PO4
Synonyms: Orthophosphoric Acid, Phosphoric(V) Acid
CAS Number: 7664-38-2
Manufacturer/Supplier: [Insert Manufacturer Name]
Emergency Contact Information: [Insert Emergency Contact Details]

2. Composition/Ingredients

Substance: Phosphoric Acid
Chemical Name: Phosphoric Acid
CAS Number: 7664-38-2
Percent by Weight: 85% (typical for liquid concentrated phosphoric acid)

3. Hazards Identification

GHS Classification:

- Acute toxicity - Oral (Category 4)
- Skin corrosion/irritation (Category 1B)
- Serious eye damage/eye irritation (Category 1)

Signal Word: Danger

Hazard Statements:

- H302: Harmful if swallowed.
- H314: Causes severe skin burns and eye damage.

Precautionary Statements:

- P260: Do not breathe mist, vapors, or spray.
- P264: Wash hands and affected skin thoroughly after handling.
- P280: Wear protective gloves, clothing, and eye/face protection.
- P301+P330+P331: If swallowed, rinse mouth. Do NOT induce vomiting.
- P303+P361+P353: If on skin or hair, remove immediately all contaminated clothing. Rinse with water.
- P305+P351+P338: If in eyes, rinse cautiously with water. Remove contact lenses if present and easy to do. Continue rinsing.

Potential Health Effects:

- **Eye Contact:** Severe eye damage, redness, watering, and potential vision loss.
- **Skin Contact:** Causes severe chemical burns, redness, and blistering.
- **Inhalation:** May cause respiratory irritation, coughing, or difficulty breathing.
- **Ingestion:** Harmful; can result in severe burns to the mouth, throat, and gastrointestinal tract.

4. First Aid Measures

General Advice: Obtain immediate medical attention for significant exposure.

- **Eye Contact:** Flush eyes with water for at least 15 minutes. Remove contact lenses if applicable and easy to do. Seek medical attention immediately.
- **Skin Contact:** Rinse affected areas with plenty of water for at least 15 minutes. Remove any contaminated clothing. Get medical assistance for burns or irritation.
- **Inhalation:** Move to fresh air immediately. If breathing difficulties arise, administer oxygen if available and consult a physician.
- **Ingestion:** Rinse the mouth thoroughly with water. Do NOT induce vomiting. Seek immediate medical help.

5. Handling and Storage

Handling:

- Avoid contact with skin, eyes, and clothing.
- Use only with appropriate protective equipment.
- Avoid inhalation of mists or vapors. Always work in a well-ventilated area.
- Do not eat, drink, or smoke while handling this material.

Storage:

- Store in a cool, dry, and well-ventilated area.
- Keep the container tightly closed when not in use.
- Store away from incompatible materials such as strong alkalis, metals, and oxidizing agents.

6. Exposure Controls/Personal Protection

Exposure Limits:

- ACGIH (TWA): 1 mg/m^3
- OSHA PEL (TWA): 1 mg/m^3

Engineering Controls:

- Ensure adequate ventilation. Use local exhaust to maintain airborne concentrations below occupational exposure limits.

Personal Protective Equipment (PPE):

- **Eye Protection:** Chemical splash goggles or full-face shield.
- **Skin Protection:** Chemical-resistant gloves (e.g., nitrile, neoprene).
- **Respiratory Protection:** Use a NIOSH-approved respirator if concentrations exceed recommended exposure limits.
- **Clothing:** Full-length protective clothing and acid-resistant aprons.

7. Physical and Chemical Properties

- **Appearance:** Clear, colorless, viscous liquid
- **Odor:** Odorless
- **Boiling Point:** Approximately 158°C (316°F) at standard pressure
- **Melting Point:** 42°C (108°F) (solidifies on cooling)
- **Flash Point:** Not applicable
- **Density:** 1.685 g/cm³ at 25°C
- **Vapor Pressure:** < 0.03 hPa at 20°C
- **Solubility:** Freely soluble in water; exothermic reaction during dissolution
- **pH:** Heavy acidic; approximately 1 at 1% in water

8. Stability and Reactivity

Chemical Stability: Stable at normal temperatures and pressures when kept dry and properly stored.

Conditions to Avoid:

- Avoid contact with heat, open flames, and moisture.
- Reacts violently with water under uncontrolled conditions.

Materials to Avoid:

- Strong alkalis, reducing agents, and organic compounds.
- Reactive metals such as aluminum, magnesium, and zinc may produce flammable hydrogen gas upon contact.

Hazardous Decomposition Products:

- Thermal decomposition may release phosphorous oxides and other toxic fumes.

9. Toxicological Information

Acute Toxicity:

- **Oral LD50 (Rat):** 1,530 mg/kg
- **Skin LD50 (Rabbit):** Not determined due to corrosive effects

Irritation Properties:

- Causes severe skin and eye burns.

Symptoms of Exposure:

- Burning sensation, coughing, difficulty breathing from inhalation.
- Skin irritation and blistering from direct contact.
- Severe gastrointestinal pain upon ingestion.

Chronic Effects: Prolonged exposure to vapors or mists may result in respiratory damage or chronic bronchitis.

10. Disposal Considerations

Waste Disposal Methods:
Dispose of according to local, regional, and national environmental regulations. Neutralize with a base prior to disposal if permitted. Avoid release into drains, soil, or water.

Container Handling:
Empty containers can retain product residue. Do not reuse empty containers unless thoroughly cleaned and authorized for reuse. Dispose of containers as hazardous waste unless completely neutralized.