SAFETY DATA SHEET

1. Identification

Product identifier: Phosphoric Acid

Other means of identification

Synonyms: Ortho-Phosphoric Acid, White Phosphoric Acid
Product No.: 0240, 6908, 2798, 2797, 5854, 2796, 5804, 2788, 0259, 5372, 0274, 0269, 0268, 0265, 0264, 0262, 0260, 0255, 0251, 6168

Recommended restrictions

Recommended use: For Laboratory, Research or Manufacturing Use.
Restrictions on use: Not determined.

Details of the supplier of the safety data sheet

Manufacturer

Company Name: Avantor Performance Materials, LLC.
Address: 3477 Corporate Parkway
          Center Valley, PA 18034
Telephone: Customer Service: 855-282-6867
Fax: 610-573-2610
Contact Person: Environmental Health & Safety
E-mail: info@avantormaterials.com

Emergency telephone number:
CHEMTREC: 1-800-424-9300 within US and Canada

2. Hazard(s) identification

Hazard Classification

Physical Hazards
Corrosive to metals Category 1

Health Hazards
Acute toxicity (Oral) Category 4
Acute toxicity (Dermal) Category 5
Skin Corrosion/Irritation Category 1A
Serious Eye Damage/Eye Irritation Category 1
Specific Target Organ Toxicity - Single Exposure

Target Organs
1. Respiratory tract irritation.

Unknown toxicity - Health
Acute toxicity, oral 0 %
Acute toxicity, dermal 0 %
Acute toxicity, inhalation, vapor 84 %
Acute toxicity, inhalation, dust or mist: 84 %

**Label Elements**

**Hazard Symbol:**

Signal Word: Danger

Hazard Statement:
- May be corrosive to metals.
- Harmful if swallowed.
- Causes severe skin burns and eye damage.
- May cause respiratory irritation.

**Precautionary Statements**

**Prevention:**
Keep only in original packaging. Do not breathe dust/fume/mist/vapors. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection. Wash thoroughly after handling.

**Response:**
Absorb spillage to prevent material damage. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. Wash contaminated clothing before reuse. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.

**Storage:**
Store locked up. Store in a well-ventilated place. Keep container tightly closed. Store in a corrosion-resistant container with a resistant inner liner.

**Disposal:**
Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

**Hazard(s) not otherwise classified (HNOC):** None.

### 3. Composition/information on ingredients

**Mixtures**

<table>
<thead>
<tr>
<th>Chemical Identity</th>
<th>CAS number</th>
<th>Content in percent (%)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoric acid</td>
<td>7664-38-2</td>
<td>80 - 90%</td>
</tr>
</tbody>
</table>

*All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

### 4. First-aid measures
General information: Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.

Ingestion: Do NOT induce vomiting. Call a physician or poison control center immediately. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Inhalation: Move to fresh air. Call a physician or poison control center immediately. Apply artificial respiration if victim is not breathing. If breathing is difficult, give oxygen.

Skin Contact: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician or poison control center immediately. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Eye contact: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Call a physician or poison control center immediately. In case of irritation from airborne exposure, move to fresh air. Get medical attention immediately.

Most important symptoms/effects, acute and delayed

Symptoms: Causes severe skin and eye burns. Causes digestive tract burns.

Hazards: None known.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically. Symptoms may be delayed.

5. Fire-fighting measures

General Fire Hazards: Product is highly acidic. Wear protective gear if spilled during fire fighting.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: The product is non-combustible. Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media: None known.

Specific hazards arising from the chemical: Not combustible, but if involved in a fire decomposes to produce toxic gases.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: Move containers from fire area if you can do so without risk. Use water spray to keep fire-exposed containers cool. Cool containers exposed to flames with water until well after the fire is out.

Special protective equipment for fire-fighters: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Product is highly acidic. Wear protective gear if spilled during fire fighting.

6. Accidental release measures
Personal precautions, protective equipment and emergency procedures: See Section 8 of the SDS for Personal Protective Equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep unauthorized personnel away. Keep upwind. Ventilate closed spaces before entering them.

Methods and material for containment and cleaning up: Neutralize with lime or soda ash. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Dike far ahead of larger spill for later recovery and disposal.

Notification Procedures: Inform authorities if large amounts are involved.

Environmental Precautions: Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so.

7. Handling and storage

Precautions for safe handling: Do not get in eyes, on skin, on clothing. Do not taste or swallow. Wash thoroughly after handling. Do not eat, drink or smoke when using the product. Use caution when adding this material to water. Add material slowly when mixing with water. Do not add water to the material; instead, add the material to the water.

Conditions for safe storage, including any incompatibilities: Do not store in metal containers. Keep container tightly closed. Store in a well-ventilated place.

8. Exposure controls/personal protection

Control Parameters

<table>
<thead>
<tr>
<th>Occupational Exposure Limits</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Chemical Identity</th>
<th>Type</th>
<th>Exposure Limit Values</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoric acid</td>
<td>TWA</td>
<td>1 mg/m3</td>
<td>US. ACGIH Threshold Limit Values (2011)</td>
</tr>
<tr>
<td></td>
<td>STEL</td>
<td>3 mg/m3</td>
<td>US. ACGIH Threshold Limit Values (2011)</td>
</tr>
<tr>
<td></td>
<td>REL</td>
<td>1 mg/m3</td>
<td>US. NIOSH Pocket Guide to Chemical Hazards (2010)</td>
</tr>
<tr>
<td></td>
<td>STEL</td>
<td>3 mg/m3</td>
<td>US. NIOSH Pocket Guide to Chemical Hazards (2010)</td>
</tr>
<tr>
<td></td>
<td>PEL</td>
<td>1 mg/m3</td>
<td>US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>1 mg/m3</td>
<td>US. OSHA Table Z-T-A (29 CFR 1910.1000) (1989)</td>
</tr>
<tr>
<td></td>
<td>STEL</td>
<td>3 mg/m3</td>
<td>US. OSHA Table Z-T-A (29 CFR 1910.1000) (1989)</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>1 mg/m3</td>
<td>US. Tennessee, OELs. Occupational Exposure Limits, Table Z1A (06 2008)</td>
</tr>
<tr>
<td></td>
<td>STEL</td>
<td>3 mg/m3</td>
<td>US. Tennessee, OELs. Occupational Exposure Limits, Table Z1A (06 2008)</td>
</tr>
<tr>
<td></td>
<td>ST ESL</td>
<td>10 µg/m3</td>
<td>US. Texas, Effects Screening Levels (Texas Commission on Environmental Quality) (12 2010)</td>
</tr>
<tr>
<td></td>
<td>AN ESL</td>
<td>1 µg/m3</td>
<td>US. Texas, Effects Screening Levels (Texas Commission on Environmental Quality) (12 2010)</td>
</tr>
<tr>
<td></td>
<td>TWA PEL</td>
<td>1 mg/m3</td>
<td>US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants (08 2010)</td>
</tr>
<tr>
<td></td>
<td>STEL</td>
<td>3 mg/m3</td>
<td>US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants (08 2010)</td>
</tr>
</tbody>
</table>
Appropriate Engineering Controls

No data available.

Individual protection measures, such as personal protective equipment

**General information:** Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area.

**Eye/face protection:** Wear safety glasses with side shields (or goggles) and a face shield.

**Skin Protection**
**Hand Protection:** Chemical resistant gloves

**Other:** Wear suitable protective clothing and gloves.

**Respiratory Protection:** In case of inadequate ventilation use suitable respirator. Respirator type: Chemical respirator with acid gas cartridge.

**Hygiene measures:** Provide eyewash station and safety shower. Observe good industrial hygiene practices. Wash hands before breaks and immediately after handling the product. Wash contaminated clothing before reuse. Avoid contact with eyes. Avoid contact with skin.

## 9. Physical and chemical properties

### Appearance

- **Physical state:** Liquid
- **Form:** Liquid
- **Color:** Colorless
- **Odor:** Odorless
- **Odor threshold:** No data available.
- **pH:** 1.5 (3.27 g/l, 20 °C)
- **Melting point/freezing point:** 21.1 °C
- **Initial boiling point and boiling range:** 158 °C
- **Flash Point:** not applicable
- **Evaporation rate:** No data available.
- **Flammability (solid, gas):** No data available.

### Upper/lower limit on flammability or explosive limits

- **Flammability limit - upper (%):** No data available.
- **Flammability limit - lower (%):** No data available.
- **Explosive limit - upper (%):** No data available.
- **Explosive limit - lower (%):** No data available.

- **Vapor pressure:** 0.3 kPa
- **Vapor density:** No data available.
- **Density:** 1.69 g/ml (20 °C)
- **Relative density:** 1.69 (20 °C)

### Solubility(ies)

- **Solubility in water:** Miscible with water.
- **Solubility (other):** No data available.
Partition coefficient (n-octanol/water): No data available.
Auto-ignition temperature: No data available.
Decomposition temperature: No data available.
Viscosity: No data available.

10. Stability and reactivity

Reactivity: No dangerous reaction known under conditions of normal use.
Chemical Stability: Material is stable under normal conditions.
Possibility of hazardous reactions: Hazardous polymerization does not occur.
Conditions to avoid: Avoid contact with oxidizing agents. Avoid contact with strong reducing agents. Contact with alkalis.
Hazardous Decomposition Products: oxides of phosphorus

11. Toxicological information

Information on likely routes of exposure
Inhalation: Severely irritating to respiratory system.
Skin Contact: Causes severe skin burns.
Eye contact: Causes serious eye damage.
Ingestion: Harmful if swallowed.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral Product: ATEmix (Rat): 1,700 mg/kg
Dermal Product: ATEmix (Rabbit) 3,044.44 mg/kg
Inhalation Product: Not classified for acute toxicity based on available data.

Repeated dose toxicity Product: No data available.

Skin Corrosion/Irritation Product: Causes severe skin burns.
Serious Eye Damage/Eye Irritation Product: Causes serious eye damage.
Respiratory or Skin Sensitization
Product: Not a skin sensitizer.

Carcinogenicity
Product: This substance has no evidence of carcinogenic properties.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:
No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:
No carcinogenic components identified

No carcinogenic components identified

Germ Cell Mutagenicity
In vitro Product: No mutagenic components identified

In vivo Product: No mutagenic components identified

Reproductive toxicity
Product: No components toxic to reproduction

Specific Target Organ Toxicity - Single Exposure
Product: None known.

Specific Target Organ Toxicity - Repeated Exposure
Product: None known.

Target Organs
Specific Target Organ Toxicity - Single Exposure: Respiratory tract irritation.

Aspiration Hazard
Product: Not classified

Other effects: Not known.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish
Product: No data available.

Aquatic Invertebrates
Product: No data available.

Chronic hazards to the aquatic environment:

Fish
Product: No data available.
Aquatic Invertebrates
Product: No data available.

Toxicity to Aquatic Plants
Product: No data available.

Persistence and Degradability
Biodegradation
Product: Expected to be readily biodegradable.

BOD/COD Ratio
Product: No data available.

Bioaccumulative potential
Bioconcentration Factor (BCF)
Product: No data available on bioaccumulation.

Partition Coefficient n-octanol / water (log Kow)
Product: No data available.

Mobility in soil: The product is water soluble and may spread in water systems.

Other adverse effects: The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

13. Disposal considerations

Disposal instructions: Discharge, treatment, or disposal may be subject to national, state, or local laws.

Contaminated Packaging: Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT
UN Number: UN 1805
UN Proper Shipping Name: Phosphoric acid solution
Transport Hazard Class(es)
Class: 8
Label(s): 8
Packing Group: III
Marine Pollutant: No
Special precautions for user: Not determined.

IMDG
UN Number: UN 1805
UN Proper Shipping Name: PHOSPHORIC ACID SOLUTION
Transport Hazard Class(es)
Class: 8
Label(s): 8
EmS No.: F-A, S-B
Packing Group: III
Marine Pollutant: No
Special precautions for user: Not determined.

IATA
UN Number: UN 1805
Proper Shipping Name: Phosphoric acid, solution
Transport Hazard Class(es):
  Class: 8
  Label(s): 8
Packing Group: III
Marine Pollutant: No
Special precautions for user: Not determined.

15. Regulatory information

US Federal Regulations
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

<table>
<thead>
<tr>
<th>Chemical Identity</th>
<th>Reportable quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoric acid</td>
<td>5000 lbs.</td>
</tr>
</tbody>
</table>

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
- Corrosive to metals
- Acute toxicity
- Skin Corrosion/Irritation
- Serious Eye Damage/Eye Irritation
- Specific Target Organ Toxicity - Single Exposure

SARA 302 Extremely Hazardous Substance
None present or none present in regulated quantities.

SARA 304 Emergency Release Notification

<table>
<thead>
<tr>
<th>Chemical Identity</th>
<th>Reportable quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoric acid</td>
<td>5000 lbs.</td>
</tr>
</tbody>
</table>

SARA 311/312 Hazardous Chemical

<table>
<thead>
<tr>
<th>Chemical Identity</th>
<th>Threshold Planning Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoric acid</td>
<td>10000 lbs.</td>
</tr>
</tbody>
</table>

SARA 313 (TRI Reporting)
None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):
None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3):

<table>
<thead>
<tr>
<th>Chemical Identity</th>
<th>Reportable quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoric acid</td>
<td>Reportable quantity: 5000 lbs.</td>
</tr>
</tbody>
</table>

US State Regulations
US. California Proposition 65
No ingredient regulated by CA Prop 65 present.

US. New Jersey Worker and Community Right-to-Know Act
Chemical Identity
Phosphoric acid

US. Massachusetts RTK - Substance List
Chemical Identity
Phosphoric acid

US. Pennsylvania RTK - Hazardous Substances
Chemical Identity
Phosphoric acid

US. Rhode Island RTK
Chemical Identity
Phosphoric acid

International regulations

Montreal protocol
not applicable

Stockholm convention
not applicable

Rotterdam convention
not applicable

Kyoto protocol
not applicable

Inventory Status:
Australia AICS: On or in compliance with the inventory
Canada DSL Inventory List: On or in compliance with the inventory
EINECS, ELINCS or NLP: On or in compliance with the inventory
Japan (ENCS) List: On or in compliance with the inventory
Korea Existing Chemicals Inv. (KECI): On or in compliance with the inventory
Philippines PICCS: On or in compliance with the inventory
US TSCA Inventory: On or in compliance with the inventory
New Zealand Inventory of Chemicals: On or in compliance with the inventory
China Inv. Existing Chemical Substances: On or in compliance with the inventory
Mexico INSQ: On or in compliance with the inventory
Taiwan Chemical Substance Inventory: On or in compliance with the inventory

16. Other information, including date of preparation or last revision
NFPA Hazard ID

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible

Issue Date: 12-01-2017
Revision Information: Not relevant.
Version #: 1.3
Further Information: No data available.

Disclaimer:

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