SAFETY DATA SHEET
Phosphoric Acid Reagent 45%

1. Identification

Product identifier
Phosphoric Acid Reagent 45%

Other means of identification
None.

Product application

<table>
<thead>
<tr>
<th>Analytical Instruments part number</th>
<th>Product name</th>
</tr>
</thead>
<tbody>
<tr>
<td>APF 90310-02, APF 90310-03 CN, APF 90311-01, APF 90311-02 CN</td>
<td>-</td>
</tr>
</tbody>
</table>

Recommended use
Analytical reagent.

Recommended restrictions
None known.

Company/undertaking identification
SUEZ WTS Analytical Instruments, Inc.
6060 Spine Road
Boulder, CO 80301
T 303-444-2009

Emergency telephone
1-800-535-5053 INFOTRAC (North America)
Outside of N.A., call collect: 1-352-323-3500
SUEZ (800) 877-1940

2. Hazard(s) identification

Physical hazards
Corrosive to metals Category 1

Health hazards
Acute toxicity, oral Category 4
Skin corrosion/irritation Category 1B
Serious eye damage/eye irritation Category 1

OSHA defined hazards
Not classified.

Label elements

Signal word
Danger

Hazard statement
May be corrosive to metals. Harmful if swallowed. Causes severe skin burns and eye damage. Causes serious eye damage.

Precautionary statement
Prevention
Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection. Do not breathe mist or vapor. Keep only in original container.
Response
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. 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/doctor. Wash contaminated clothing before reuse. Absorb spillage to prevent material-damage.

Storage
Store locked up. Store in corrosive resistant container with a resistant inner liner.

Disposal
Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)
Causes severe damage to the respiratory tract.

Supplemental information
None.

3. Composition/information on ingredients

Mixtures

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS #</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>55</td>
</tr>
<tr>
<td>Phosphoric Acid</td>
<td>7664-38-2</td>
<td>45</td>
</tr>
</tbody>
</table>

Composition comments
Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this SDS for our assessment of the potential hazards of this formulation.

4. First-aid measures

Inhalation
Move to fresh air.
Get medical attention immediately.

Skin contact
Wash off immediately with plenty of water.
Get medical attention immediately.

Eye contact
Immediately flush eye(s) with plenty of water.
Get medical attention immediately.

Ingestion
Rinse mouth.
Do not give anything to eat or drink.
Do not induce vomiting.
Call a physician or poison control center immediately.

Most important symptoms/effects, acute and delayed
Corrosive effects. Burning pain and severe corrosive skin damage. Causes serious eye damage.
Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Indication of immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information
Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media
Carbon dioxide, dry chemicals, foam.

Unsuitable extinguishing media
Water.

Specific hazards arising from the chemical
Oxides of phosphorus evolved in fire.

Special protective equipment and precautions for firefighters
Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Fire fighting equipment/instructions
Use standard firefighting procedures and consider the hazards of other involved materials. Prevent spillage and fire-fighting water from entering in public sewers or the immediate environment. In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk. Cool containers / tanks with water spray.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Wear protective clothing, gloves and safety goggles.
Please refer also to section no. 8 'Exposure controls' for further information. For personal protection, see section 8 of the SDS.
Absorb onto inert material and dispose of according to Hazardous Waste Regulations. Remove small spills with plenty of water. Prevent entry into waterways, sewer, basements or confined areas. Absorb spillage to prevent material damage. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. For waste disposal, see section 13 of the SDS.

Environmental precautions

Prevent from entering sewers or the immediate environment. Accidental release of large quantities into the aquatic environment may harm aquatic organisms.

7. Handling and storage

Precautions for safe handling
Avoid contact with skin and eyes. Do not taste or swallow. When using, do not eat, drink or smoke. Wash thoroughly immediately after use. Use care in handling/storage. Handle in accordance with good industrial hygiene and safety procedures. Do not get this material in contact with eyes.

Conditions for safe storage, including any incompatibilities
Store in a cool, dry place out of direct sunlight. Store in corrosion-resistant container with a resistant inner liner. Store in tightly closed container. Keep only in the original container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

<table>
<thead>
<tr>
<th>US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoric Acid (CAS 7664-38-2)</td>
<td>PEL</td>
<td>1 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>US. ACGIH Threshold Limit Values</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoric Acid (CAS 7664-38-2)</td>
<td>STEL</td>
<td>3 mg/m³</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>1 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>US. NIOSH: Pocket Guide to Chemical Hazards</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoric Acid (CAS 7664-38-2)</td>
<td>STEL</td>
<td>3 mg/m³</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>1 mg/m³</td>
</tr>
</tbody>
</table>

Biological limit values
No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls
Provide eyewash station. Adequate ventilation to maintain air contaminants below exposure limits.

Individual protection measures, such as personal protective equipment

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

Skin protection
Hand protection
Wear protective gloves.
Neoprene gloves (Protection against unintentional short-term contact)

Other
Wear suitable protective clothing.

Respiratory protection
In case of insufficient ventilation, use a breathing mask with filter type: P2

Thermal hazards
Not available.

General hygiene considerations
Wash hands after handling and before eating. Keep away from food and drink.

9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Appearance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Colorless</td>
</tr>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>Not available.</td>
</tr>
<tr>
<td>pH (concentrated product)</td>
<td>&lt; 2 Neat</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>23 °F (-5 °C)</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>217 °F (103 °C)</td>
</tr>
<tr>
<td>Property</td>
<td>Value</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>------------------------------------------------------------</td>
</tr>
<tr>
<td>Flash point</td>
<td>&gt; 212 °F (&gt; 100 °C) P-M(CC)</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Slower than Ether</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits</td>
<td></td>
</tr>
<tr>
<td>Flammability limit - lower (%)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flammability limit - upper (%)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Explosive limit - lower (%)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Explosive limit - upper (%)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>3 mmHg</td>
</tr>
<tr>
<td>Vapor pressure temp.</td>
<td>77 °F (25 °C)</td>
</tr>
<tr>
<td>Vapor density</td>
<td>Not available.</td>
</tr>
<tr>
<td>Relative density</td>
<td>1.5</td>
</tr>
<tr>
<td>Relative density temperature</td>
<td>70 °F (21 °C)</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td></td>
</tr>
<tr>
<td>Solubility (water)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not available.</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not available.</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not available.</td>
</tr>
<tr>
<td>Other information</td>
<td></td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not explosive.</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>Not oxidizing.</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.5</td>
</tr>
<tr>
<td>VOC</td>
<td>0 % ESTIMATED</td>
</tr>
</tbody>
</table>

10. Stability and reactivity

Reactivity                                    | May be corrosive to metals.                                 |
Chemical stability                             | Material is stable under normal conditions.                 |
Possibility of hazardous reactions             | Hazardous polymerization does not occur.                    |
Conditions to avoid                            | May in contact with certain metals, such as zinc, magnesium, release hydrogen gas which may form explosive mixtures in air. |
Incompatible materials                         | Metals. Avoid contact with strong bases. Avoid contact with strong oxidizers. |
Hazardous decomposition products               | Oxides of phosphorus evolved in fire.                       |

11. Toxicological information

Information on likely routes of exposure

Inhalation                                     | May cause irritation to the respiratory system.             |
Skin contact                                   | Causes severe skin burns.                                   |
Eye contact                                    | Causes serious eye damage.                                  |
Ingestion                                      | Harmful if swallowed. Causes digestive tract burns. May cause burns in mouth, throat and/or stomach. |

Symptoms related to the physical, chemical and toxicological characteristics

Burning pain and severe corrosive skin damage. May cause severe irritation or burns to the eyes, skin, gastrointestinal tract, and respiratory system. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Information on toxicological effects

Acute toxicity                                 | Harmful if swallowed.                                       |
<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoric Acid Reagent 45% (CAS Mixture)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dermal</strong></td>
<td>Rabbit</td>
<td>&gt; 5000 mg/kg, (Calculated according to GHS additivity formula)</td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td>Rabbit</td>
<td>667 mg/kg, (Calculated according to GHS additivity formula)</td>
</tr>
<tr>
<td><strong>LD50</strong></td>
<td>Rat</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoric Acid (CAS 7664-38-2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dermal</strong></td>
<td>Rabbit</td>
<td>2740 mg/kg</td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td>Rabbit</td>
<td>300 mg/kg</td>
</tr>
<tr>
<td><strong>LD50</strong></td>
<td>Rat</td>
<td></td>
</tr>
</tbody>
</table>

- **Skin corrosion/irritation**: Causes severe skin burns.
- **Serious eye damage/eye irritation**: Causes serious eye damage.

- **Respiratory or skin sensitization**
  - **Respiratory sensitization**: Not classified.
  - **Skin sensitization**: Not classified.
  - **Germ cell mutagenicity**: Not classified.
- **Carcinogenicity**
- **US. National Toxicology Program (NTP) Report on Carcinogens**: Not listed.
- **Reproductive toxicity**: Not classified.
- **Specific target organ toxicity - single exposure**: Not classified.
- **Specific target organ toxicity - repeated exposure**: Not classified.
- **Aspiration hazard**: Not classified.

**12. Ecological information**

- **Ecotoxicity**: No ecotoxicity data noted for the ingredient(s).
- **Persistence and degradability**: No data available.
- **Bioaccumulative potential**: No data available.
- **Mobility in soil**: No data available.
- **Other adverse effects**: Not available.

**13. Disposal considerations**

- **Disposal instructions**: Dispose of contents/container in accordance with local/regional/national/international regulations. Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator.
- **Hazardous waste code**: The complete waste code should be assigned in discussion with the waste disposal company. D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel]
- **Waste from residues / unused products**: Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
- **Contaminated packaging**: Since emptied containers may retain product residue, follow label warnings even after container is emptied.
14. Transport information

**DOT**

<table>
<thead>
<tr>
<th>UN number</th>
<th>UN1805</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>Phosphoric acid solution, RQ</td>
</tr>
<tr>
<td>Transport hazard class(es)</td>
<td>8</td>
</tr>
<tr>
<td>Class</td>
<td>8</td>
</tr>
<tr>
<td>Subsidiary risk</td>
<td>-</td>
</tr>
<tr>
<td>Packing group</td>
<td>III</td>
</tr>
<tr>
<td>Special precautions for user</td>
<td>Read safety instructions, SDS and emergency procedures before handling.</td>
</tr>
<tr>
<td>ERG number</td>
<td>154</td>
</tr>
<tr>
<td>Some containers may be exempt from Dangerous Goods/Hazmat Transport Regulations, please check BOL for exact container classification.</td>
<td></td>
</tr>
</tbody>
</table>

**IATA**

<table>
<thead>
<tr>
<th>UN number</th>
<th>UN1805</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>Phosphoric acid solution</td>
</tr>
<tr>
<td>Transport hazard class(es)</td>
<td>8</td>
</tr>
<tr>
<td>Class</td>
<td>8</td>
</tr>
<tr>
<td>Subsidiary risk</td>
<td>-</td>
</tr>
<tr>
<td>Packing group</td>
<td>III</td>
</tr>
<tr>
<td>Environmental hazards</td>
<td>No.</td>
</tr>
<tr>
<td>ERG Code</td>
<td>154</td>
</tr>
<tr>
<td>Special precautions for user</td>
<td>Read safety instructions, SDS and emergency procedures before handling.</td>
</tr>
</tbody>
</table>

**IMDG**

<table>
<thead>
<tr>
<th>UN number</th>
<th>UN1805</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>PHOSPHORIC ACID SOLUTION, RQ</td>
</tr>
<tr>
<td>Transport hazard class(es)</td>
<td>8</td>
</tr>
<tr>
<td>Class</td>
<td>8</td>
</tr>
<tr>
<td>Subsidiary risk</td>
<td>-</td>
</tr>
<tr>
<td>Packing group</td>
<td>III</td>
</tr>
<tr>
<td>Environmental hazards</td>
<td>No.</td>
</tr>
<tr>
<td>Marine pollutant</td>
<td>No.</td>
</tr>
<tr>
<td>EmS</td>
<td>F-A, S-B</td>
</tr>
<tr>
<td>Special precautions for user</td>
<td>Read safety instructions, SDS and emergency procedures before handling.</td>
</tr>
</tbody>
</table>

15. Regulatory information

**US federal regulations**

This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

Not regulated.
CERCLA Hazardous Substance List (40 CFR 302.4)
Phosphoric Acid (CAS 7664-38-2) Listed.

SARA 304 Emergency release notification
Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)
Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)
SARA 302 Extremely hazardous substance
Not listed.

SARA 311/312 Hazardous chemical
Yes

Classified hazard categories
Corrosive to metal
Acute toxicity (any route of exposure)
Skin corrosion or irritation
Serious eye damage or eye irritation
Hazard not otherwise classified (HNOC)

SARA 313 (TRI reporting)
Not regulated.

Other federal regulations
Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.

Clean Water Act (CWA)
Section 112(r) (40 CFR 68.130)
Hazardous substance

Safe Drinking Water Act (SDWA)
Not regulated.

FEMA Priority Substances Respiratory Health and Safety in the Flavor Manufacturing Workplace
Phosphoric Acid (CAS 7664-38-2) High priority

Inventory status

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*"Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

US state regulations

US. California Proposition 65
California Safe Drinking Water and Toxics Enforcement Act of 2016 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance
No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Developmental toxin
No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Female reproductive toxin
No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin
No ingredient listed.

16. Other information, including date of preparation or last revision
Issue date Jan-17-2019
Revision date Jan-17-2019
Version # 1.0
NFPA ratings

Health: 3
Flammability: 0
Instability: 0

List of abbreviations

CAS: Chemical Abstract Service Registration Number
NFPA: National Fire Protection Association
ACGIH: American Conference of Governmental Industrial Hygienists
TWA: Time Weighted Average
STEL: Short Term Exposure Limit
LD50: Lethal Dose, 50%
LC50: Lethal Concentration, 50%
EC50: Effect Concentration, 50%
NOEL: No Observed Effect Level
COD: Chemical Oxygen Demand
BOD: Biochemical Oxygen Demand
TOC: Total Organic Carbon
IATA: International Air Transport Association
IMDG: International Maritime Dangerous Goods Code
DOT: Department of Transportation (49 CFR 172.101)
GHS: Globally Harmonized System of Classification and Labeling of Chemicals.
IARC: International Agency for Research on Cancer.
OSHA: Occupational Safety & Health Administration.
TDG: Transportation of Dangerous Goods Regulations, Canada

References:
No data available

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Revision information
Product and Company Identification: Commercial Names
Hazard(s) identification: Hazard statement
Hazard(s) identification: Response
Hazard(s) identification: Storage
Hazard(s) identification: Supplemental information
Handling and storage: Conditions for safe storage, including any incompatibilities
Exposure controls/personal protection: Eye/face protection
Exposure controls/personal protection: Hand protection
Exposure controls/personal protection: Respiratory protection
Physical & Chemical Properties: Multiple Properties
Other information, including date of preparation or last revision: Bibliography
Material Attributes & Uses: Experimental Data: Experimental Data
GHS: Classification

Prepared by
This SDS has been prepared by SUEZ Regulatory Department (1-215-355-3300).