1 Identification of substance

- **Trade name:** Phosphate Acid Reagent, vial
- **Product use:** Reagent for water analysis
- **Catalogue number:** L531510
- **Manufacturer/Supplier:**
  Orbeco-Hellige, Inc.
  6456 Parkland Drive
  Sarasota, FL 34243
  USA
  phone: (941) 756-6410
  fax: (941) 727-9654
  www.orbeco.com
  Made in Germany
- **Emergency information:** Chemtrec: 800-424-9300

2 Hazards identification

- **Hazard description:**
  Xi Irritant
- **Canadian Hazard Symbols:**
  ![Canadian Hazard Symbols]
- **WHMIS classification:**
  D2A
  Very toxic material causing other toxic effects
  E
  Corrosive material
- **Information pertaining to particular dangers for man and environment:**
  The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
  R 36/38 Irritating to eyes and skin.
- **Classification system:**
  The classification was made according to the latest editions of international substances lists, and expanded upon from company and literature data.
- **NFPA ratings (scale 0 - 4)**
  Health = 2
  Fire = 0
  Reactivity = 0

(Contd. on page 2)
3 Composition / Data on components

- **Description:** sulfuric acid solution

- **Composition and Information on Ingredients:**
  - CAS: 7664-93-9
  - EINECS: 231-639-5
  - Index number: 016-020-00-8
  - RTECS: WS5600000

- **Additional information:** For the wording of the listed risk phrases refer to section 16.

4 First aid measures

- **General information:** Immediately remove any clothing soiled by the product.
- **After inhalation:** Supply fresh air.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes (15 min) under running water. Call a doctor immediately.
- **After swallowing:** Seek medical treatment. Rinse out mouth and then drink 1-2 glasses of water.
- **The following symptoms may occur:** after swallowing:
  - damage to the affected mucous membranes possible
  - sickness
  - vomiting
  - diarrhoea
  - after inhalation:
  - mucous membrane irritation
  - coughing
- **Danger:** Danger of gastric perforation.

5 Fire fighting measures

- **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
- **Special hazards caused by the material, its products of combustion or resulting gases:** Formation of toxic gases is possible during heating or in case of fire.
  - nitrogen oxides
  - Sulfur oxides (SOx)
- **Protective equipment:** Wear self-contained respiratory protective device.

6 Accidental release measures

- **Person-related safety precautions:**
  - Wear protective equipment. Keep unprotected persons away.
  - Ensure adequate ventilation.
  - Mount respiratory protective device.
- **Measures for environmental protection:** Do not allow product to reach sewage system or any water course.
- **Measures for cleaning/collecting:** Neutralize with diluted sodium hydroxide solution or by throwing on lime sand, lime or sodium carbonate.
Absorb with liquid-binding material (sand, diatomite, universal binders).
Ensure adequate ventilation.
Dispose contaminated material as waste according to item 13.

7 Handling and storage

- Handling:
  - Information for safe handling:
    Ensure good ventilation/exhaustion at the workplace.
    Prevent formation of aerosols.
  - Information about protection against explosions and fires: The product is not flammable.

- Storage:
  - Requirements to be met by storerooms and receptacles: Store in a cool location.
  - Information about storage in one common storage facility:
    Store away from oxidizing agents.
    Store away from metals.
  - Further information about storage conditions:
    Keep receptacle tightly sealed.
    Protect from heat and direct sunlight.
    Protect from humidity and water.
    Protect from exposure to the light.
  - Recommended storage temperature: 20°C ± 5°C (approx. 68°F)

8 Exposure controls and personal protection

- Additional information about design of technical systems: No further data; see item 7.

- Components with limit values that require monitoring at the workplace:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Limit Value</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>7664-93-9 sulphuric acid</td>
<td>1 mg/m³</td>
<td>PEL (USA)</td>
</tr>
<tr>
<td></td>
<td>1 mg/m³</td>
<td>REL (USA)</td>
</tr>
<tr>
<td></td>
<td>0.2 T mg/m³</td>
<td>TLV (USA)</td>
</tr>
<tr>
<td></td>
<td>0.2 mg/m³</td>
<td>EL (Canada)</td>
</tr>
</tbody>
</table>

ACGIH A2; IARC 1

- Additional information: The lists that were valid during the creation were used as basis.

- Personal protective equipment:
  - General protective and hygienic measures:
    Keep away from foodstuffs, beverages and feed.
    Immediately remove all soiled and contaminated clothing.
    Wash hands before breaks and at the end of work.
    Do not inhale gases / fumes / aerosols.
    Avoid contact with the eyes and skin.
    Do not eat, drink, smoke or sniff while working.
  - Breathing equipment: Use respiratory protective device against the effects of fumes/dust/aerosol.
  - Recommended filter device for short term use: Filter B

- Protection of hands:
  Preventive skin protection by use of skin-protecting agents is recommended.
  After use of gloves apply skin-cleaning agents and skin cosmetics.

- Material of gloves:
  Nitrile rubber, NBR
  Recommended thickness of the material: ≥ 0.11 mm

- Penetration time of glove material:
  The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
  Value for the permeation: Level ≥ 1 (10 min)
## 9 Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor Threshold</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Form</td>
<td>Fluid</td>
</tr>
<tr>
<td>Color</td>
<td>Colorless</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Melting point/Melting range</td>
<td>Undetermined.</td>
</tr>
<tr>
<td>Boiling point/Boiling range</td>
<td>100°C (212°F)</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Flammability (solid, gaseous):</td>
<td></td>
</tr>
<tr>
<td>Upper Flammable Limit</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Lower Flammable Limit</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td>Undetermined.</td>
</tr>
<tr>
<td>Sensitivity to Mechanical Impact</td>
<td>None</td>
</tr>
<tr>
<td>Sensitivity to Static Discharge</td>
<td>None</td>
</tr>
<tr>
<td>Auto igniting</td>
<td>Product is not selfigniting.</td>
</tr>
<tr>
<td>Danger of explosion</td>
<td>Product does not present an explosion hazard.</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Density at 20°C (68°F):</td>
<td>1.059 g/cm³</td>
</tr>
<tr>
<td>Solubility in / Miscibility with</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>Fully miscible.</td>
</tr>
<tr>
<td>Coefficient of Water / Oil Distribution</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>pH-value at 20°C (68°F):</td>
<td>&lt; 1</td>
</tr>
</tbody>
</table>

| Solvent content                  |                                 |
| Organic solvents                 | 0.0 %                           |
| Water                            | < 95 %                          |

## 10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** To avoid thermal decomposition do not overheat.
- **Materials to be avoided:**
  - ammonia (NH₃)
  - alkalis
  - acids
  - metals
  - combustible materials
  - organic solvents
- **Dangerous reactions**
  - Corrosive action on metals.
  - Reacts with metals forming hydrogen.
  - Reacts with organic substances.
- **Dangerous products of decomposition:**
  - nitrogen oxides
  - Sulfur oxides (SOₓ)
11 Toxicological information

*Acute toxicity:* Quantitative data on the toxicity of the preparation are not available.

<table>
<thead>
<tr>
<th>LD/LC50 values that are relevant for classification:</th>
</tr>
</thead>
<tbody>
<tr>
<td>7664-93-9 sulphuric acid</td>
</tr>
<tr>
<td>Oral</td>
</tr>
<tr>
<td>LD50 2140 (25%) mg/kg (rat)</td>
</tr>
<tr>
<td>(IUCLID)</td>
</tr>
<tr>
<td>Inhalative</td>
</tr>
<tr>
<td>LC 50 510 (pure) mg/m³/2h (rat)</td>
</tr>
<tr>
<td>IUCLID</td>
</tr>
</tbody>
</table>

*Primary irritant effect:*
- **on the skin:** Skin irritation testing performed on 10% sulfuric acid showed slight to no irritation effects (GESTIS).
- **on the eye:** Irritating effect.
- **Sensitization:** No sensitizing effects known.

*Additional toxicological information:*
The product shows the following dangers according to internally approved calculation methods for preparations:
- **Irritant**
- **Carcinogenicity:** NTP? IARC Monographs? OSHA Regulated? Sulfuric acid: classified A2 (suspected by human) by ACGIH (sulfuric acid contained in strong inorganic acid mists) see chapter 8 / 15
- **Teratogenicity:** Not found.
- **Mutagenicity:** Not found.
- **Reproductive Toxicity:** Not found.
- **Synergistic Products:** None

12 Ecological information

*Information about elimination (persistence and degradability):*

*Other information:*
Methods for the determination of biodegradability are not applicable to inorganic substances.
Inorganic substance. Does not cause biocidal oxygen deficit.

*Ecotoxicological effects:*

*Aquatic toxicity:*

| 7664-93-9 sulphuric acid                      |
| Daphnia EC50 29 mg/l/24h (Daphnia magna)     |

*Remark:*
toxic for algae
Forms corrosive mixtures with water even if diluted.

*Remark: neutralization possible*

*General notes:*
Water hazard class 1 (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.
13 Disposal considerations

- **Product:**
- **Recommendation:**
  Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
  Hand over to hazardous waste disposers.

- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

- **TDG / DOT regulations:**
  - Hazard class: 8
  - Identification number: UN2796
  - Proper shipping name (technical name): SULPHURIC ACID
  - Label 8

- **Land transport ADR/RID (cross-border):**
  - ADR/RID class: 8 (C1) Corrosive substances
  - Danger code (Kemler): 80
  - UN-Number: 2796
  - Packaging group: II
  - Description of goods: 2796 SULPHURIC ACID, solution
  - Limited quantity (LQ): LQ22

- **Maritime transport IMDG:**
  - IMDG Class: 8
  - UN Number: 2796
  - Label 8
  - Packaging group: II
  - EMS Number: F-A,S-B
  - Marine pollutant: No
Trade name: Phosphate Acid Reagent, vial

(Contd. of page 6)

· Proper shipping name: SULPHURIC ACID

· Air transport ICAO-TI and IATA-DGR:

  · ICAO/IATA Class: 8
  · UN/ID Number: 2796
  · Label: 8
  · Packaging group: II
  · Proper shipping name: SULPHURIC ACID

*15 Regulations

· Sara
  · Section 355 (Extremely hazardous substances): 7664-93-9 sulphuric acid
  · Section 313 (Specific toxic chemical listings): 7664-93-9 sulphuric acid
  · TSCA (Toxic Substances Control Act): 7732-18-5 water, distilled, conductivity or of similar purity
  · Proposition 65
    · Chemicals known to cause cancer: None of the ingredients is listed.
    · Chemicals known to cause reproductive toxicity for females: None of the ingredients is listed.
    · Chemicals known to cause reproductive toxicity for males: None of the ingredients is listed.
    · Chemicals known to cause developmental toxicity: None of the ingredients is listed.

· Canadian Ingredient Disclosure List
  · Limit 0.1% None of the ingredients is listed.
  · Limit 1% 7664-93-9 sulphuric acid

· Canadian Domestic Substances List (DSL)
  · 7732-18-5 water, distilled, conductivity or of similar purity
  · EPA (Environmental Protection Agency)
    · None of the ingredients is listed.

· IARC (International Agency for Research on Cancer)
  · 7664-93-9 sulphuric acid

· NTP (National Toxicology Program)
  · 7664-93-9 sulphuric acid

(Contd. on page 8)
Trade name: Phosphate Acid Reagent, vial

- NIOSH-Ca (National Institute for Occupational Safety and Health)
  None of the ingredients is listed.

- OSHA-Ca (Occupational Safety & Health Administration)
  None of the ingredients is listed.

- ENCS List (MITI):
  7664-93-9 sulphuric acid

- Product related hazard informations:
  The product has been classified and marked in accordance with directives on hazardous materials.

- Risk phrases:
  36/38 Irritating to eyes and skin.

- Safety phrases:
  23 Do not breathe fumes / aerosol
  25 Avoid contact with eyes.
  26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
  37 Wear suitable gloves.
  60 This material and its container must be disposed of as hazardous waste.

- Information about limitation of use: Employment restrictions concerning young persons must be observed.

- Water hazard class: Water hazard class 1 (Self-assessment): slightly hazardous for water.

- CPR Classification:
  Class D, Division 2A
  Class E

- This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- Relevant R-phrases
  35 Causes severe burns.

- Recommended restriction of use: professional/industrial use only

- Contact: Orbeco-Hellige, Inc., Quality Assurance Dept., Phone: 941-756-6410

- Sources
  IUCLID (International Uniform Chemical Information Database)
  International Chemical Safety Cards (ICSCs)
  Data arise from manufacturers' data sheets, reference works and literature.

- * Data compared to the previous version altered.