MATERIAL SAFETY DATA SHEET
according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

SECTION 1. Identification
Product identifier
Product number 100565
Product name ortho-Phosphoric acid 99% cryst. for analysis EMSURE®

Relevant identified uses of the substance or mixture and uses advised against
Identified uses Reagent for research and development
Reagent for analysis, Chemical production

Details of the supplier of the safety data sheet
Company EMD Millipore Corporation | 290 Concord Road, Billerica, MA 01821, United States of America | SDS Phone Support: +1-978-715-1335 | General Inquiries: +1-978-715-4321 | Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)
Emergency telephone 800-424-9300 CHEMTREC (USA)
+1-703-527-3887 CHEMTREC (International)
24 Hours/day; 7 Days/week

SECTION 2. Hazards identification
GHS Classification
Corrosive to Metals, Category 1, H290
Skin corrosion, Category 1B, H314
For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling
Hazard pictograms

Signal Word
Danger

Hazard Statements
H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.

Precautionary Statements
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P330 + P331  IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P305 + P351 + P338  IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P309 + P310  IF exposed or if you feel unwell: Immediately call a POISON CENTER or doctor/physician.

OSHA Hazards
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Other hazards
None known.

SECTION 3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Formula</th>
<th>H₃PO₄</th>
<th>H₃O₄P (Hill)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS-No.</td>
<td>7664-38-2</td>
<td></td>
</tr>
<tr>
<td>Molar mass</td>
<td>97.99 g/mol</td>
<td></td>
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</table>

Hazardous ingredients

Chemical Name (Concentration)
CAS-No.
phosphoric acid (>= 90 % - <= 100 %)
7664-38-2

SECTION 4. First aid measures

Description of first-aid measures

Inhalation
After inhalation: fresh air. Call in physician.

Skin contact
After skin contact: wash off with plenty of water. Immediately remove contaminated clothing. If available swab with polyethylene glycol 400. Call a physician immediately.

Eye contact
After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.

Ingestion
After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation!). Call a physician immediately. Do not attempt to neutralize.

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed
Irritation and corrosion, irritant effects, Cough, Shortness of breath, Convulsions, shock
Risk of blindness!

Indication of any immediate medical attention and special treatment needed
No information available.

SECTION 5. Fire-fighting measures

Extinguishing media
**Suitable extinguishing media**
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable extinguishing media**
For this substance/mixture no limitations of extinguishing agents are given.

**Special hazards arising from the substance or mixture**
Not combustible.
Ambient fire may liberate hazardous vapors.
Fire may cause evolution of:
Oxides of phosphorus

**Advice for firefighters**

*Special protective equipment for fire-fighters*
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

*Further information*
Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

**SECTION 6. Accidental release measures**

**Personal precautions, protective equipment and emergency procedures**
Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

**Environmental precautions**
Do not empty into drains.

**Methods and materials for containment and cleaning up**
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

**SECTION 7. Handling and storage**

**Precautions for safe handling**
Observe label precautions.

**Conditions for safe storage, including any incompatibilities**
Tightly closed. Dry.
Store at +5°C to +30°C (+41°F to +86°F).
SECTION 8. Exposure controls/personal protection

Exposure limit(s)

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Basis</th>
<th>Value</th>
<th>Threshold limits</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>phosphoric acid</td>
<td></td>
<td>7664-38-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACGIH</td>
<td>Time Weighted Average (TWA):</td>
<td>1 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Short Term Exposure Limit (STEL):</td>
<td>3 mg/m³</td>
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<tr>
<td>NIOSH/GUIDE</td>
<td>Recommended exposure limit (REL):</td>
<td>1 mg/m³</td>
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<tr>
<td></td>
<td>Short Term Exposure Limit (STEL):</td>
<td>3 mg/m³</td>
<td></td>
<td></td>
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<tr>
<td>OSHA_TRANS</td>
<td>PEL:</td>
<td></td>
<td>1 mg/m³</td>
<td></td>
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<tr>
<td>Z1A</td>
<td>Short Term Exposure Limit (STEL):</td>
<td>3 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time Weighted Average (TWA):</td>
<td>1 mg/m³</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Immediately change contaminated clothing. Apply skin-protective barrier cream. Wash hands and face after working with substance.

Eye/face protection

Tightly fitting safety goggles

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Other protective equipment:

Protective clothing

Respiratory protection

required when dusts are generated.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9. Physical and chemical properties

Physical state: solid
Color: colorless
Odor: odorless
Odor Threshold: No information available.

pH: < 0.5
at 100 g/l
68 °F (20 °C)

Melting point: ca. 42 °C

Boiling point/boiling range: ca. 415 °F (213 °C)
at 1,013 hPa

Flash point: does not flash

Evaporation rate: No information available.

Flammability (solid, gas): No information available.

Lower explosion limit: not applicable

Upper explosion limit: not applicable

Vapor pressure: ca. 2 hPa
at 68 °F (20 °C)

Relative vapor density: No information available.

Relative density: 1.87 g/cm³
at 77 °F (25 °C)

Water solubility: 750 - 850 g/l
at 68 °F (20 °C)

Partition coefficient: n-octanol/water
log Pow: -0.77
(calculated)
(Lit.) Bioaccumulation is not expected (log Pow <1).

Autoignition temperature: No information available.

Decomposition temperature: No information available.

Viscosity, dynamic: No information available.

Explosive properties: No information available.

Ignition temperature: not combustible

Corrosion: May be corrosive to metals.
SECTION 10. Stability and reactivity

Reactivity
See below

Chemical stability
The product is chemically stable under standard ambient conditions (room temperature).

Possibility of hazardous reactions
Violent reactions possible with:
bases, metallic oxides
Risk of ignition or formation of inflammable gases or vapors with:
Metals, metal alloys
Possible formation of:
Hydrogen

Conditions to avoid
Strong heating.

Incompatible materials
Aluminum, iron/iron-containing compounds, Mild steel
Gives off hydrogen by reaction with metals.

Hazardous decomposition products
in the event of fire: See section 5.

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure
Eye contact, Skin contact, Ingestion

Target Organs
Eyes
Skin
Respiratory system

Acute oral toxicity
LD50 rat: 1,530 mg/kg (IUCLID) (Regulation (EC) No 1272/2008, Annex VI)

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

Acute inhalation toxicity
LC50 rat: > 0.85 mg/l; 1 h (RTECS)
Corrosive to respiratory system

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract
Acute dermal toxicity  
LD50 rabbit: 2,740 mg/kg  
(IUCLID)

Skin irritation  
rabbit  
Result: Causes burns.  
(IUCLID)

Causes burns.

Eye irritation  
rabbit  
Result: Causes burns.  
(IUCLID)

Causes serious eye damage.  
Risk of blindness!

Sensitization  
Patch test: human  
Result: negative  
(IUCLID)

Genotoxicity in vitro  
Ames test  
Result: negative  
(IUCLID)

Specific target organ systemic toxicity - single exposure  
The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific target organ systemic toxicity - repeated exposure  
The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard  
Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity  
IARC  
No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA  
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP  
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

ACGIH  
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Further information
Systemic effects:
shock, Convulsions
Further data:
Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

Ecotoxicity
Toxicity to fish
LC50 Gambusia affinis (Mosquito fish): 138 mg/l; 96 h (External MSDS)
Toxicity to bacteria
EC50 activated sludge: 270 mg/l (IUCLID)

Persistence and degradability
Biodegradability
Does not cause biological oxygen deficit.

Bioaccumulative potential
Partition coefficient: n-octanol/water
log Pow: -0.77
(calculated)
(Lit.) Bioaccumulation is not expected (log Pow <1).

Mobility in soil
No information available.

Additional ecological information
Biological effects:
Caustic even in diluted form.
Harmful effect due to pH shift.
Further information on ecology
Discharge into the environment must be avoided.

SECTION 13. Disposal considerations
The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information

Land transport (DOT)
UN number UN 3453
Proper shipping name PHOSPHORIC ACID, SOLID
Class 8
Packing group III
Environmentally hazardous --

Air transport (IATA)
SECTION  15. Regulatory information
United States of America

OSHA Hazards
Highly toxic by inhalation
Harmful if swallowed.
Corrosive to skin
Corrosive to eyes
Corrosive by inhalation.
Target organ effects

This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS, and may deviate from the GHS information on the label and in section 2.

SARA 311/312  Hazards
Acute Health Hazard
Chronic Health Hazard

SARA 313
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 302
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

Ingredients
phosphoric acid

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

Ingredients
phosphoric acid

DEA List I
Not listed

DEA List II
Not listed

US State Regulations

Massachusetts Right To Know
Ingredients
phosphoric acid

Pennsylvania Right To Know
Ingredients
phosphoric acid

New Jersey Right To Know
Ingredients
phosphoric acid

California Prop 65 Components
This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

Notification status

TSCA: All components of the product are listed in the TSCA-inventory.

DSL: All components of this product are on the Canadian DSL.

SECTION 16. Other information

Training advice
Provide adequate information, instruction and training for operators.

Full text of H-Statements referred to under sections 2 and 3.

H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.

Key or legend to abbreviations and acronyms used in the safety data sheet
Used abbreviations and acronyms can be looked up at www.wikipedia.org.
MATERIAL SAFETY DATA SHEET  
according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

<table>
<thead>
<tr>
<th>Product number</th>
<th>Version 1.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product name</td>
<td>ortho-Phosphoric acid 99% cryst. for analysis EMSURE®</td>
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</table>

Revision Date 08/22/2013

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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