



MATERIAL SAFETY DATA SHEET

Product: **Phosphoric Acid, Pure**
US Version

MSDS No: 2-800-26-004-US Date of Issue: 30/10/2006 Revision: 0/US Page 2/9

3. Hazards identification

A. EMERGENCY OVERVIEW

Physical Appearance and Odor

Colorless liquid, odorless.

Warning Statements:

DANGER! CAUSES BURNS.

Contact with reactive metals zinc, bare steel may evolve highly flammable hydrogen gas.
Danger of explosion if hydrogen gas evolved in confined area.

B. POTENTIAL HEALTH EFFECTS

Phosphoric acid is corrosive to all parts of the body.

Acute eye:

Corrosive. Causes tissue destruction, permanent damage to the cornea, blindness.

Acute skin:

Causes irritation, burns.

Acute inhalation:

Mists may cause lung irritation, shortness of breath, fluid in lungs.

Acute ingestion:

Can cause corrosion of and damage to the gastro-intestinal tract.

Chronic effects:

Severity of acute effects is such that significant repeated or prolonged exposure is unlikely.
The product does not contain any ingredient designated by IARC, NTP, ACGIH or OSHA as probable or suspected human carcinogens.

4. First-aid measures

Contaminated individuals must be taken for medical attention if any adverse reaction occurs.
Rescuers should be taken for medical attention, if necessary.

Take a copy of label and MSDS to health professional with contaminated individual.

Eye contact

Hold eyelids open and flush with a steady, gentle stream of water for at least 15 minutes. Seek immediate medical attention. Continue intermittent irrigation until medical attention can be obtained.

Skin contact

Immediately wipe excess material off skin with a dry cloth; then wash skin with plenty of soap and water for at least 15 minutes. Seek medical attention. Remove contaminated clothing and shoes while washing. Clean contaminated clothing and shoes before re-use.



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Product: **Phosphoric Acid, Pure****US Version**

MSDS No: 2-800-26-004-US

Date of Issue: 30/10/2006

Revision: 0/US

Page 3/9

Inhalation

Move the injured person to fresh air at once.
Assure that the victim is breathing. If breathing is difficult, administer oxygen, if available. Seek immediate medical attention.

Ingestion**Do not induce vomiting.**

If victim is conscious and alert, give 2-3 glasses of water to drink. Seek immediate medical attention.

NOTE: Never give an unconscious person anything to drink.

Notes to physician:

Treat symptomatically.

5. Fire - fighting measures**Extinguishing media**

Not combustible. Use extinguishing method suitable for surrounding fire.

Special fire fighting procedure

Call the fire brigade. Avoid breathing the fumes as they may be toxic. Stand upwind of the fire.

In closed stores, provide fire-fighters with the approved self-contained breathing apparatus in positive pressure mode and full protective closing.

Prevent the dissolved material to run into drains or watercourses.

Unusual fire and explosion hazards

Not combustible. Hydrogen may form upon contact with metals (danger of explosion!).

Hazardous decomposition materials (Under Fire Conditions)

Emits toxic fumes of phosphorous oxides.

6. Accidental release measures**Evacuation procedures & personal precautions**

Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.

After spillage / leakage procedures

Dike and salvage, absorb with liquid acid absorbent or neutralize. Soda ash and lime are neutralizing agents.

If material can not be salvaged, a method is neutralization, followed by discharge into a treatment system in accordance with all local and state regulations.

7. Handling and storage**Handling**

Do not get on skin or in eyes. Avoid breathing vapors and mists. Do not ingest. This product reacts violently with bases liberating heat and causing spattering.



MATERIAL SAFETY DATA SHEET

Product: **Phosphoric Acid, Pure****US Version**

MSDS No: 2-800-26-004-US Date of Issue: 30/10/2006 Revision: 0/US Page 4/9

| | |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Storage conditions | Wear chemical goggles and PVC gloves for handling small quantities. Wear full protective clothing where there is a risk of splashes or leakage. Store in a dry, well-ventilated area away from incompatible materials (see "materials to avoid" in section 10). Provide sufficient heating to prevent crystallization. Keep containers tightly closed. |
| Incompatible products | Fluorine, strong oxidizing agents, strong reducing agents, bases, metals, sulfur trioxide, phosphorus pentoxide. |

8. Exposure controls / personal protection**Exposure limits:**

Exposure limits represent regulated or recommended worker breathing zone concentrations measured by validated sampling and analytical methods, meeting the regulatory requirements. The following limits apply to Phosphoric acid.

| Components | ACGH-TLV | | OSHA | | Notes |
|-----------------|--------------|--------------|--------------|--------------|-------|
| | TWA | STEL | TWA | STEL | |
| Phosphoric Acid | 1 mg/cu m | 3 mg/cu m | 1 mg/cu m | 3 mg/cu m | |

Engineering measures to reduce exposures /ventilation requirements Mechanical exhaust required. Ventilate at floor level. Adequate to meet maximum exposure limit for acid mist of 1 mg/ m³ in 8 hours.

Personal protection equipment:

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of hazardous substances handled.

Respiratory protection

When respirators are required, select NIOSH/MSHA approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industrial recommendations.

Skin Protection

Wear PVC gloves, boots, acid resistant apron and protective clothing.



MATERIAL SAFETY DATA SHEET

Product: **Phosphoric Acid, Pure****US Version**

MSDS No: 2-800-26-004-US

Date of Issue: 30/10/2006

Revision: 0/US

Page 5/9

Eye/Face protection

Eye and face protection requirements will vary dependent upon work environment conditions and material handling practices. Appropriate ANSI Z87 approved equipment should be selected for the particular use intended for this material.

Use chemical safety glasses with side shields or splash proof goggles. An emergency eye wash must be readily accessible to the work area. Face contact should be prevented through use of a face shield.

Industrial hygiene

Avoid breathing vapors. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure. Wash thoroughly after handling.

9. Physical and chemical properties

| | |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Molecular weight | 98.00 |
| Appearance | Colorless liquid |
| Odour | Odourless |
| pH (1 w/w% water solution) | < 1 |
| Melting point/range | -18 ⁰ C to 27 ⁰ C depending on H ₃ PO ₄ concentration. |
| Boiling point/range | 138 ⁰ C to 171 ⁰ C depending on H ₃ PO ₄ concentration. |
| Vapour pressure, (25⁰C) | <1 mm to 6.8 mm Hg depending on H ₃ PO ₄ concentration. |
| Vapour density (air=1) | Not available |
| Flash point | Not available |
| Density, (25⁰C) | 1.574 to 1.791 depending on H ₃ PO ₄ concentration. |
| Flammable/Explosion limits | Not available |
| Auto-ignition temperature | Not available |
| Solubility in water | Fully soluble |
| Thermal decomposition | Transforms to pyrophosphoric acid at 200°C |
| Other data | Possesses phenomena of super-cooling |

10. Stability and reactivity

Chemical stability This material is stable under normal handling and storage conditions described in Section 7.



MATERIAL SAFETY DATA SHEET

Product: **Phosphoric Acid, Pure**
US Version

MSDS No: 2-800-26-004-US Date of Issue: 30/10/2006 Revision: 0/US Page 6/9

| | |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Incompatibility with other substances | Fluorine, strong oxidizing agents, strong reducing agents, bases, metals, sulfur trioxide, phosphorus pentoxide. |
| Hazardous Decomposition Products | Fumes produced when heated to decomposition may include corrosive phosphorous oxides. Hydrogen gas may form from reaction with metals. |
| Hazardous polymerization | Not likely to occur when stored under proper conditions. |

11. Toxicological information

Phosphoric acid is corrosive to the eyes, skin and irritating for the respiratory tract.

| | |
|-------------------------------------------------------------------------------|-----------------------------------|
| Acute oral toxicity to Rat, LD50 | 1,530 mg/Kg (for 50% solution) |
| Acute dermal toxicity to Rat, LD50 | 2,740 mg/Kg (for 50% solution) |
| Skin Irritation, Rabbit | 119 mg. Severely irritating. |
| Eye Irritation, Rabbit | 595 mg/24 hr. Severely irritating |
| Skin Sensitization, guinea pigs | NA |
| Ames Test, <i>Salmonella typhimurium</i> & <i>Escherichia coli</i> | NA |
| <i>Carcinogenicity</i> | |
| IARC | Not included |
| NTP 11th Report on Carcinogens | Not included |
| OSHA | Not included |

12. Ecological information

Phosphoric acid is harmful to aquatic life even in low concentration due to its acidity.

Ecotoxicity NA

Chemical Fate

Mobility Low volatility. Soluble in water.

Persistence/Degradability Freely dissociates.

Bio-accumulation The calcium salt of the acid is a normal constituent of bone. May contribute to the eutrophication of confined surface water.



MATERIAL SAFETY DATA SHEET

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MSDS No: 2-800-26-004-US Date of Issue: 30/10/2006 Revision: 0/US Page 7/9

13. Disposal considerations

Waste disposal If Phosphoric acid is to be used in water reactions, triple rinse drum with water and put into process (reduce water volume equal to rinsing). Soda ash and Lime may be used as neutralizing agents for material that cannot be salvaged. Neutralized liquid may be discharged to treatment in accordance with regulatory procedures. Consult state and local regulations regarding the proper disposal of this material.

EPA Hazardous Waste Yes
EPA RCRA Hazardous Waste Codes "C" Corrosive

14. Transportation information

| | |
|---------------------|-------------------------------------------------|
| UN No. | 1805 |
| IMO-Code/IMO | Hazard Class :8 corrosive |
| ICAO/IATA | Label :Corrosive (8) |
| | Packaging group :III |
| | Proper shipping name :Phosphoric acid, liquid |
| ADR/RID | UN No :1805 |
| | Hazard Class :8 C1 Corrosive substances |
| | Packaging group :III |
| | Label :8 |
| | Proper shipping name :Phosphoric acid, solution |
| US DOT | UN No :1805 |
| | Hazard Class :8 corrosive |
| | Packaging group :III |
| | Danger Label Mode :No. .8 |
| | Proper shipping name :Phosphoric acid solution |
| CANADA TDG | UN No :1805 |
| | Hazard Class :8 corrosive |
| | Label :Corrosive (8) |
| | Packaging group :III |
| | Proper shipping name :Phosphoric acid, liquid |



MATERIAL SAFETY DATA SHEET

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US Version

MSDS No: 2-800-26-004-US Date of Issue: 30/10/2006 Revision: 0/US Page 8/9

15. Regulatory information

Inventory Status

| | |
|------------------------|--------|
| United States (TSCA) | Listed |
| Canada (DSL) | Listed |
| Europe (EINECS/ELINCS) | Listed |
| Australia (AICS) | Listed |
| Japan (MITI) | Listed |
| South Korea (KECL) | Listed |
| Philippines | Listed |

UNITED STATES

US Federal Regulations

| | |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| TSCA | Listed on the TSCA Inventory |
| Health & Safety Reporting List | Not listed. |
| Chemical Test Rules | Not listed. |
| Section 12b | None of the chemicals are listed under TSCA Section 12b. |
| TSCA Significant New Use Rule | Not listed. |
| CERCLA Hazardous Substances and corresponding RQs | CAS# 7664-38-2: 5000 lb final RQ; 2270 kg final RQ |
| SARA Section 302 Extremely Hazardous Substances | Not listed. |
| SARA Codes | Immediate. |
| Section 313 | Not listed. |
| Clean Air Act | Not air pollutant. Not listed as a Class 1 / Class 2 Ozone depletors. |
| Clean Water Act | Listed as a Hazardous Substance under the CWA. Not listed as Priority / Toxic Pollutants under the CWA. |

US State Regulations

| | |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Right to Know Lists California, New Jersey, Pennsylvania, Minnesota, Massachusetts. | Listed |
| California Prop 65 | California No Significant Risk Level: None of the chemicals in this product are listed. |

FDA

| | |
|---------------|---------------------------------------------------------------------------------------|
| Status | This product meets the compositional requirements of: 21 CFR 182.1073 Phosphoric Acid |
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US Version

MSDS No: 2-800-26-004-US Date of Issue: 30/10/2006 Revision: 0/US Page 9/9

Canada - WHMIS

This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and the MSDS contains all the information required by the CPR.

WHMIS Classification



E: Corrosive material

16. Other information

National Fire Protection Association Hazard Ratings--NFPA(R)

- 3** Health Hazard Rating--Serious
- 0** Flammability Rating--Minimal
- 0** Instability Rating--Minimal

Australian HazChem: Code 2R
Poison Schedule: S5

Reason for revision:

New, US version of the MSDS.

Key Legend Information:

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
TLV - Threshold Limit Value
PEL - Permissible Exposure Limit
TWA - Time Weighted Average
STEL - Short Term Exposure Limit
NTP - National Toxicology Program
IARC - International Agency for Research on Cancer
ND - Not determined

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End of safety data sheet