

SAFETY DATA SHEET

Preparation Date: 8/12/2019

Revision date 8/12/2019

Revision Number: G1

1. IDENTIFICATION

Product identifier

Product code: P1100
Product Name: PHOSPHOROUS ACID, REAGENT

Other means of identification

Synonyms: Dihydroxyphosphine oxide
 Orthophosphorus acid
 Phosphonic acid
 Phosphorus trihydroxide
 Trihydroxyphosphine

CAS #: 13598-36-2
RTECS # SZ6400000
Cl#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: No information available.
Uses advised against No information available

Supplier: Spectrum Chemical Mfg. Corp
 14422 South San Pedro St.
 Gardena, CA 90248
 (310) 516-8000

Order Online At: <https://www.spectrumchemical.com>
Emergency telephone number Chemtrec 1-800-424-9300
Contact Person: Tom Tyner (USA - West Coast)
Contact Person: Ibad Tirmiz (USA - East Coast)

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Considered a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Acute toxicity - Oral	Category 4
Skin corrosion/irritation	Category 1 Sub-category A
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3
Corrosive to metals	Category 1

Label elements

Danger

Hazard statements

Harmful if swallowed
Causes severe skin burns and eye damage
May cause respiratory irritation
May be corrosive to metals

**Hazards not otherwise classified (HNOC)**

Not Applicable

Other hazards

Not available

Precautionary Statements - Prevention

Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust
Wear protective gloves/protective clothing/eye protection/face protection
Use only outdoors or in a well-ventilated area
Keep only in original container

Precautionary Statements - Response

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

Precautionary Statements - Storage

Store locked up
Store in a well-ventilated place. Keep container tightly closed
Store in corrosive resistant/ .? container with a resistant inner liner

Precautionary Statements - Disposal

Dispose of contents and container to an approved waste disposal plant in accordance with local, regional, national and international regulations as applicable

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No	Weight-%
Phosphorous Acid	13598-36-2	100

4. FIRST AID MEASURES

First aid measures

- General Advice:** National Capital Poison Center in the United States can provide assistance if you have a poison emergency and need to talk to a poison specialist. Call 1-800-222-1222. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. First aider needs to protect himself.
- Skin Contact:** Wash off immediately with soap and plenty of water. Continue flushing with plenty of water for at least 15 minutes. Remove all contaminated clothes and shoes. Immediate medical attention is required. Call a physician immediately.
- Eye Contact:** Flush eyes with water for 15 minutes. Immediate medical attention is required. Call a physician immediately.
- Inhalation:** Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. **WARNING!** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled or ingested material is toxic, infectious or corrosive. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required. Call a physician immediately.
- Ingestion:** Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. If victim is conscious, give water or milk. Immediate medical attention is required. Call a physician or Poison Control Center immediately.

Most important symptoms and effects, both acute and delayed

- Symptoms**
- Severe skin and eye irritation or burns
 - May cause corneal injury
 - Irritating to respiratory system
 - May cause chemical burns to the respiratory tract
 - Coughing and wheezing
 - May cause shortness of breath
 - Laryngitis
 - May cause pulmonary edema
 - May cause chemical pneumonitis
 - May cause nausea and vomiting
 - Causes digestive (gastrointestinal) tract irritation
 - May cause gastrointestinal (digestive) tract burns

Indication of any immediate medical attention and special treatment needed

- Notes to Physician:** Treat symptomatically.

Protection of first-aiders

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

- Suitable Extinguishing Media:** The product is not flammable. If it is involved in a fire, extinguish the fire using an agent suitable for the type of surrounding fire.

- Unsuitable Extinguishing Media:** No information available.

Specific hazards arising from the chemical

Hazardous combustion products No information available.

Specific hazards No information available.

Special Protective Actions for Firefighters

Specific Methods: No information available

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use personal protective equipment. Avoid contact with skin, eyes and clothing.

Environmental precautions Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not let product enter drains. Do not flush into surface water or sanitary sewer system. Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Cover with plastic sheet to prevent spreading.

Methods for cleaning up Sweep up and shovel. Use appropriate tools to put the spilled solid in a suitable waste disposal container. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:

Use only in area provided with appropriate exhaust ventilation. Keep away from incompatible materials.

Safe Handling Advice:

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Do not ingest. Do not breathe dust. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:

Keep container tightly closed in a dry and well-ventilated place. Hygroscopic. Air sensitive. Store at room temperature in the original container. Store in a segregated and approved area. Store away from incompatible materials.

Incompatible Materials:

Strong bases
Strong oxidizing agents
Strong reducing agents

Metals
Water

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

Component	CAS No	OSHA	NIOSH	ACGIH	AIHA WEEL
Phosphorous Acid	13598-36-2	None	None	None	None

Canada

Component	CAS No	Canada - Alberta	Canada - British Columbia	Canada - Ontario	Canada - Quebec
Phosphorous Acid	13598-36-2	None	None	None	None

Australia and Mexico

Component	CAS No	Australia	Mexico
Phosphorous Acid	13598-36-2	None	None

Appropriate engineering controls

Engineering measures to reduce exposure:

Ensure adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

Eye protection: Goggles or Face-shield.

Skin and body protection: Chemical resistant apron
Long sleeved clothing
Gloves
Boots

Respiratory protection: Effective dust mask. Use a dust respirator under conditions where exposure to the substance is apparent (e.g. generation of high concentration of dust (dust clouds), inadequate ventilation, development of respiratory tract irritation), and engineering controls are not feasible. Be sure to use an approved/certified respirator or equivalent.

Hygiene measures: Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Solid	Appearance: Crystals. Crystalline powder.	Color: White.
Odor: No information available.	Taste No information available.	Formula H3PO3
Molecular/Formula weight (g/mole): 82.00	Flammability (solid, gas) no data available	Flashpoint (°C/°F): No information available
Flash Point Tested according to: Not available	Autoignition Temperature (°C/°F): No information available	Lower Explosion Limit (%): No information available
Upper Explosion Limit (%): No information available	Melting point/range(°C/°F): 63-74 °C/145-165 °F	Decomposition temperature(°C/°F): 1384 °C/2523 °F
Boiling point/range(°C/°F): 259 °C/298 °F	Bulk density: No information available	Density (g/cm3): No information available
Specific gravity: 1.65-1.70	pH No information available	Vapor pressure @ 20°C (kPa): No information available
Evaporation rate: No information available	Vapor density: No information available	VOC content (g/L): No information available
Odor threshold (ppm): No information available	Partition coefficient (n-octanol/water): No information available	Viscosity: No information available
Miscibility: No information available	Solubility: Soluble in Water	

10. STABILITY AND REACTIVITY

Reactivity

No information available

Chemical stability

Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid: Exposure to moisture. Exposure to moist air. Exposure to air. Incompatible materials.

Incompatible Materials:
 Strong bases
 Strong oxidizing agents
 Strong reducing agents
 Metals
 Water

Hazardous decomposition products: No information available.

Other Information

Corrosivity: Extremely corrosive in presence of aluminum, brass, and zinc.
 Slightly corrosive in presence of copper, of stainless steel(304).
 Non-corrosive in presence of stainless steel(316).

Special Remarks on Corrosivity: Severe corrosive effect on brass and bronze.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:

Eyes. Skin. Ingestion. Inhalation.

Acute Toxicity

Component Information

Phosphorous Acid	
CAS No	13598-36-2

LD50/oral/rat = 1895 mg/kg Oral LD50 Rat
LD50/oral/mouse = 1700 mg/kg
LD50/dermal/rabbit = No information available
LD50/dermal/rat = >5000 mg/kg LD50 dermal Rat
LC50/inhalation/rat = >2.06 gm/m³ 4H
LC50/inhalation/mouse = No information available
Other LD50 or LC50 information = No information available

Product Information

LD50/oral/rat =
Value - Acute Toxicity = 1895 mg/kg

LD50/oral/mouse =
Value - Acute Tox = 1700 mg/kg

LD50/dermal/rabbit
Value - Acute Toxicity = No information available

LD50/dermal/rat
VALUE - Acute Tox = >5000 mg/kg

LC50/inhalation/rat
VALUE-Vapor = No information available
VALUE-Gas = No information available
VALUE-Dust/Mist = >2060 mg/m³ (rat, 4 hr)

LC50/Inhalation/mouse
VALUE-Vapor = No information available
VALUE - Gas = No information available
VALUE - Dust/Mist = No information available

Symptoms

Skin Contact: Severe skin irritation. Causes skin burns.

Eye Contact: Severe eye irritation. Causes eye burns. May cause permanent injury.

Inhalation Irritating to respiratory system. Symptoms may include coughing and wheezing, and shortness of breath. May cause chemical burns to the respiratory tract. May cause laryngitis and bronchitis. It may cause pulmonary edema. May cause

chemical pneumonitis.

Ingestion Ingestion may cause nausea, vomiting. Causes digestive (gastrointestinal) tract irritation. May cause digestive (gastrointestinal) tract burns.

Aspiration hazard No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity Prolonged or repeated skin contact with dilute solutions of potassium hydroxide can cause dermatitis. Prolonged or repeated eye contact with dilute solutions can cause conjunctivitis. Prolonged or repeated Inhalation can produce chronic productive cough, and shortness of breath.

Sensitization: No information available.

Mutagenic Effects: For Potassium Hydroxide:
Cytogenic analysis - Hamster ovary 12mmol/L (Registry of Toxic Effects of Chemical Substances)

Carcinogenic effects: Not considered carcinogenic.

Component	CAS No	IARC	ACGIH - Carcinogens	NTP	OSHA HCS - Carcinogens	Australia - Notifiable Carcinogenic Substances	Australia - Prohibited Carcinogenic Substances
Phosphorous Acid	13598-36-2	Not listed	Not listed	Not listed	Not listed	Not listed	Not listed

ACGIH (American Conference of Governmental Industrial Hygienists)

IARC (International Agency for Research on Cancer)

NTP (National Toxicology Program)

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

Reproductive toxicity No data is available

Reproductive Effects: No information available
Developmental Effects: No information available
Teratogenic Effects: No information available

Specific Target Organ Toxicity

STOT - single exposure respiratory system.
STOT - repeated exposure No information available.
Target Organs: Skin. Respiratory system. Eyes.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: Aquatic environment.

Phosphorous Acid - 13598-36-2

Fish LC50: 6980 - 9784mg/L (96h, Brachydanio rerio)

Persistence and degradability: No information available

Bioaccumulative potential: No information available.
Mobility in soil No information available
Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products:
Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:
Empty containers should be taken for local recycling, recovery or waste disposal

Component	CAS No	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Phosphorous Acid	13598-36-2	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No: UN2834
Proper Shipping Name: PHOSPHOROUS ACID
Hazard Class 8
Subsidiary Class No information available
Packing group: III
Emergency Response Guide Number 154
Marine Pollutant No data available
DOT RQ (lbs): No information available
Special Provisions IB8, IP3, T1, TP33
Symbol(s): No information available
Description: UN2834, PHOSPHOROUS ACID, 8, III

TDG (Canada)

UN-No: UN2834
Proper Shipping Name: PHOSPHOROUS ACID
Hazard Class 8
Subsidiary Risk: No information available
Packing Group: III
Marine Pollutant No Information available
Description: UN2834, PHOSPHOROUS ACID, 8, III

ADR

UN Number UN2834
Proper Shipping Name: PHOSPHOROUS ACID
Transport hazard class(es) 8
Packing group III
Subsidiary Risk: No information available
Description: UN2834, PHOSPHOROUS ACID, 8, III

IMDG

UN-No: UN2834
Proper Shipping Name: PHOSPHOROUS ACID

Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: III
Marine Pollutant: No information available
EMS: F-A
Description: UN2834, PHOSPHOROUS ACID, 8, III

RID

UN Number: UN2834
Proper Shipping Name: PHOSPHOROUS ACID
Transport hazard class(es): 8
Subsidiary Risk: No information available
Packing group: III
Description: UN2834, PHOSPHOROUS ACID, 8, III

ICAO (air)

UN-No: UN2834
Proper Shipping Name: PHOSPHOROUS ACID
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: III
Description: UN2834, PHOSPHOROUS ACID, 8, III

IATA

UN Number: UN2834
Proper Shipping Name: PHOSPHOROUS ACID
Transport hazard class(es): 8
Subsidiary Risk: No information available
Packing group: III
Precautionary Statements - Response: 8L
Special Provisions: No information available
Description: UN2834, PHOSPHOROUS ACID, 8, III

15. REGULATORY INFORMATION

International Inventories

Component	CAS No	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	China IECSC	Australia (AICS)	EINECS-No.
<i>Phosphorous Acid</i>	13598-36-2	Present ACTIV E	Present KE-28491	Present	Present (1)-421	Present	Present	Present 237-066-7

U.S. Regulations

Phosphorous Acid
 New Jersey RTK Hazardous Substance List: 1519

California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.

Chemicals Known to the State of California to Cause Cancer:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Component	CAS No	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:

Phosphorous Acid	13598-36-2	Not Listed	Not Listed	Not Listed	Not Listed
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CERCLA/SARA

Component	CAS No	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting de minimis
Phosphorous Acid	13598-36-2	None	None	None	None	None

U.S. TSCA

Component	CAS No	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) - Health and Safety Reporting
Phosphorous Acid	13598-36-2	Not Applicable	Not Applicable

Canada

WHMIS 2015 - GHS Classifications

WHMIS 2015 Hazard Classification Information:

The WHMIS 2015 classification of this product has not been validated or reviewed yet.

Canada Hazardous Products Regulation This product has been classified according to the hazard criteria of the HPR (Hazardous Products Regulation) and the SDS contains all of the information required by the HPR

DSL/NDSL

Component	CAS No	Canada (DSL)	Canada (NDSL)
Phosphorous Acid	13598-36-2	Present	Not Listed

Component	CAS No	CEPA Schedule I - Toxic Substances
Phosphorous Acid	13598-36-2	Not listed
Component	CAS No	CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting
Phosphorous Acid	13598-36-2	Not listed

EU Classification

EU GHS - SV - CLP 1272/2008

Component	CAS No	EU GHS - SV - CLP (1272/2008)
Phosphorous Acid	13598-36-2	Acute toxicity - Oral - Acute Tox. 4: H302 Harmful if swallowed. (Minimum classification); Skin corrosion/irritation - Skin Corr. 1A: H314 Causes severe skin burns and eye damage.015-157-00-0

EU - CLP (1272/2008)

R-phrase(s)

R22 - Harmful if swallowed
R35 - Causes severe burns

S -phrase(s)

S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)

S 1/2 - Keep locked up and out of the reach of children.

S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection

Component	CAS No	Classification	Concentration Limits:	Safety Phrases
Phosphorous Acid	13598-36-2	Xn; R22 C; R35	No information	S: (1/2)-26-36/37/39-45

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:

C - Corrosive

Xn - Harmful

**16. OTHER INFORMATION**

Preparation Date: 8/12/2019
Revision date 8/12/2019
Prepared by: Sonia Owen

Disclaimer:

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet