

**Safety data sheet as per COMMISSION REGULATION (EU) No 453/2010
of 20 May 2010 amending Regulation (EC) No 1907/2006
Product: Phosphorous acid**



SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name: Phosphorous acid

CAS No. : 13598-36-2

EC No. : 237-066-7

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: Phosphorous acid is used to produce phosphonates like ATMP, HEDP, PBTC which are used as scale inhibitor or corrosion inhibitors in water treatment. It is also used in preparing PMIDA which is a very important intermediate of herbicide glyphosate. It is used to prepare phosphite salts which are used in controlling microbial plant diseases.

Sector of use: SU 3 industrial uses

Environmental release category: Manufacture (ERC1) and formulations (ERC2)

Uses identified against: Food additive, medicinal products

1.3 Details of the supplier of the safety data sheet: Manufacturer/Supplier:

Prasol Chemicals Ltd.,
Prasol House, Plot No.A-17/2/3,
T.T.C. Indl. Area, Khairne M.I.D.C.,
Navi Mumbai - 400 710,
Maharashtra, India.
Tel: +91-22-27782555
Fax: +91-22-27782430

Further information obtainable from:

Mr. Dhaval Parikh

e-mail:sales@prasolchem.com; inquiry@prasolchem.com

1.4 Information in case of emergency:

Product safety department Tel: +91-22- 27782555; Fax:+91-22- 27782430

Other Comments (e.g. language(s) of the phone service): English

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

2.1.1 Classification according to Regulation (EC) No 1272/2008(CLP)



GHS05

Corrosion

Met. Corr. 1

Acute Tox. 4

Skin Corr. 1B

Eye Dam. 1

H290

H302

H314

H318



GHS07

Exclamation mark

May be corrosive to metals.

Harmful if swallowed.

Causes severe skin burns and eye damage

Causes serious eye damage

2.1.2 Classification according to Directive 67/548/EEC or Directive 1999/45/EC



C; Corrosive

Xn, R22: Harmful if swallowed

C, R35: Causes severe burns

Information concerning particular hazards for human and environment: Not applicable

2.2 Label elements

Labeling according to Regulation (EC) No 1272/2008(CLP)

The substance is classified and labeled according to the CLP regulation.

Hazard pictograms



GHS05

Corrosion

Signal word Danger



GHS07

Exclamation mark

Revision: 15-01

Issue Date: 21.08.2015

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Hazard-determining components of labeling: Phosphorous acid

Hazard statements

H290 May be corrosive to metals.

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage

Precautionary statements

P260 Do not breathe dust/fume/gas/mist/vapors/spray.

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P390: Absorb spillage to prevent material damage.

P406 Store in corrosive resistant container with a resistant inner liner.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards

Results of PBT and vPvB assessment: Not determined

SECTION 3: Composition/information on ingredients

Chemical characterization:

CAS No. Description
13598-36-2 Phosphorous acid

Identification number(s)

EC Number: 237-066-7

Index Number: 015-157-00-0

Additional information:

Molecular Formula: H₃PO₃

Molecular Weight: 82.0g/mol

SECTION 4: First aid measures

4.1 General information:

Immediately remove any clothing soiled by the product.

Consult a physician. Show this safety data sheet to the doctor in attendance.

After inhalation: Inhalation produces damaging effects on the mucous membranes and upper respiratory tract. Symptoms may include irritation of the nose and throat, and labored breathing. May cause lung edema, a medical emergency.

After skin contact: Corrosive. Contact can cause severe irritation, burns, redness, and pain. Burns usually penetrate the skin with sharply defined edges, and heal slowly with the formation of scar tissue.

After eye contact: Corrosive. Fumes and airborne powder cause eye irritation. Contact with substance can cause severe eye burns and permanent damage.

After swallowing: Corrosive. Releases heat on contact with moisture and will burn mucous surfaces. Sore throat, abdominal pain, nausea, vomiting, and diarrhea may result. Brown or yellow stains will be found around the mouth. Suffocation may occur from swelling of the tongue. Aspiration into the lungs can cause chemical pneumonitis. Ingestion of this material has caused human fatalities.

4.2 Most important symptoms and effects, both acute and delayed

Eye contact: Inflammation of the eye is characterized by redness, watering, and itching

Skin contact: Inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

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

Information for doctor: Treat symptomatically and supportively

SECTION 5: Firefighting measures

5.1 Suitable extinguishing agents: Non-flammable product, Use suitable means to extinguish neighboring fires.

For safety reasons unsuitable extinguishing agents: water jet

5.2 Special hazards caused by the substance, its products of combustion or resulting gases:

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Thermal decomposition with formation of corrosive vapour and phosphorus oxides. Forms flammable and explosive hydrogen through corrosion of metals.

5.3 Advice for firefighters: *Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing. Acid resistant clothing.*

Additional information

Collect contaminated fire-fighting water separately. It must not enter the sewage system..

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation. Evacuate personnel to safe areas.

6.2 Measures for environmental protection: *Do not let product enter drains.*

6.3 Methods and material for containment and cleaning up: *Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.*

6.4 Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment

See Section 13 for disposal information

SECTION 7: Handling and storage

7.1 Precautions for safe handling: *Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage.*

Information about fire - and explosion protection: *Isolate from incompatible substances. Reacts violently with water.*

7.2 Conditions for safe storage, including any incompatibilities: *Store in corrosive resistant stainless steel container with a resistant in-liner. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store under inert gas. Air sensitive.*

Storage class (TRGS 510): Non-combustible, corrosive hazardous materials

Incompatible materials: *Water, Nitrates, Amines, Metals, strong bases*

Information about storage in one common storage facility: *Store away from flammable substances.*

Further information about storage conditions: *Store in dry conditions. Protect from humidity and water. Keep container tightly sealed.*

Packaging material: *Recommended: Stainless steel 316 L, lined steel, Polyethylene*

To be avoided: Aluminium and copper alloys, Mild steel.

7.3 Specific end use(s) *No further relevant information available.*

SECTION 8: Exposure controls/personal protection

Additional information about design of technical facilities:

Use adequate ventilation to keep airborne concentrations low.

8.1 Control parameters

Ingredients with limit values that require monitoring at the workplace: *not required*

8.2 Exposure controls

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. Avoid contact with the eyes and skin.*

Respiratory protection:

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device

Protection of hands: *Acid resistant gloves (PVC, neoprene)*

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Material of gloves: *Natural rubber/Natural latex - NR (0.5 mm) (use non-powdered and allergen free products)*

Polychloroprene - CR (0.5 mm)/ Nitrile rubber/Nitrile latex - NBR (0.35 mm)/ Butyl rubber - Butyl (0.5 mm)/

Fluoro carbon rubber - FKM (0.4 mm)/ Polyvinyl chloride - PVC (0.5 mm)

Penetration time of glove material: *concentrations up to 75%, permeation time \geq 8 hours*

For the permanent contact gloves made of the following materials are suitable: *Nitrile rubber, NBR*

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As protection from splashes gloves made of the following materials are suitable: Nitrile rubber, NBR
Eye protection: Safety goggles, Face-shield, Eye wash bottle with pure water
Body protection: Acid resistant clothing, anti -acid boots.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	: white solid
Odour	: odorless
Odour threshold	: not applicable
pH	: <1 at 20°C
Melting point/Melting range	: 63-74°C
Boiling point/Boiling range	: 259°C
Flash point	: not applicable (inorganic substance)
Evaporation rate	: not applicable
Flammability (solid, gaseous)	: not applicable
Upper/lower flammability or explosive limits	: not applicable
Vapour pressure at 20°C	: 0.000011 mmHg
Vapour density	: not determined
Density at 20°C	: 1.837 g/cm ³
Solubility in / Miscibility with water	: >1067g/L (miscible)
Partition coefficient (n-octanol/water)	: ~-0.2 log PoW
Auto-ignition temperature	: does not self-ignite upto 85°C when it melts
Decomposition temperature	: 180°C
Viscosity	: not applicable
Explosive properties	: none
Oxidising properties	: none
9.2 Other information	pKa 1.3, 6.7 at 25°C

SECTION 10: Stability and reactivity

- 10.1 Reactivity** Reacts violently with bases to evolve heat.
10.2 Chemical stability Stable under recommended storage conditions, Forms flammable and explosive hydrogen through corrosion of metals.
10.3 Possibility of hazardous reactions Reacts violently with bases. When diluting, always add acid to water, never reverse
10.4 Conditions to avoid Heat, flames and sparks
10.5 Incompatible materials: Water, bases (Exothermic reaction), ferrous metal, Aluminium. Contact with metals liberates hydrogen gas.
10.6 Hazardous decomposition products: Hydrogen, by reaction with metals, Phosphorous oxides formation at high temperature. Hazardous polymerization has not been reported.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity:

LD50 oral 1560mg/Kg (rat)

Phosphorous acid is classified as corrosive to the skin, therefore, no need to perform an acute dermal and an acute inhalation toxicity tests

Skin corrosion/irritation: Strong corrosive effect on skin and mucous membranes.

Serious eye damage/irritation: no data available.

Respiratory or skin sensitization: No sensitizing effects known.

Germ cell mutagenicity: non genotoxic

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

Reproductive toxicity: Reproduction NOAEL: at least 500 mg/kg
Developmental NOAEL: at least 250 mg/kg

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STOT-single exposure: no data available

STOT-repeated exposure: Parental NOAEL: 250 mg/kg (both for local and systemic toxicity)

Aspiration hazard: no data available

Contact with molten substance may cause severe burns to skin and eyes.

Additional toxicological information: Burning sensation, Cough, wheezing, laryngitis, Shortness of breath, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin

SECTION 12: Ecological information

12.1 Toxicity

Phosphorous acid toxicity is related to its acidic nature and, therefore, is more related to concentration than to dose.

Aquatic toxicity:

LC50	96h	>100mg/L	Cyprinus carpio (carp)
EC50	48h	>1000 mg/L	Daphnia magna
EC50	72h	153mg/L	Pseudokirchneriella subcapitata (green algae)

12.2 Persistence and degradability

Biodegradation the substance is inorganic; therefore no biodegradation tests are applicable

12.3 Bio accumulative potential

not expected to bio-accumulate.

12.4 Mobility in soil

This substance is highly water soluble and dissociating.

12.5 Results of PBT and vPvB assessment

No assessment required for inorganic substance

12.6 Other adverse effects

May be harmful to aquatic life due to shift of pH.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product: Must not be disposed together with household garbage. Do not allow product to reach sewage system.

Contaminated packaging:

Empty containers must be decontaminated before returning for recycling. Dispose of container and unused contents in accordance with federal, state and local requirements.

Recommended cleansing agents: Water, carefully, if necessary together with cleansing agents

SECTION 14: Transport information

Land Transport (ADR/RID)

Marine Transport (IMDG)

Air Transport (ICAO/ IATA)

14.1 UN/ID Number: 2834

14.2 UN proper shipping name: PHOSPHOROUS ACID

14.3 Transport hazard class: 8 Corrosive substances

14.4 Packaging group: III

14.5 Environmental hazards: not a marine pollutant

14.6 Special precautions for the user:

EMS Number : F-A,S-B

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: no data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This safety datasheet complies with the requirements of COMMISSION REGULATION (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006

Hazard pictograms Please refer section 2

Signal word Danger

Hazard statements Please refer section 2

Precautionary statements Please refer section 2

Labeling according to EU guidelines:

Code letter and hazard designation of product: please refer Section 2

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Risk phrases: please refer Section 2.

15.2 Chemical safety assessment A Chemical Safety Assessment has not been carried out and shall be available at the time of REACH registration

Substances of very high concern (SVHC) according to REACH, Article 57 The substance is not listed as SVHC.

SECTION 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.

Department issuing MSDS:

Product safety department.

Contact:

Tel: +91-022-27782555

Fax: +91-022-27782430

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

CAS: Chemical Abstracts Service (division of the American Chemical Society)

EC50: Half minimal response concentration

EINECS: European Inventory of Existing Commercial Chemical Substances

GHS: Globally Harmonized System of Classification and Labeling of Chemicals

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

IMDG: International Maritime Code for Dangerous Goods

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

Sources

REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

ECHA: [http://apps.echa.europa.eu/registered/data/dossiers/DISS-9ea6f6b7-947c-01c3-e044-00144f67d031/DISS-9ea6f6b7-947c-01c3-e044-00144f67d031.html](http://apps.echa.europa.eu/registered/data/dossiers/DISS-9ea6f6b7-947c-01c3-e044-00144f67d031/DISS-9ea6f6b7-947c-01c3-e044-00144f67d031_DISS-9ea6f6b7-947c-01c3-e044-00144f67d031.html)

Sigma Aldrich:

<http://www.sigmaaldrich.com/MSDS/MSDS/DisplayMSDSPage.do?country=IN&language=en&productNumber=215112&brand=SIAL&PageToGoToURL=http%3A%2F%2Fwww.sigmaaldrich.com%2Fcatalog%2Fproduct%2Fsi%2F215112%3Flang%3Den>

ChemIDplus: <http://chem.sis.nlm.nih.gov/chemidplus/rn/13598-36-2>

Data compared to the previous version altered.

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- Section 2: Hazard Identification
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