

Product Stewardship Summary

Phosphonic Acid

General Statement

Phosphonic acid, also known as phosphorous acid, is a moderately strong inorganic acid. It is used primarily for the production of phosphonates and phosphate salts. These derivatives are used in a number of antimicrobial applications.

Chemical Identity

Name: Phosphonic acid

Brand Names: Ashland does not use a brand name when selling phosphonic acid. Chemical name (IUPAC):

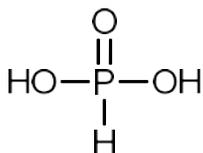
Phosphonic acid

CAS number(s): 13598-36-2

ES number: 237-066-7

Molecular formula: H_3O_3P

Structure:



Uses and Applications

Ashland produces phosphonic acid as a byproduct of other manufacturing processes. Ashland sells this chemical to other manufacturers, who further use it to produce a variety of products, including antimicrobials.



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Physical/Chemical Properties

Phys/Chem Safety Assessment

Property	Value
Form	White Flakes
Physical state	Solid
Color	White
Odor	Odorless
Density	1.837 g/cm ³ @ 20°C
Melting / boiling point	63.74°C / 256°C
Flammability	Combustible
Explosive properties	Not explosive
Self-ignition temperature	None
Vapor pressure	<0.000014 hPa @ 20°C
Mol weight	82 g/mol
Water solubility	>1067 g/L @ 20°C
Flash point	Not determined
Octanol-water partition coefficient (Log _{K_{ow}})	Not determined

Exposure, Hazard and Safety Assessment

The following section describes possible exposures scenarios and hazards associated with phosphonic acid. The exposure assessment describes both the amount of and the frequency with which a chemical substance reaches a person, a population of people, or the environment. Hazard refers to the inherent properties of a substance that make it capable of causing harm to human health or the environment. The safety assessment reports the possibility of a harmful event arising from exposure to a chemical or physical agent under specific conditions. Just because a substance may possess potentially harmful properties does not mean that it automatically poses a risk. It is not possible to make that determination without understanding the exposure.

Human Health Effects

Human Exposure Assessment

Consumer: Consumer exposure to dangerous concentrations of phosphonic acid is unlikely outside of industrial environments.

Worker: Workers using phosphonic acid should ensure the usage of appropriate PPE at all times.

Human Hazard Assessment

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	H302: Harmful if swallowed No acute toxicity if applied on skin or inhaled.
Irritation / corrosion Skin / eye / respiratory test	Causes severe skin burns and eye damage. Inhalation of concentrated vapors may cause respiratory irritation.
Sensitization	Does not cause allergic reactions upon contact with skin
Toxicity after repeated exposure Oral / inhalation / dermal	Prolonged or repeated exposure does not cause any harmful effects
Genotoxicity / Mutagenicity	Does not affect genetic system
Carcinogenicity	Not considered as a carcinogen
Reproductive / Developmental Toxicity	Not toxic to reproduction or to unborn children
Aspiration hazard	Not applicable

Human Health Safety Assessment

Consumer: Consumer exposure to dangerous concentrations of phosphonic acid is unlikely. While phosphonic acid solutions are sometimes used to treat plant diseases, these applications are unlikely to lead to significant consumer exposure.

Worker: Industrial uses of phosphonic acid release only small quantities, which are unlikely to lead to significant consumer exposure. Phosphonic acid is capable of causing severe skin and eye burns. Workers should wear appropriate PPE at all times. Workers should ensure that all storage and transfer devices are compatible with phosphonic acid.

Environmental Effects

Environmental Exposures

Environmental damage from phosphonic acid is unlikely to occur outside of a significant spill.

Environmental Hazard Assessment:

Effect Assessment	Result
Aquatic toxicity	Not toxic to aquatic organisms

Fate and behavior	Result
Biodegradation	Likely to react or decompose rapidly in aqueous solution.
Bioaccumulation potential	Not likely to bioaccumulate.
PBT / vPvB conclusion	This substance is not considered to be persistent, bioaccumulating and toxic (PBT) or very persistent and very bioaccumulating (vPvB)

Environmental Safety Assessment

Phosphonic acid is minimally toxic, with the exception of its acidic and reactive properties. Acute environmental damage may occur from a large spill.

Risk Management Recommendations

Phosphonic acid is a moderately strong acid. Care should be taken to prevent worker contact with concentrated phosphonic acid. Proper PPE should be used at all times, including acid-resistant clothing and eye protection.

Regulatory Agency Review

Phosphonic acid:

- is on the list of REACH registered substances (EC) 1907/2006
- is on the US TSCA inventory
- is listed on Canada's DSL list
- is on the Australia Index of Chemical Substances
- is on the China Inventory of Existing Chemical Substances
- is on the Japan Inventory of Existing and New Chemical Substances
- is on the Korea Existing Chemicals Inventory
- is on the New Zealand Inventory of Chemicals
- is on the Philippines Inventory of Chemicals and Chemical Substances

Regulatory Information / Classification and Labeling

Under the Globally Harmonized System for classification and labeling (GHS), substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the (Extended) SDS. GHS attempts to standardize hazard communication so that the intended audience (workers, consumers, transport workers, and emergency responders) can better understand the hazards of the chemicals in use.

GHS Classification:

Corrosive to metals: Category 1
 Acute toxicity (oral): Category 4
 Skin corrosion/irritation: Category 1A
 Serious eye damage/eye irritation: Category 1

Hazard Statements:

H290: May be corrosive to metals.
 H302: Harmful if swallowed
 H314: Causes severe skin burns and eye damage

Signal Word:

Danger

Precautionary Statements:

P234: Keep only in original container

P260: Do not breathe dust/fume/gas/mist/vapours/spray

P264: Wash ... thoroughly after handling

P270: Do not eat, drink, or smoke when using this product

P280: Wear protective gloves/protective clothing/eye protection/face protection

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.

P406: Store in corrosive resistant/... container with resistant inner liner

Hazard Pictograms:**Conclusion**

Phosphonic acid is useful in several industrial processes. While it is a moderately strong acid, it is unlikely to present a serious hazard to humans or the environment except in cases of large-scale spills.

Contact Information with Company

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Additional Information

For more information on GHS, visit <http://www.osha.gov/dsg/hazcom/ghsguideoct05.pdf> or http://live.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html.
Ashland product stewardship summaries are located at <http://www.ashland.com/sustainability/product/product-stewardship>

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REACH registration is specific to Importers/Manufacturers that place the chemical on the EU market, and is specific to registered uses. Inclusion on the list of REACH Registered Substances does not automatically imply registration by Ashland.

Inclusion on the New Zealand Inventory of Chemicals applies only to the pure substance listed. The importer of record must determine whether or not their substances are in compliance.