SAFETY DATA SHEET

Phosbrite® 172

Section 1. Identification

Product identifier : Phosbrite® 172

SDS # : **232**

Other means of identification

Synonyms : Bright Dip, PB172

Product code(s) : **PB172**

Product type : Liquid.

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

Identified uses
Aluminum brightener.

Uses advised against	**Reason**
Product is not intended for consumer use. Reserved for industrial and professional use only.	Risk assessment.

Supplier's details :

PCS Sales (USA), Inc. (A Subsidiary of Nutrien Ltd.)
Suite 150
500 Lake Cook Road
Deerfield, IL 60015
United States

PCS Sales (Canada), Inc. (A Subsidiary of Nutrien Ltd.)
Suite 500
122 1st Avenue South
Saskatoon, Saskatchewan S7K 7G3
Canada

Company phone number (North America):
1-800-524-0132 (Customer Service)

sds@nutrien.com - www.nutrien.com

Emergency telephone number (with hours of operation) :

Nutrien North American
24 HOUR EMERGENCY TELEPHONE NUMBERS:

English:
Transportation Emergencies: 1-800-792-8311
Medical Emergencies: 1-303-389-1653

French or Spanish:
Tranportation or Medical Emergencies: 1-303-389-1654

Section 2. Hazard identification

Classification of the substance or mixture :

CORROSIVE TO METALS - Category 1
SKIN CORROSION - Category 1B
SERIOUS EYE DAMAGE - Category 1
CARCINOGENICITY (inhalation) - Category 1B
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Section 2. Hazard identification

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : May be corrosive to metals.
Causes severe skin burns and eye damage.
May cause cancer if inhaled.
May cause respiratory irritation.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention : Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep only in original packaging. Use only outdoors or in a well-ventilated area. Avoid breathing vapor. Wash hands thoroughly after handling.

Response : Absorb spillage to prevent material damage.
IF exposed or concerned: Get medical attention.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or physician.
IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician.
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.

Storage : Store locked up. Store in a corrosion resistant container with a resistant inner liner.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : None known.

Other hazards which do not result in classification : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	% (w/w)	CAS number
Orthophosphoric acid	79 - 80	7664-38-2
Sulfuric acid	10 - 12	7664-93-9
Ammonium dihydrogen orthophosphate	5 - 6	7722-76-1
Water	2 - 6	7732-18-5

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

Eye contact : CORROSIVE. Begin eye irrigation immediately. All eye exposures to acid require medical evaluation following decontamination. Immediately rinse eyes with large quantities of water or saline for a minimum of 20-30 minutes depending on severity of exposure. If possible, remove contact lenses being careful not to cause additional eye damage. If the initial water supply is insufficient, keep the affected area wet with a moist cloth and transfer the person to the nearest place where rinsing can be continued for the recommended length of time. Call an ambulance for transport to hospital. Continue eye irrigation during transport. For additional advice call the medical emergency number on this safety data sheet or your poison center or doctor.

Inhalation : CORROSIVE. If mists or vapors are present in unknown or excessive concentrations, rescuers must wear appropriate respiratory protection and a suit resistant to acids (Level B or C). REMOVE PERSON TO FRESH AIR. Watch closely for signs of wheezing and breathing difficulties. Maintain an open airway. If not breathing, begin CPR. Oxygen may be administered by trained personnel. Affected persons who have stopped breathing or are having difficulty breathing or are unconscious need immediate medical attention. Call an ambulance for transport to hospital. For additional advice call the medical emergency number on this SDS or your poison center or doctor.

Skin contact : CORROSIVE. Causes severe burns. Immediately begin rinsing the affected areas with water. Remove contaminated clothing and shoes. Affected areas should be rinsed for a minimum of 20 - 30 minutes or longer depending on severity of exposure. Luke-warm water is recommended for continued irrigation to prevent hypothermia. Conscious persons without breathing difficulties may benefit from prolonged irrigation in a fixed shower or bathing facility prior to hospital transport. Call an ambulance for transport to hospital. Continue skin irrigation during transport. For additional advice call the medical emergency number on this safety data sheet or your poison center or doctor.

Ingestion : CORROSIVE. May cause severe burns to the mouth, throat, and stomach. If the affected person requires cardiopulmonary resuscitation, avoid mouth to mouth contact. Do not induce vomiting. If vomiting occurs, attempt to keep head lower than the chest so that vomit does not enter the lungs. Wash face and mouth with water to remove visible material. If the exposed person is conscious and can swallow, give 1-2 sips of water. Do not give anything else by mouth. Loosen tight clothing such as collar, tie, belt or waistband to prevent any breathing restrictions. For signs of breathing difficulties, refer to the INHALATION section. Call an ambulance for transportation to hospital. For additional advice, call the medical emergency number on this safety data sheet or your poison center or doctor.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Corrosive to eyes on contact. Causes serious eye damage.

Inhalation : Irritating to the respiratory system. May cause breathing difficulties.

Skin contact : Corrosive to the skin. Causes severe burns.

Ingestion : Corrosive to the digestive tract. May cause burns to the mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : Adverse symptoms may include the following:
Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.
coughing
wheezing and breathing difficulties

Section 4. First-aid measures

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : Adverse symptoms may include the following:
throat and stomach pain
difficulty swallowing
nausea or vomiting

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Phosphoric acid is an acid which may cause coagulative necrosis. Treatment is symptomatic and supportive. The extent of injury depends on duration of exposure and concentration of liquid. Do not attempt to use chemicals to neutralize the exposure. Contact Nutrien's 24 Hr Medical Emergency telephone number for professional support: English: 1-303-389-1653; French or Spanish: 1-303-389-1654

Specific treatments : Outcomes can be improved by minimizing time to decontamination and extending decontamination times to reduce tissue damage. Expert opinion indicates extended decontamination is required to remove corrosive chemicals. Skin and eye decontamination should be performed for a minimum of 20 - 30 minutes. Extended decontamination times may be required depending on the exposure. To avoid hypothermia, irrigation water should be maintained at a comfortable temperature. If the patient is not in extremis, it may be necessary to delay transport to emergency care facilities to ensure adequate decontamination time. However, early patient transport may be necessary depending on patient's condition or the availability of water. If possible, continue skin and/or eye irrigation during emergency medical transport. Double-bag contaminated clothing and personal belongings of the patient.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. Depending on the situation, the rescuer should wear an appropriate mask, gloves, protective clothing and a respirator or self-contained breathing apparatus. Mouth-to-mouth resuscitation of oral exposure patients is not recommended. First-aiders with contaminated clothing should be properly decontaminated.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Non-flammable. Material will not burn. Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Reacts violently with water. Will react with water or steam to produce heat and corrosive fumes. Attacks many metals producing extremely flammable hydrogen gas which can form explosive mixtures with air. Flammable concentrations of vapor may accumulate in the headspace of containers.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
acidic corrosive material
sulfur oxides
nitrogen oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 5. Fire-fighting measures

Remark : Contain and collect the water used to fight the fire for later treatment and disposal.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : Put on appropriate personal protective equipment (see Section 8). If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". Refer to Emergency Response Guidebook, Guide 154 for further information regarding spill control and Isolation/Protective Action Distances Guidelines.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused adverse impacts (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Put on appropriate personal protective equipment (see Section 8). Stop leak if without risk. Move containers from spill area. Neutralize acids by applying basic substances (soda ash or lime) or use an acid spill kit. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Put on appropriate personal protective equipment (see Section 8). Approach release from upwind. Stop leak if without risk. Prevent entry into sewers, water courses, basements or confined areas. Move containers from spill area. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). The spilled material may be neutralized with calcium carbonate, crushed limestone, or sodium carbonate. Contaminated absorbent material may pose the same hazard as the spilled product.

Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. PB172 is a mixture or strong acids and is corrosive to skin, eyes and mucous membranes. The fumes evolved during the use of PB172 are corrosive. Avoid generating mists or aerosols. Air agitation is not recommended while using PB172. Mechanical agitation, which moves the aluminum while immersed in the solution, is required. Handle the material in a fume hood/cupboard or under local exhaust ventilation. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from alkalis. Empty containers retain product residue and can be hazardous. Do not reuse container. Refer to NFPA 400 Hazardous Materials Code for further information on the safe storage and handling of hazardous materials.

Section 7. Handling and storage

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a corrosion resistant container with a resistant inner liner. Store locked up. Separate from alkalis. Attacks many metals producing extremely flammable hydrogen gas which can form explosive mixtures with air. Flammable concentrations of vapor may accumulate in the headspace of containers. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Tanks and heating coils should be made of 316L stainless steel, and as these rely on the presence of nitric acid to prevent corrosive attack, the nitric acid content should not be allowed to fall below 2.0%. The addition of water to lower the specific gravity is only necessary if the specific gravity exceeds 1.78 (80°F/60°F). Water addition should be made only when the appropriate amounts of virgin PB174LC solution and nitric acid have been made and the specific gravity exceeds the recommended parameter. Sulfuric acid reacts violently with water or alcohol, liberating large amounts of heat; ALWAYS ADD ACID TO WATER OR OTHER DILUENT. Extremely reactive and incompatible with reducing agents, organic materials, metals, alkalis, moisture. Highly reactive with combustible materials. Slightly reactive with oxidizing agents. Refer to NFPA 400 Hazardous Materials Code for further information on the safe storage and handling of hazardous materials.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Canadian Regulations Orthophosphoric acid	**CA Alberta Provincial (Canada, 4/2009).** 15 min OEL: 3 mg/m³ 15 minutes. 8 hrs OEL: 1 mg/m³ 8 hours. **CA British Columbia Provincial (Canada, 4/2014).** TWA: 1 mg/m³ 8 hours. STEL: 3 mg/m³ 15 minutes. **CA Ontario Provincial (Canada, 1/2013).** TWA: 1 mg/m³ 8 hours. STEL: 3 mg/m³ 15 minutes. **CA Quebec Provincial (Canada, 1/2014).** TWAEV: 1 mg/m³ 8 hours. STEV: 3 mg/m³ 15 minutes.
Sulfuric acid	**CA Alberta Provincial (Canada, 4/2009).** 15 min OEL: 3 mg/m³ 15 minutes. 8 hrs OEL: 1 mg/m³ 8 hours. **CA Ontario Provincial (Canada, 1/2013).** TWA: 0.2 mg/m³ 8 hours. **CA Quebec Provincial (Canada, 1/2014).** TWAEV: 1 mg/m³ 8 hours. STEV: 3 mg/m³ 15 minutes. **CA British Columbia Provincial (Canada, 4/2014).** TWA: 0.2 mg/m³ 8 hours. Form: thoracic

Section 8. Exposure controls/personal protection

U.S. Federal Regulations	
Orthophosphoric acid	**ACGIH TLV (United States, 4/2014).** TWA: 1 mg/m³ 8 hours. STEL: 3 mg/m³ 15 minutes. **OSHA PEL 1989 (United States, 3/1989).** TWA: 1 mg/m³ 8 hours. STEL: 3 mg/m³ 15 minutes. **NIOSH REL (United States, 10/2013).** TWA: 1 mg/m³ 10 hours. STEL: 3 mg/m³ 15 minutes. **OSHA PEL (United States, 2/2013).** TWA: 1 mg/m³ 8 hours.
Sulfuric acid	**OSHA PEL 1989 (United States, 3/1989).** TWA: 1 mg/m³ 8 hours. **NIOSH REL (United States, 10/2013).** TWA: 1 mg/m³ 10 hours. **ACGIH TLV (United States, 4/2014).** TWA: 0.2 mg/m³ 8 hours. Form: Thoracic fraction **OSHA PEL (United States, 2/2013).** TWA: 1 mg/m³ 8 hours.
Monoammonium phosphate	**OSHA (United States):** Particulates not otherwise regulated (PNOR) TWA (8 hours), Total dust: 15 mg/m³; Respirable fraction: 5 mg/m³.
Water	None assigned.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

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. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. Recommended:
butyl rubber
neoprene rubber
PVC
Contact your personal protective equipment manufacturer to verify the compatibility of the equipment for the intended purpose.

Section 8. Exposure controls/personal protection

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended:
chemical-resistant protective suit
Contact your personal protective equipment manufacturer to verify the compatibility of the equipment for the intended purpose.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended: Impervious rubber safety boots.
Contact your personal protective equipment manufacturer to verify the compatibility of the equipment for the intended purpose.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Contact your personal protective equipment manufacturer to verify the compatibility of the equipment for the intended purpose.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear viscous liquid.]

Color : Clear, Light green

Odor : Odorless.

Odor threshold : Not available.

pH : 1.3 to 1.8 [Conc. (% w/w): 1%]

Melting point : 21°C (69.8°F)

Boiling point : 149°C (300.2°F)

Flash point : [Product does not sustain combustion.]

Evaporation rate : Not available.

Flammability (solid, gas) : Non-flammable substance. Attacks many metals producing extremely flammable hydrogen gas which can form explosive mixtures with air. Flammable hydrogen gas may be produced on prolonged contact with metals such as aluminum, tin, lead and zinc. Flammable concentrations of vapor may accumulate in the headspace of containers.

Lower and upper explosive (flammable) limits : Not applicable.

Vapor pressure : 0.13 kPa (1 mm Hg) [room temperature]
0.27 kPa (2 mm Hg) [50°C]

Vapor density : 3.4 [Air = 1]

Relative density : 1.7 g/cm³
Bulk density: 14 lbs/gal

Solubility : Easily soluble in the following materials: cold water and hot water.

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not applicable.

Decomposition temperature : Not available.

Viscosity : Not available.

Section 10. Stability and reactivity

Reactivity : Reactive or incompatible with the following materials:
Reacts violently with bases.
May be corrosive to metals. Attacks many metals producing extremely flammable hydrogen gas which can form explosive mixtures with air.
This product should be stored away from oxidizing materials and strong bases.

Chemical stability : The product is stable.

Possibility of hazardous reactions : May be corrosive to metals. Contact your sales representative or a metallurgical specialist to ensure compatability with your equipment.

Conditions to avoid : No specific data. This product should be stored away from oxidizing materials and strong bases. Refer to NFPA 400 Hazardous Materials Code for further information on the safe storage and handling of hazardous materials.

Incompatible materials : Attacks many metals producing extremely flammable hydrogen gas which can form explosive mixtures with air.
Reactive or incompatible with the following materials:
alkalis
metals

Hazardous decomposition products : Acidic corrosive material

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Orthophosphoric acid	LD50 Oral	Rat	1.25 g/kg	-
Sulfuric acid	LD50 Oral	Rat	2140 mg/kg	-
Ammonium dihydrogen orthophosphate	LD50 Oral	Rat - Male, Female	>2000 mg/kg	-
Water	LD50 Oral	Rat	>90 g/kg	-

Conclusion/Summary : Not considered to be acutely toxic. Corrosive material.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Sulfuric acid	Eyes - Severe irritant	Rabbit	-	250 Micrograms	-
	Eyes - Severe irritant	Rabbit	-	0.5 minutes 5 milligrams	-

Conclusion/Summary

Skin : Corrosive to the skin.

Eyes : Corrosive to eyes.

Respiratory : May cause respiratory irritation.

Sensitization

Not available.

Conclusion/Summary

Skin : No known significant effects or critical hazards.

Respiratory : No known significant effects or critical hazards.

Mutagenicity

Section 11. Toxicological information

Not available.

Conclusion/Summary : No known significant effects or critical hazards.

Carcinogenicity

Not available.

Conclusion/Summary : The U.S. National Toxicology Program has concluded that occupational exposure to strong inorganic acid mists containing sulfuric acid are carcinogenic. Epidemiological studies of workers chronically exposed to sulfuric acid have suggested increased risk for upper respiratory cancers, especially laryngeal cancer. The International Agency for Research in Cancer and NTP has concluded that occupational exposure to strong inorganic acid mists containing sulfuric acid is carcinogenic to man, however, sulfuric acid itself is not considered a confirmed human carcinogen at this time. The epidemiological studies which provided the basis for the IARC and NTP assessments were confounded by exposure to alkyl sulfates (known animal carcinogens), other chemicals, and smoking. Based on the evidence from all human and animal studies, no definative relationship has been shown between increased risk of respiratory tract cancer and sulfuric acid alone. Sulfuric acid can react with other substances to form mutagenic and possibly carcinogenic products such as alkyl sulfates.

Reproductive toxicity

Not available.

Conclusion/Summary : No known significant effects or critical hazards.

Teratogenicity

Not available.

Conclusion/Summary : No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Phosphoric acid	Category 3	Inhalation (mists)	Respiratory tract irritation
Sulfuric acid	Category 3	Inhalation (mists)	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Inhalation
Skin contact
Eye contact

Potential acute health effects

Eye contact : Corrosive to eyes on contact. Causes serious eye damage.

Inhalation : Irritating to the respiratory system. May cause breathing difficulties.

Skin contact : Corrosive to the skin. Causes severe burns.

Ingestion : Corrosive to the digestive tract. May cause burns to the mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Section 11. Toxicological information

Inhalation : Adverse symptoms may include the following:
Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.
coughing
wheezing and breathing difficulties

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : Adverse symptoms may include the following:
throat and stomach pain
difficulty swallowing
nausea or vomiting

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : See above.

Potential delayed effects : See above.

Long term exposure

Potential immediate effects : See above.

Potential delayed effects : See below.

Potential chronic health effects

Conclusion/Summary : Adverse effects are typically the result of acute overexposure. These effects may be long term or permanent in nature.

General : May cause damage to organs through prolonged or repeated exposure if inhaled.

Carcinogenicity : May cause cancer if inhaled. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Orthophosphoric acid	Acute EC50 105 ppm Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 60 ppm Fresh water	Fish - Lepomis macrochirus	96 hours
Sulfuric acid	Acute LC50 42500 µg/l Marine water	Crustaceans - Pandalus montagui - Adult	48 hours
	Acute LC50 42000 µg/l Fresh water	Fish - Gambusia affinis - Adult	96 hours

Conclusion/Summary : Harmful to aquatic life. May be harmful to the environment if released in large quantities.

Persistence and degradability

Conclusion/Summary : Not persistent. Readily biodegradable

Bioaccumulative potential

Section 12. Ecological information

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Water	-1.38	-	low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	TDG Classification	DOT Classification	Mexico Classification	IMDG	IATA
UN number	UN3264	UN3264	UN3264	UN3264	UN3264
UN proper shipping name	Corrosive liquid, acidic, inorganic, n.o.s. (Phosphoric acid, sulfuric acid, mixture)	Corrosive liquid, acidic, inorganic, n.o.s. (Phosphoric acid, sulfuric acid, mixture)	Corrosive liquid, acidic, inorganic, n.o.s. (Phosphoric acid, sulfuric acid, mixture)	Corrosive liquid, acidic, inorganic, n.o.s. (Phosphoric acid, sulfuric acid, mixture)	Corrosive liquid, acidic, inorganic, n.o.s. (Phosphoric acid, sulfuric acid, mixture)
Transport hazard class(es)	8	8	8	8	8
Packing group	II	II	II	II	II
Environmental hazards	No.	No.	No.	No.	No.
Additional information	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.40-2.42 (Class 8). **Explosive Limit and Limited Quantity Index** 1	**Reportable quantity** 5000 lbs / 2270 kg [346.63 gal / 1312.1 L]. Packages of less than the reportable quantity are not subject to Hazmat transportation requirements.	**Special provisions** 274, P001, IBC02, T11	**Emergency schedules** F-A, S-B **Special provisions** 274, P001, IBC02, T11, TP2, TP27	-

Section 14. Transport information

	Passenger Carrying Road or Rail Index 1 **Special provisions** 16	**Limited quantity** Yes. **Packaging instruction** Exceptions: 154. Non-bulk: 202. Bulk: 242. **Quantity limitation** Passenger aircraft/rail: 1 L. Cargo aircraft: 30 L. **Special provisions** 386, B2, IB2, T11, TP2, TP27			

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL and the IBC Code : Not available.

Section 15. Regulatory information

Canadian lists

Canadian NPRI : The following components are listed: Phosphorus (total)

CEPA Toxic substances : None of the components are listed.

Canada inventory : All components are listed or exempted.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia : All components are listed or exempted.

China : All components are listed or exempted.

Europe : All components are listed or exempted.

Japan : All components are listed or exempted.

Malaysia : All components are listed or exempted.

New Zealand : All components are listed or exempted.

Philippines : All components are listed or exempted.

Section 15. Regulatory information

Republic of Korea : All components are listed or exempted.

Taiwan : All components are listed or exempted.

Turkey : Not determined.

U.S. Federal Regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined
TSCA 8(b) Active inventory: All components are listed or exempted.
Clean Water Act (CWA) 311: Phosphoric acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Listed

SARA 302/304 Composition/information on ingredients

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard
Delayed (chronic) health hazard.

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard.
Orthophosphoric acid	70 - 74	No.	No.	No.	Yes.	No.
Sulfuric acid	14 - 17	No.	No.	No.	Yes.	Yes.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Ammonium dihydrogen orthophosphate Sulfuric acid	7722-76-1 7664-93-9	5 - 6 14 - 17
Supplier notification	Ammonium dihydrogen orthophosphate Sulfuric acid	7722-76-1 7664-93-9	5 - 6 14 - 17

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : The following components are listed: Phosphoric acid

New York : The following components are listed: Phosphoric acid

New Jersey : The following components are listed: Phosphoric acid

Pennsylvania : The following components are listed: Phosphoric acid

California Prop. 65 : ⚠ **WARNING:** This product can expose you to chemicals including cadmium, which is known to the State of California to cause cancer and to cause birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

Section 16. Other information

History

Date of issue/Date of revision : 3/31/2021

Date of previous issue : 7/9/2019

Version : 2.2

Indicates information that has changed from previously issued version.

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations
HPR = Hazardous Products Regulations

Procedure used to derive the classification

Classification	Justification
CORROSIVE TO METALS - Category 1	Expert judgment
SKIN CORROSION - Category 1B	Weight of evidence
SERIOUS EYE DAMAGE - Category 1	Weight of evidence
CARCINOGENICITY (inhalation) - Category 1B	Regulatory data
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3	Weight of evidence

References : Transportation of Dangerous Goods Act and Clear Language Regulations, current edition at time of SDS preparation, Transport Canada;
Hazardous Products Act and Regulations, current revision at time of SDS preparation, Health Canada;
Domestic Substances List, current revision at time of SDS preparation, Environment Canada;
29 CFR Part 1910, current revision at time of SDS preparation, U.S. Occupational Safety and Health Administration;
40 CFR Parts 1-799, current revision at time of SDS preparation, U.S. Environmental Protection Agency;
49 CFR Parts 1-199, current revision at time of SDS preparation, U.S. Department of Transport;
Mexican Official Standard NOM-018-STPS-2015, Harmonised System for the Identification and Communication of Hazards and Risks by Hazardous Chemicals in the Workplace;
NORMA Oficial Mexicana NOM-010-STPS-2014, Agentes químicos contaminantes del ambiente laboral-Reconocimiento, evaluación y control.
Mexican Official Standard NOM-002-SCT / 2011, List of the most commonly transported hazardous substances and materials;
Threshold Limit Values for Chemical Substances, current edition at time of SDS preparation, American Conference of Governmental Industrial Hygienists;
NFPA 400, National Fire Codes, National Fire Protection Association, current edition at time of SDS preparation;
NFPA 704, National Fire Codes, National Fire Protection Association, current edition at time of SDS preparation;
Corrosion Data Survey, Sixth Edition, 1985, National Association of Corrosion Engineers;
ERG 2016, Emergency Response Guidebook, U.S. Department of Transport, Transport Canada, and the Secretariat of Transportation and Communications of Mexico
Hazardous Substances Data Bank, current revision at time of SDS preparation,

Section 16. Other information

National Library of Medicine, Bethesda, Maryland
Integrated Risk Information System, current revision at time of SDS preparation, U. S. Environmental Protection Agency, Washington, D.C.
Pocket Guide to Chemical Hazards, current revision at time of SDS preparation, National Institute for Occupational Safety and Health, Cincinnati, Ohio ;
Agency for Toxic Substances and Disease Registry Databank, current revision at time of SDS preparation, U.S. Department of Health and Human Services, Atlanta, Georgia
National Toxicology Program, Report on Carcinogens, Division of the National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina.
Registry of Toxic Effects of Chemical Substances. National Institute for Occupational Safety and Health, Cincinnati, Ohio
California Code of Regulations, Title 27, Div 4, Chapter 1, Proposition 65 Aug 30, 2018 rev and current updates
The Fertilizer Institute, Product Toxicology Testing Program Results, TFI, Washington , D.C., 2003

Notice to reader

Supply chain partners must ensure they pass this SDS, and all other relevant safety information to their customers.

DISCLAIMER AND LIMITATION OF LIABILITY

The information and recommendations contained in this Safety Data Sheet ("SDS") relate only to the specific material referred to herein (the "Material") and do not relate to the use of such Material in combination with any other material or process. The information and recommendations contained herein are believed to be current and correct as of the date of this SDS. HOWEVER, THE INFORMATION AND RECOMMENDATIONS ARE PRESENTED WITHOUT WARRANTY, REPRESENTATION OR LICENSE OF ANY KIND, EXPRESS OR IMPLIED, WITH RESPECT TO THEIR ACCURACY, CORRECTNESS OR COMPLETENESS, AND THE SELLER, SUPPLIER AND MANUFACTURER OF THE MATERIAL AND THEIR RESPECTIVE AFFILIATES (COLLECTIVELY, THE "SUPPLIER") DISCLAIM ALL LIABILITY FOR RELIANCE ON SUCH INFORMATION AND RECOMMENDATIONS. This SDS is not a guarantee of safety. A buyer or user of the Material (a "Recipient") is responsible for ensuring that it has all current information necessary to safely use the Material for its specific purpose.

FURTHERMORE, THE RECIPIENT ASSUMES ALL RISK IN CONNECTION WITH THE USE OF THE MATERIAL. THE RECIPIENT ASSUMES ALL RESPONSIBILITY FOR ENSURING THE MATERIAL IS USED IN A SAFE MANNER IN COMPLIANCE WITH APPLICABLE ENVIRONMENTAL, HEALTH, SAFETY AND SECURITY LAWS, POLICIES AND GUIDELINES. THE SUPPLIER DOES NOT WARRANT THE MERCHANTABILITY OF THE MATERIAL OR THE FITNESS OF THE MATERIAL FOR ANY PARTICULAR USE AND ASSUMES NO RESPONSIBILITY FOR INJURY OR DAMAGE CAUSED DIRECTLY OR INDIRECTLY BY OR RELATED TO THE USE OF THE MATERIAL.