



SAFETY DATA SHEET

SECTION 1	PRODUCT AND COMPANY IDENTIFICATION
Trade Name:	Phosphoric Acid
Chemical Name:	Phosphoric Acid
CAS Number:	7664-38-2
Chemical Family:	Inorganic Acids
Synonyms:	Phos acid Merchant acid Defluorinated acid Ortho-phosphoric acid PFS Phosphatic fertilizer solution
Primary Use:	Use in manufacture of Ammonium Phosphates and other fertilizer products
Company Information:	THE MOSAIC COMPANY 3033 Campus Drive Plymouth, MN 55441 www.mosaicco.com 800-918-8270 or 763-577-2700 8 AM to 5 PM Central Time US
Emergency Telephone:	EMERGENCY OVERVIEW 24 Hour Emergency Telephone Number: <u>For Chemical Emergencies:</u> Spill, Leak, Fire or Accident Call CHEMTREC North America: (800) 424-9300 (reference CCN201871) Others: (703) 527-3887 (collect)

SECTION 2	HAZARD IDENTIFICATION	
GHS Classification:	Corrosive to metal Acute toxicity Category 2 (Oral) Serious Eye Damage/Eye Irritation: Category 1 (pH<2) Acute toxicity, Inhalation (Category 2) Acute toxicity, Dermal (Category 1) Skin corrosion (Category 1A)	Hazard Statement H290 Hazard Statement H300 Hazard Statement H318 Hazard Statement H330 Hazard Statement H310 Hazard Statement H314
	Signal Word: DANGER Hazard Statement(s) H290 May be corrosive to metals H300 Fatal if swallowed H310 Fatal in contact with skin H314: Causes severe skin burns and eye damage H318 Causes serious eye damage H330 Fatal if inhaled	
Label Elements:		
Prevention:	P234 Keep only in original container P262 Do not get in eyes, on skin, or on clothing. P264 Wash skin thoroughly after handling P260 Do not breath fumes/gas/mist/vapors/spray P270 Do not eat, drink or smoke when using this product.	



	P271 Use only outdoors or in a well-ventilated area. P280 Wear protective gloves/protective clothing / Wear eye protection/face protection P284 Wear respiratory protection
Response:	P301+ P310+ P330 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse mouth.
	P301+P330+P331 IF SWALLOWED: Rinse mouth, Do NOT induce vomiting.
	P305+P351+P338+ P310 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 doctor/ physician.
	P303+P361+P353 IF ON SKIN: Take off immediately all contaminated clothing. Rinse skin with water.
	P304+P340+ P310 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.
	P363 Wash contaminated clothing before reuse.
Storage:	P390 Absorb Spillage to prevent material damage.
	P403+ P233 P405 P406 Store in a well-ventilated place. Keep container tightly closed. Store locked up Store in corrosive resistant container
Disposal:	P501 Disposal of content/containers to be in accordance with local/regional/national regulations.

SECTION 3		COMPOSITION INFORMATION ON INGREDIENTS			
Formula:	H ₃ PO ₄				
Composition:	Phosphoric Acid Water Hydrofluoric Acid Sulfuric Acid	CAS 7664-38-2 CAS 7732-18-5 CAS 7664-39-3 CAS 7764-93-9	36-75% 25-60% 2.2-3.7% 1.5-3%	Corrosive to metal Acute toxicity Category 2 (Oral) Serious Eye Damage/Eye Irritation: Category 1 (pH<2) Acute toxicity, Inhalation (Category 2) Acute toxicity, Dermal (Category 1) Skin corrosion (Category 1A)	

SECTION 4		FIRST AID MEASURES	
First Aid Procedures:	Eyes:	Flush eyes with plenty of clean water for at least 15 minutes. If symptoms persist, seek medical attention.	
	Skin:	Wash contaminated area thoroughly with mild soap and water. If chemical or solution soaks through clothing, remove clothing and wash contaminated skin. If irritation develops and persists after washing, seek medical attention.	
	Inhaled:	Remove to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. Observe for possible delayed reaction. Get Medical Attention.	
	Ingestion:	If swallowed, call a poison control center or physician immediately. Do not induce vomiting unless directed to do so by a poison control center or physician. Never give anything by mouth to an unconscious person.	
Note to Physician:	This material is corrosive and may cause acid burns, including gastro esophageal perforation. Late complications of severe acid burns include pulmonary edema, esophageal, gastric or pyloric strictures and stenosis. Following exposure to high concentrations keep patient under medical observation for at least 24 hours.		



SECTION 5	FIRE FIGHTING MEASURES
Extinguishing Media:	<p>Use extinguishing agent suitable for type of surrounding fire. Avoid excessive water to minimize runoff. Prevent firefighter water from entering the environment.</p> <p>Water spray may be used to keep fire-exposed containers cool. Use care because water applied directly to acid results in the evolution of heat and causes splattering. When material is not involved in a fire, do not use water on the material.</p> <p>Small fires: Water spray, dry chemical or CO₂ Large fires: Water spray, carbon dioxide, dry chemical powder, or appropriate foam.</p>
Protection of Firefighters:	Phosphoric acid will react with water or steam, and may generate hydrogen gas when in contact with some metals.

SECTION 6	ACCIDENTAL RELEASE MEASURES
Personal Precautions, PPE and Emergency Procedures:	Use personal protective equipment recommended in Section 8, including respiratory protection as conditions warrant. Avoid skin contact and do not inhale gas or mist. Stay upwind and away from spill/release. Evacuate all personnel from affected area. See DOT Emergency Response Guide 154.
Environmental Precautions:	<p>Prevent spilled material from entering sewers, storm drains or other unauthorized confined treatment drainage systems. Do not add water to spilled material. Dike far ahead of spill for later recovery and disposal.</p> <p>If spill could potentially enter any waterway, including intermittent dry creeks, contact the local authorities. If in the U.S., contact the US Coast Guard national response center toll free number 800-424-8802.</p>
Methods and Materials for Containment and Cleaning up:	Collect as much of the spilled material as possible in acid-resistant containers for possible re-use or proper disposal. Absorb the remaining material with sand, vermiculite, or other absorbent material, or neutralize with soda ash, sodium bicarbonate, limestone, or lime until acidity is neutralized. For a release or spill of phosphoric acid into water, neutralize with agricultural lime (slaked lime), crushed limestone, or sodium bicarbonate.

SECTION 7	HANDLING AND STORAGE
Handling:	Do not enter confined spaces such as tanks or pits without following proper entry procedures such as OSHA 29CFR1910.146 or ANSI Z117.1 (for confined space). The use of appropriate respiratory protection is required when concentrations exceed any established exposure limits (see Section 8). Wash thoroughly after handling. Do not wear contaminated clothing or shoes. When diluting, the acid should be added to the water.
Storage:	Store in suitable containers in cool, dry, well-ventilated areas. Materials in storage should be segregated by the hazards they pose. Use "first in –first out" inventory system to prevent full containers being stored for excessive periods of time. Keep container(s) tightly closed. Keep away from any incompatible material. Protect container(s) against physical damage and exposure to water. Phosphoric acid is corrosive to most metals, especially when dilute. To prevent ignition of hydrogen gas generated in metal containers (from metal contact), smoking, open flames, and sparks must not be permitted in storage areas. As a precaution, post signs in storage area that say, "No Smoking or Open Flames."



SECTION 8		EXPOSURE CONTROLS / PERSONAL PROTECTION	
Engineering Controls:	Eye wash and shower stations should be available in areas where acid is being handled. Use process enclosure, general ventilation, or local exhaust systems where necessary, to maintain airborne concentrations below the exposure limits.		
Personal Protective Equipment (PPE):	Eye/Face:	Wear splash goggles while handling sealed cylinders. Wear a facemask that provides both splash and impact protection for face and eyes when using respiratory protection described above.	
	Skin:	Follow NIOSH recommendations for appropriate gloves that prevent skin contact to Phosphoric acid. Depending on conditions of use, an apron and/or arm covers may be necessary.	
	Respiratory:	A NIOSH approved air purifying respirator with a type acid gas filter may be used under conditions where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited (see manufacturer's respirator selection guide). Use a positive pressure air supplied respirator if there is potential for uncontrolled release, exposure levels are not known or any other circumstances where air purifying respirators may not provide adequate protection. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed if workplace conditions warrant a respirator.	
	Other:	A source of clean water should be available in the work area for flushing eyes and skin. Appropriate chemical protective clothing should be worn as needed.	
General Hygiene Considerations:	Wash thoroughly after handling. Maintain proper hygiene practices when handling this product.		
Exposure Guidelines:	OSHA Permissible Exposure Limits (PEL):	TWA 1 mg/m ³	
	ACGIH Threshold Limit Value (TLV):	TWA 1 mg/m ³ STEL 3 mg/m ³	

SECTION 9		PHYSICAL AND CHEMICAL PROPERTIES	
Note: Unless otherwise stated, values in this section are determined at 20°C (68°F) and 760 mm Hg (1 atm).			
Appearance:	Brownish – to green liquid	Vapor Pressure (mm Hg):	0.0285
Odor:	Acrid	Vapor Density (air=1):	3.4
Odor Threshold:	No data available	Specific Gravity or Relative Density:	1.2-1.78 for 75-85% solution
Physical state:	Liquid	Bulk Density:	15.6 lbs/gal.
pH:	1.5 at 1% solution	Solubility in Water:	Complete
Melting Point/ Freezing Point:	Not applicable	Partition coefficient:	No data available



Boiling Point:	275-309°F / 135-154°C for a 75-85% solution	Auto-Ignition Temperature:	Not applicable
Flash Point:	Not applicable	Decomposition Temperature:	415 °F/213 °C
Evaporation Rate:	No data available	Viscosity:	21.5 cp in 75% solution
Flammability:	Not applicable	Volatility:	Low volatility
Upper/lower Flammability or explosive limits	Not applicable		

SECTION 10	STABILITY AND REACTIVITY
Chemical Stability:	Stable under proper conditions of storage and handling. Corrosive to metal. Can react with common metals, generating hydrogen gas. Water reactive. Contact with water can generate heat.
Conditions to Avoid:	Avoid contact with metals that will produce hydrogen, a flammable and explosive gas. Avoid contact with strong caustic, metallic sulfides, and sulfites. Reacts violently with water especially when water is added to the product. Reacts with metals and metallic salts.
Incompatible Materials:	Metals that will product hydrogen. Extremely reactive or incompatible with alkalis. Do not mix with solutions containing bleach or ammonia. Slightly reactive to reactive with organic materials, metals. Slightly reactive with reducing agents. Non-reactive with oxidizing
Hazardous Decomposition Products:	Toxic fumes of phosphorous oxides, phosphoric acid fumes and mist. Combustion by-products include oxides of phosphorus. Converted to pyrophosphoric acid when heated to 213°C. Reacts with metals to liberate flammable hydrogen gas. Formation of flammable gases may occur with aldehydes, cyanides, mercaptans, and sulfides. Formation of toxic fumes may occur with cyanides, fluorides, halogenated organics, sulfides, and organics.
Corrosiveness:	Extremely corrosive to steel, highly corrosive to aluminum, zinc, copper. Slightly corrosive to 304 or 316 stainless steel. Corrosive to ferrous metals and alloys. Corrosive to brass. Will corrode a wide variety of metals.
Hazardous Polymerization:	Will not occur.

SECTION 11	TOXICOLOGICAL INFORMATION
Substance:	Phosphoric Acid
Acute Oral Toxicity:	LD ₅₀ (Rats, oral) – 1,530 mg/kg
Acute Inhalation Toxicity:	LC ₅₀ (Rats, Inhalation 1-hour) – 1217 g/m ₃ (as P ₂ O ₅) LC ₅₀ (Rabbit, inhalation 1-hour) – 1689 mg/m ₃ (as P ₂ O ₅) LC ₅₀ (Mouse, inhalation 1-hour) – 271 mg/m ₃ (as P ₂ O ₅) LC ₅₀ (Guinea pig, inhalation 1-hour) – 61 mg/m ₃ (as P ₂ O ₅)
Acute Dermal Toxicity:	LD ₅₀ (Rabbit, dermal) – 2,740 mg/kg LD ₅₀ (Rabbit, dermal) (85% solution) >1,260 mg/kg bw LD ₅₀ (Rabbit, dermal) (80% solution) >3,160 mg/kg bw LD ₅₀ (Rabbit, dermal) (75% solution) >3,160 mg/kg bw Rabbit – application of 0.5 mL to albino rabbits for 24 hours – solutions from 75% to 85% phosphoric acid were corrosive to skin.
Mutagenesis:	Not classified
Target Organ	Skin, mucous membranes, gastrointestinal tract, lungs, eyes and teeth



Developmental Toxicity:	Not classified
Carcinogenicity	Strong inorganic acid mists containing sulfuric acid: PROVEN (Human, Group 1, IARC) SUSPECTED (Human, Group A2, ACGIH); Group X (NTP)


SECTION 12	ECOLOGICAL INFORMATION
Ecotoxicology:	<p>LC₅₀ (bluegill) = pH 3.0-3.5 EC₅₀ (Daphnia magna) = pH 4.6 EC₅₀ (Daphnia pulex) = pH 4.1 LC₅₀ (Gammarus pulex (amphipod)) = pH 3.4</p> <p>Harmful to fish and other water organisms if pH drops below 5. Will disperse with current. Release to watercourses may cause effects downstream from the point of release. Provides a source of phosphate nutrient that can promote algal growth in waterways. Rapid algal growth may result in eutrophication of waterways (oxygen depletion from decomposition of decaying plant matter), reducing the viability of waterways for other organisms.</p>

SECTION 13	DISPOSAL CONSIDERATIONS
	<p>Properly characterize all waste materials. Consult state and local regulations regarding the proper disposal of this material. Phosphoric acid, if classified as a waste, would be a RCRA "characteristic" hazardous waste due to the characteristic of corrosivity (D002). If the undiluted material is spilled to soil or water, toxicity characteristic testing of the contaminated materials is recommended to characterize for treatment and/or disposal. Further, this waste may be subject to the land disposal restrictions in 40 CFR 268.40 and may require treatment prior to disposal to meet specific standards. Consult state and local regulations to determine whether they are more stringent than the federal requirements. Container contents should be completely used and containers should be emptied prior to discarding. Unless recycled or used as product, container rinsate could be considered a RCRA hazardous waste and must be disposed of with care and in full compliance with federal, state and local regulations. Larger empty containers, such as drums, should be returned to the distributor or to a drum re-conditioner. To assure proper disposal of smaller empty containers, consult with state and local regulations and disposal authorities.</p>




SECTION 14	TRANSPORT INFO
Regulatory Status:	Regulated by US DOT, Canada TDG, IATA, IMO/IMDG
Identification Number:	UN1805
Hazard Class:	Class 8 (Corrosive)
Proper Shipping Name	Phosphoric Acid Solution
Packing Group	III
DOT Emergency Response Guide Number:	154



Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:	Pollution Category: Z Hazard: S/P Ship type: 3
MARPOL Annex V:	Non-HME

SECTION 15	REGULATORY INFORMATION				
CERCLA:	Designated as an extremely hazardous substance (EHS) (40 CFR 302). Reportable Quantity (RQ) is 5,000 lb. Persons in charge of vessels or facilities are required to notify the National Response Center (NRC) immediately when there is a release in an amount equal to or greater than the RQ. Toll free (800) 424-8802.				
RCRA 261.33:	This material, as produced, would be a RCRA "characteristic" hazardous waste due to the characteristic of corrosivity (D002). If the material is spilled to soil or water, characteristic testing of the contaminated materials is recommended. Further, this waste is subject to the land disposal restrictions in 40 CFR 268.40 and may require treatment prior to disposal to meet specific standards. Consult state and local regulations to determine whether they are more stringent than the federal requirements. Container rinsate could be considered a RCRA hazardous waste and must be disposed of with care and in full compliance with federal, state and local regulations.				
SARA TITLE III: (Exemptions at 40 CFR, Part 370 may apply for agricultural use, or for quantities of less than 10,000 pounds on-site.)	Section 302/304: Not listed	RQ: 5000 lbs	TPQ: 1000 lbs		
	Section 311/312:				
	Acute: Yes	Chronic: Yes	Fire: No	Pressure: No	Reactivity: No
	Section 313: Listed				
NTP, IARC, OSHA:	The International Agency for Research on Cancer (IARC) classified "strong inorganic acid mists containing sulfuric acid" as a Category I carcinogen (known human carcinogen). NTP has classified strong inorganic acid mists containing sulfuric acid as a known human carcinogen.				
Canada DSL and NDSL:	DSL: Yes NDSL: Not listed				
TSCA:	Listed on the TSCA Inventory				
CA Proposition 65: (Health & Safety Code Section 25249.5)	 WARNING: Cancer and Reproductive Harm – www.P65Warnings.ca.gov				
WHMIS:	WHMIS 2015 This SDS has been prepared according to the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all of the information required by the HPR.				



SECTION 16	OTHER INFORMATION																														
Disclaimer:	<p>The information in this document is believed to be correct as of the date issued. HOWEVER, MOSAIC MAKES NO GUARANTEE, REPRESENTATION, OR WARRANTY, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO THE USE OF THIS PRODUCT.</p> <p>User is responsible for determining whether this product is fit for a particular purpose and suitable for user's method of use or application and assumes the risk of use thereof. The conditions and use of this product are beyond the control of Mosaic, and Mosaic disclaims any liability for loss or damage incurred in connection with the use or misuse of this product. Each user should review the recommended industrial hygiene and safe handling procedures in the specific context of the intended use and determine whether they are appropriate.</p>																														
Preparation:	The preparation of this SDS was in accordance with ANSI Z400.1-2010.																														
Revision Date:	December 31, 2018																														
Sections Revised:	15, 16																														
SDS Number:	MOS 200002																														
References:	Globally Harmonized System of Classification and Labelling of Chemicals (GHS) – 4 th Edition 2011 OSHA Hazard Communication Standard, 2012 MARPOL Annex V; The Fertilizer Institute (TFI), 2003; TOXNET																														
Other Hazard Classifications:	<table border="1" data-bbox="509 911 1122 1163"> <thead> <tr> <th colspan="2" data-bbox="509 911 805 953">NFPA HAZARD CLASS</th> <th colspan="2" data-bbox="834 911 1122 953">HMIS HAZARD CLASS</th> </tr> </thead> <tbody> <tr> <td data-bbox="509 953 685 1016">Health:</td> <td data-bbox="685 953 805 1016">3</td> <td data-bbox="834 953 993 1016">Health:</td> <td data-bbox="993 953 1122 1016">3</td> </tr> <tr> <td data-bbox="509 1016 685 1058">Flammability:</td> <td data-bbox="685 1016 805 1058">0</td> <td data-bbox="834 1016 993 1058">Flammability:</td> <td data-bbox="993 1016 1122 1058">0</td> </tr> <tr> <td data-bbox="509 1058 685 1100">Instability:</td> <td data-bbox="685 1058 805 1100">0</td> <td data-bbox="834 1058 993 1100">Physical Hazard:</td> <td data-bbox="993 1058 1122 1100">0</td> </tr> <tr> <td data-bbox="509 1100 685 1163">Special Hazard:</td> <td data-bbox="685 1100 805 1163">Corrosive</td> <td data-bbox="834 1100 993 1163">PPE:</td> <td data-bbox="993 1100 1122 1163">Section 8</td> </tr> </tbody> </table> <table border="1" data-bbox="509 1188 1278 1713"> <thead> <tr> <th colspan="2" data-bbox="509 1188 1278 1241">WHMIS 2015 (HPR) HAZARD CLASS</th> </tr> </thead> <tbody> <tr> <td data-bbox="509 1241 685 1283">Signal Word</td> <td data-bbox="685 1241 1278 1283">Danger</td> </tr> <tr> <td data-bbox="509 1283 685 1419">Symbol</td> <td data-bbox="685 1283 1278 1419">  </td> </tr> <tr> <td data-bbox="509 1419 685 1566">Classification</td> <td data-bbox="685 1419 1278 1566"> Corrosive to metal Acute toxicity Category 2 (Oral) Serious Eye Damage/Eye Irritation: Category 1 (pH<2) Acute toxicity, Inhalation (Category 2) Acute toxicity, Dermal (Category 1) Skin corrosion (Category 1A) </td> </tr> <tr> <td data-bbox="509 1566 685 1713">Hazard Statements</td> <td data-bbox="685 1566 1278 1713"> H290 May be corrosive to metals H300 Fatal if swallowed H310 Fatal in contact with skin H314: Causes severe skin burns and eye damage H318 Causes serious eye damage H330 Fatal if inhaled </td> </tr> </tbody> </table>	NFPA HAZARD CLASS		HMIS HAZARD CLASS		Health:	3	Health:	3	Flammability:	0	Flammability:	0	Instability:	0	Physical Hazard:	0	Special Hazard:	Corrosive	PPE:	Section 8	WHMIS 2015 (HPR) HAZARD CLASS		Signal Word	Danger	Symbol		Classification	Corrosive to metal Acute toxicity Category 2 (Oral) Serious Eye Damage/Eye Irritation: Category 1 (pH<2) Acute toxicity, Inhalation (Category 2) Acute toxicity, Dermal (Category 1) Skin corrosion (Category 1A)	Hazard Statements	H290 May be corrosive to metals H300 Fatal if swallowed H310 Fatal in contact with skin H314: Causes severe skin burns and eye damage H318 Causes serious eye damage H330 Fatal if inhaled
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