# Material Safety Data Sheet

| Revision Issued: 10/23/2009 | Supercedes: 02/28/2007 | First Issued: 7/21/2003 |
|---|---|---|

## Section I – Product and Company Identification

**Product Name:** **Defluorinated Phosphoric Acid Amber Feed Grade**

**PotashCorp MSDS No.:** 55

**ERG No.:** 154

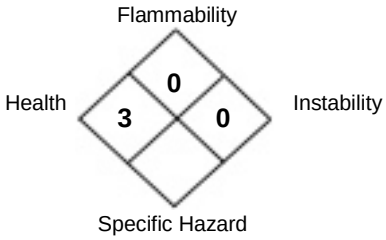

1101 Skokie Blvd., Northbrook, IL 60062
Phone (800) 241-6908 / (847) 849-4200

Suite 500, 122 – 1st Avenue South
Saskatoon, Saskatchewan Canada S7K7G3
Phone (800) 667-0403 from Canada
(800) 667-3930 from USA


**Emergencies (800) 424-9300 (CHEMTREC)**

Web Site www.potashcorp.com

Health Emergencies, Contact Your Local Poison Center




**NFPA Code**

| Common Name: Phosphoric Acid | Formula: $H_3PO_4$ | Synonym: DFMGA, DFMGAA | Uses: Animal Feed |
|---|---|---|---|

## Section II – Composition / Information On Ingredients

| Chemical Name | CAS No. | Exposure Limits | | | | | | | | % by Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| | | OSHA PEL | | TLV – TWA | | STEL | | CEIL | | |
| | | mg/m³ | ppm | mg/m³ | ppm | mg/m³ | ppm | mg/m³ | ppm | |
| Phosphoric Acid | 7664-38-2 | 1 | | 1 | | 3 | | | | 72 – 81 |
| Sulfuric Acid | 7664-93-9 | 1 | | 1 | | 3 | | | | 1.0 – 5.0 |
| Fluoride compounds, as F | | | | | | | | | | 0.1 – 0.2 |

## Section III – Hazard Identification

| | | | |
|---|---|---|---|
| **Potential Acute Health Effects:** | | | |
| **Eyes and Skin:** | Contact causes eye irritation, may cause burns or blindness. Substance is corrosive. May cause severe burns and ulceration to skin. | | |
| **Inhalation:** | Inhalation can cause irritation or corrosive burns to the upper respiratory system, including nose, mouth, and throat. Lung irritation, pulmonary edema, and chemical pneumonitis can also occur. | | |
| **Ingestion:** | Ingestion causes irritation and can cause corrosive burns to mouth, throat and stomach resulting in hemorrhaging and permanent damage. Can be fatal if swallowed. | | |
| **Potential Chronic Health Effects:** | Long-term exposure may cause upper respiratory disease and irritation of the skin. | | |
| **CARCINOGENICITY LISTS** | **IARC Monograph:** Yes(1) | **NTP:** Yes(1) | **OSHA:** No |

(1) Included based on liquid sulfuric acid concentration, however, basis of Carcinogenicity listing is sulfuric acid mist.

## Section IV – First Aid Measures

| | |
|---|---|
| **Eyes:** | Immediately flush eyes (holding eyelids apart) with plenty of water for at least 15 minutes. Get medical attention. |
| **Skin:** | Immediately flush skin with plenty of water while removing contaminated clothing. Get medical attention if irritation develops or persists. |
| **Ingestion:** | Do not induce vomiting. Drink large amounts of water (or milk if available) to dilute the acid. Get medical attention immediately. |
| **Inhalation:** | Remove to fresh air. If breathing has stopped, give artificial respiration with the aid of a pocket mask equipped with a one way valve or other proper respiratory medical device. If breathing with difficulty, give oxygen. Observe for possible delayed reaction. |

| Section V – Fire Fighting Measures | | | |
|---|---|---|---|
| **Flash Point:** | Non-flammable | **Autoignition Temperature:** | Not Applicable |
| **Lower Explosive Limit:** | Not Applicable | **Upper Explosive Limit:** | Not Applicable |
| **Unusual Fire and Explosion Hazards:** | Phosphoric Acid is not flammable; however the following hazards can occur when exposed to extreme heat; release of phosphorus oxides and/or phosphine from thermal decomposition and hydrogen from reaction with metals. | | |
| **Extinguishing Media:** | Phosphoric Acid is not flammable; use most appropriate agent to extinguish surrounding material. | | |
| **Special Firefighting Procedures and Equipment:** | Keep personnel removed from and upwind of fire. Wear full fire-fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA). Cool containers containing phosphoric acid with water spray to prevent rupture. | | |

| Section VI – Accidental Release Measures | |
|---|---|
| **Small Spill:** | Neutralize acid spill with alkali such as soda ash, sodium bicarbonate, limestone or lime. Absorb material with an inert material such as sand, vermiculite, diatomaceous earth or other absorbent material and place in chemical waste container to be disposed at an appropriate waste disposal facility according to current applicable laws and regulations and product characteristics at time of disposal. Adequate ventilation is required for soda ash due to the release of carbon dioxide gas. No smoking in spill area. |
| **Large Spill:** | Contain spill with dikes and transfer the material to appropriate containers for reclamation or disposal. Absorb remaining spill with an inert material such as sand, vermiculite or other absorbent material and place in chemical waste container to be disposed at an appropriate waste disposal facility according to current applicable laws and regulations and product characteristics at time of disposal. Neutralize residue with alkali such as soda ash, sodium bicarbonate, limestone or lime. Adequate ventilation is required for soda ash due to the release of carbon dioxide gas. No smoking in spill area. |
| **Release Notes:** | 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. In case of accident or road spill notify: CHEMTREC IN USA at 800-424-9300; CANUTEC in Canada at 613-996-6666 CHEMTREC in other countries at (International code)+1-703-527-3887. |
| **Comments:** | See Section XIII for disposal information and Section XV for regulatory requirements. Large and small spills may have a broad definition depending on the user's handling system. Therefore, the spill category must be defined at the point of release by technically qualified personnel. |

| Section VII – Handling and Storage | |
|---|---|
| **Ventilation:** | Use with adequate ventilation. |
| **Handling:** | Use appropriate personal protective equipment as specified in Section VIII. Avoid contact with skin and eyes. Avoid inhalation and ingestion. |
| **Storage:** | Store in unopened container in cool, well ventilated area, away from potential sources of heat and fire. Keep away from combustible materials, strong bases and metals. Large storage tanks should be bermed and electrically grounded. Avoid using glass or unprotected steel containers. |

| Section VIII – Exposure Controls/ Personal Protection | |
|---|---|
| **Engineering Controls:** | Good ventilation should be sufficient to control airborne levels. |
| **Personal Protection:** | |
| **Eye Protection:** | Wear chemical splash goggles and face shield (ANSI Z87.1 or approved equivalent) when eye and face contact is possible due to splashing or spraying of material. |
| **Protective Clothing:** | Where contact is likely, wear chemical-resistant gloves, a chemical suit, rubber boots and chemical safety goggles plus a face shield. |
| **Respiratory Protection:** | Wear NIOSH approved respiratory protective equipment when vapor or mists may exceed applicable concentration limits. |
| **Other Protective Clothing or Equipment:** | Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. |

## Section IX – Physical and Chemical Properties

| | | | |
|---|---|---|---|
| **Appearance/Color/Odor:** | Amber to black viscous liquid with acrid odor | **Boiling Point:** | 277 - 326$^{o}$F |
| **Melting Point/Range:** | Not Applicable | **Boiling Point Range:** | 277 – 326$^{o}$F |
| **Solubility in Water:** | Complete | **Vapor Pressure (mmHg):** | 2 - 6 mm Hg @ 77$^{o}$F |
| **Specific Gravity:** | 1.7 – 1.8 @ 75$^{o}$F | **Molecular Weight:** | 98 |
| **Vapor Density:** | Not Available | **% Volatiles:** | Not Available |
| **Bulk Density:** | 14 – 15 lbs/gal | **Evaporation Rate:** | Not Available |
| **pH:** | 1-1.5 at 1-10 g/L | **Freezing Point:** | Not Available |
| **Viscosity:** | 115 cp @ 75$^{o}$F, 90 cp @ 100$^{o}$F | **Density:** | Not Available |

## Section X – Stability and Reactivity

| | |
|---|---|
| **Stability:** | This product is hygroscopic, but is stable under normal conditions of storage, handling and use. |
| **Hazardous Polymerization:** | Will not occur |
| **Conditions to Avoid:** | High temperatures |
| **Materials to Avoid (Incompatibles):** | Bases, aluminum, copper, mild steel, brass and bronze |
| **Hazardous Decomposition Products:** | Fluoride compounds from the heating of wet process acid, phosphorus oxides and/or phosphine from thermal decomposition and hydrogen gas from reaction with metals. |

## Section XI – Toxicological Information

| | | |
|---|---|---|
| **Significant Routes of Exposure:** | Eyes, Skin, Respiratory System, Digestive Tract | |
| **Toxicity to Animals:** | **Acute Oral Toxicity:** | (Rat) $LD_{50}$ = 1,530 mg/kg bw. |
| | **Acute Inhalation Toxicity:** | (Guinea pig, mouse, rat, rabbit ) 1-hr: $LC_{50}$ = 61 – 1,689 mg/m$^3$ $P_2O_5$. |
| | **Acute Toxicity: Other Routes:** | No data available |
| | **Acute Dermal Toxicity:** | (Rabbit) 24–hr: $LD_{50}$ (85-75% $H_3PO_4$) = >1,260 – >3,160 mg/kg bw |
| | **Repeated Dose Toxicity:** | No data available |
| | **Eye & Skin Irritation/Corrosion:** | (Rabbit) OECD Guideline 405: Not irritating at 17% solution but severe irritation at higher concentration.<br>Skin Irritation/Corrosion: (Rabbit) 24-hr: Highly irritating to corrosive |
| **Special Remarks on Toxicity to Animals:** | **Developmental Toxicity/Teratogenicity:** | No data available |
| | **Bacterial Genetic Toxicity In-Vitro:** | Gene Mutation: (*S. typhimurium)* Bacterial reverse mutation assay: Negative |
| | **Non-Bacterial Genetic Toxicity In-Vitro:** | Chromosomal Aberration: (Sea urchin) Embryo and sperm assays: Aberrations caused at pH 6.5. |
| | **Toxicity to Reproduction:** | (Rat) One-generation: 375 mg/kg bw did not affect offspring growth in rats. |
| | **Carcinogenicity:** | No data available |
| **Other Effects on Humans:** | Inhalation: 10,000 mg/m$^3$ is immediately dangerous to life (IDLH).<br>Dermal contact: May irritate eyes and skin. | |
| **Special Remarks on Chronic Effects on Humans** | The International Agency for Research on Cancer (IARC) classified "strong inorganic acid mists containing sulfuric acid" as a Category 1 carcinogen, a substance that is "carcinogenic to humans". The National Toxicity Program classified "strong inorganic acid mists containing sulfuric acid" as a "known human carcinogen". These classifications are for strong inorganic acid mists only and do not apply to sulfuric acid or sulfuric acid solutions. The basis for the classifications rest on several epidemiology studies which have several deficiencies. These studies did not account for exposure to other substances, some known to be animal or potential human carcinogens, social influences (smoking, etc.) and included small numbers of subjects. Based on the overall weight of evidence from all human and chronic animal studies, no definitive casual relationship between sulfuric acid mist exposure and respiratory tract tumors has been shown. When handling this material avoid the creation of mist. | |
| **Special Remarks on Other Effects on Humans:** | None found | |

## Section XII – Ecological Information

| | | |
|---|---|---|
| **Ecotoxicity:** | **EPA Ecological Toxicity rating :** | High |
| | **Acute Toxicity to Fish:** | (*L. macrochirus* (bluegill sunfish)) 96-hr static: $LC_{50}$ = pH 3.0–3.5. |
| | **Chronic Toxicity to Fish:** | Mosquito fish: $LD_{50}$=138 mg/L; 96 hours (CAS# 7664-38-2) |
| | **Acute Toxicity to Aquatic Invertebrates:** | (*Daphnia magna*) 12-hr static: $EC_{50}$ = pH 4.6; (*Daphnia pulex*) 12-hr static: $EC_{50}$ = pH 4.1; (*Gammarus pulex*) 12-hr static: $LC_{50}$ = pH 3.4 |
| | **Chronic Toxicity to Aqautic Invertebrates:** | Dangerous to aquatic plants at high concentrations. |
| | **Toxicity to Aquatic Plants:** | No data available |
| | **Toxicity to Bacteria:** | (Activated sludge): $EC_{50}$ = pH 2.55. |
| | **Toxicity to Soil Dwelling Organisms:** | No data available |
| | **Toxicity to Other Non-Mammalian Terrestrial Species:** | No data available |
| | **Toxicity to Terrestrial Plants:** | (Peas, beans, beets, rapeseed and weeds) Sprayed with 15-20% solution of $H_3PO_4$: Foliage was destroyed on all plants. |
| **Environmental Fate:** | **Stability in Water:** | Ionic dissociation in water. |
| | **Stability in Soil:** | Dissolves some soil material (carbonates). |
| | **Transport and Distribution:** | Under acidic soil conditions, sparsely soluble phosphates tend to solubilize and may migrate to water. |
| **Toxicity:** | Inorganic phosphates have the potential to increase the growth of freshwater algae, whose eventual death will reduce the available oxygen for aquatic life. | |
| **Degradation Products:** | **Biodegradation:** | Under anaerobic conditions, microorganisms may degrade the product to phosphine. |
| | **Photodegradation:** | No data available |

## Section XIII – Disposal Considerations

| | |
|---|---|
| **Product Disposal:** | Dispose of waste at an appropriate waste disposal facility according to applicable laws and regulations. Neutralize with lime or other base. Collect in appropriate containers. Dispose of at an appropriate waste disposal facility in accordance with current applicable laws and regulations and product characteristics at time of disposal. |
| **General Comments:** | None |

## Section XIV – Transportation Information

| | **USDOT** | **TDG - Canada** |
|---|---|---|
| **Proper Shipping Name:** | Phosphoric Acid, Solution | Phosphoric Acid, Solution |
| **Hazard Class:** | 8 | 8 |
| **Identification Number:** | UN1805 | UN1805 |
| **Packing Group (Technical Name):** | III | III |
| **Labeling / Placarding:** | Corrosive | Corrosive |
| **Authorized Packaging:** | Rail: Class DOT 103, 104, 105, 109, 111, 112, 114, 115, or 120 tank car tanks; Class 106 or 110 multi-unit tank car tanks and AAR Class 203W, 206W, and 211W tank car tanks. Truck: DOT specification MC 300, MC 301, MC 302, MC 303, MC 304, MC 305, MC 306, MC 307, MC 310, MC 311, MC 312, MC 330, MC 331, DOT 406, DOT 407, and DOT 412 cargo tank motor vehicles. | |
| **Notes:** | TDG Note (Canada): If product exceeds the CERCLA Reportable Quantity, the notation “RQ” shall be added before or after the basic shipping description. | |

## Section XV – Regulatory Information

**UNITED STATES: SARA Hazard Category:**

This product has been reviewed according to the EPA Hazard Categories promulgated under Section 311 and 312 of the Superfund Amendment and reauthorization Act of 1986 (SARA title III) and is considered, under applicable definitions, to meet the following categories:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Fire:** | No | **Pressure Generating:** | No | **Reactivity:** | No | **Acute:** | Yes | **Chronic:** | Yes |

| | |
|---|---|
| **40 CFR Part 355 - Extremely Hazardous Substances:** | Sulfuric Acid |
| **40 CFR Part 370 - Hazardous Chemical Reporting:** | Applicable |
| **All intentional ingredients listed on the TSCA inventory.** | |

**SARA Title III Information:**

This product contains the following substances subject to the reporting requirements of Title III (EPCRA) of the Superfund amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

| Chemical | CAS NO. | Percent by Weight | CERCLA RQ (lbs) | SARA (1986) Reporting | | |
|---|---|---|---|---|---|---|
| | | | | 311 | 312 | 313 |
| Phosphoric Acid | 7664-38-2 | 72 - 81 | 5000 | Yes | Yes | No |
| Sulfuric Acid | 7664-93-9 | 1.0 – 5.0 | 1000 | Yes | Yes | Yes* |
| Note: * Aerosol only | | | | | | |

**CERCLA/Superfund, 40 CFR Parts 117, 302:**

If this product contains components subject to substances designated as CERCLA reportable Quantity (RQ) Substances, it will be designated in the above table with the RQ value in pounds. If there is a release of RQ Substance to the environment, notification to the National Response Center, Washington D.C. (1-800-424-8802) is required.

**CANADA:**

| | |
|---|---|
| **WHMIS Hazard Symbol and classification:** | This product is WHMIS controlled. Category E |
| **Ingredient Disclosure List** | This product does contain ingredient(s) on this list. |
| **Environmental Protection:** | All intentional ingredients are listed on the DSL (Domestic Substance List). |

**EINECS#:**

(Phosphoric Acid) 231-633-2
(Sulfuric Acid) 231-639-5

**California: Prop 65:**

This is not a chemical known to cause cancer, nor is it listed, however, "strong inorganic acid mists containing sulfuric acid" has been listed as carcinogenic on March 14, 2003.

## Section XVI – Other Information

**NFPA Hazard Ratings:**

| **Health:** 3 | **Flammability:** 0 | **Instability:** 0 | **Special Hazards:** |
|---|---|---|---|

**0 = Insignificant** **1 = Slight** **2 = Moderate** **3 = High** **4 = Extreme**

**COMMENTS:**

This product is TSE/BSE (Transmissible Spongiform Encephalopathy/Bovine Spongiform Encephalopathy) free. There are no animal constituents used in the manufacture of Phosphoric Acid Green Feed Grade for PCS Sales (USA) Inc. Our product is created through a chemical process.

**Section(s) changed since last revision:**

I, XV, XVI