

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier**

Product form	: Substance
Substance name	: (MAP) Monoammonium phosphate
Product code	: MAP, MAPFR, MAPOS,
Formula	: $(\text{NH}_4)\text{H}_2\text{PO}_4$
Synonyms	: Ammonium dihydrogen phosphate / Ammonium dihydrogenorthophosphate / Ammonium phosphate (monobasic) / Phosphoric acid, monoammonium salt / Ammonium dihydrogenphosphate / Ammonium phosphate / Ammonium phosphate, monobasic / Ammoniumorthophosphate, monobasic / Phosphoric acid, ammonium salt (1:1) / AMMONIUM PHOSPHATE / Ammonium dihydrogen orthophosphate / MAP
Product group	: Commercial product

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

Use of the substance/preparation : Agricultural chemical

1.3. Details of the supplier of the safety data sheet

PCS Sales (USA), Inc.
1101 Skokie Blvd.
Suite 400
Northbrook, IL 60062
T 800-241-6908 / 847-849-4200

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

SDS@PotashCorp.com - www.PotashCorp.com

1.4. Emergency telephone number

Emergency number : 800-424-9300
CHEMTREC

SECTION 2: Hazards identification**2.1. Classification of the substance or mixture****GHS-US classification**

Skin Irrit. 2 H315
Eye Irrit. 2B H320
STOT SE 3 H335

Full text of H-phrases: see section 16

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2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US)



GHS07

Signal word (GHS-US)

: Warning

Hazard statements (GHS-US)

: H315 - Causes skin irritation
H320 - Causes eye irritation
H335 - May cause respiratory irritation

Precautionary statements (GHS-US)

: P261 - Avoid breathing dust
P264 - Wash hands thoroughly after handling
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear eye protection, face protection, protective clothing, protective gloves
P302+P352 - IF ON SKIN: Wash with plenty of water
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P312 - Call a POISON CENTER/doctor if you feel unwell
P332+P313 - If skin irritation occurs: Get medical advice/attention
P337+P313 - If eye irritation persists: Get medical advice/attention
P362 - Take off contaminated clothing and wash it before reuse.
P403+P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up
P501 - Dispose of contents/container according to local, regional, national, and international regulations

2.3. Other hazards

Hazardous to the aquatic environment.

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable.

3.2. Mixtures

Name	Product identifier	%	GHS-US classification
Monoammonium phosphate as P ₂ O ₅	(CAS No.) 7722-76-1	52	Skin Irrit. 2, H315 Eye Irrit. 2B, H320 STOT SE 3, H335
Total Nitrogen, as N ***		11	

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Name	Product identifier	%	GHS-US classification
Fluorides, as F		0.6	

*** Product contains monoammonium phosphate as essential ingredient with small amounts of diammonium phosphate, ammonium sulfate, urea, and aluminum/calcium/iron/magnesium phosphate compounds.

Full text of H-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures general : If medical advice is needed, have product container or label at hand.
- First-aid measures after inhalation : If inhaled, remove from source of exposure to dusts to fresh air and keep at rest in a position comfortable for breathing. Give oxygen or artificial respiration if necessary. Obtain medical attention if breathing difficulty persists. Persons who have inhaled decomposition gases (e.g. in a fire) should obtain immediate medical attention.
- First-aid measures after skin contact : Wash skin thoroughly with mild soap and water. Obtain medical attention if irritation develops or persists.
- First-aid measures after eye contact : Immediately rinse with water for a prolonged period while holding the eyelids wide open. Obtain medical attention if irritation develops or persists.
- First-aid measures after ingestion : Do not induce vomiting. Seek medical attention if a large amount is swallowed. Get medical advice and attention if you feel unwell (or if a large amount of MAP is ingested [small children, more than 50 g]) Drink large amounts of water (or milk if available) to dilute stomach contents. Ingestion of small quantities is unlikely to cause toxic effect.

4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries : Irritation to eyes, skin and respiratory tract.
- Symptoms/injuries after inhalation : Difficulty in breathing. Dry/sore throat. Symptoms may be delayed.
- Symptoms/injuries after skin contact : May cause skin irritation.
- Symptoms/injuries after eye contact : May cause eye irritation.
- Symptoms/injuries after ingestion : If a large quantity has been ingested : Abdominal pain. Diarrhea. Nausea. Vomiting.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Chemical type foam, Carbon Dioxide (CO₂), dry chemical, water fog.
- Unsuitable extinguishing media : None known.

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5.2. Special hazards arising from the substance or mixture

- Fire hazard : MAP is a non-flammable inorganic salt and is not flammable; however, if involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition: Ammonia.
- Explosion hazard : Product is not explosive.
- Reactivity : Stable at ambient temperature and under normal conditions of use.

5.3. Advice for firefighters

- Firefighting instructions : Keep personnel removed from and upwind of fire. When strongly heated, MAP will decompose giving off ammonia.
- Protection during firefighting : Wear full fire-fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA).
- Other information : Do not allow run-off from fire fighting to enter drains or water courses.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Do not breathe fumes from fires or vapours from decomposition.

6.1.1. For non-emergency personnel

- Protective equipment : Wear suitable protective clothing, gloves and eye/face protection. Wear tight fitting goggles in dusty areas to reduce dust exposure to the eyes. If skin irritation occurs, wear long sleeves.
- Emergency procedures : Collect as any solid. Ventilate area.

6.1.2. For emergency responders

- Protective equipment : Wear suitable protective clothing, gloves and eye/face protection.
- Emergency procedures : If possible, stop flow of product. Contain and collect as any solid. Ventilate area.

6.2. Environmental precautions

If spill could potentially enter any waterway, including intermittent dry creeks, contact the U.S. COAST GUARD NATIONAL RESPONSE CENTER at 800-424-8802. In case of accident or road spill notify CHEMTREC at 800-424-9300. In other countries call CHEMTREC at (International code) +1-703-527-3887.

6.3. Methods and material for containment and cleaning up

- For containment : If contaminated with other materials, contain and collect as any solid in suitable containers. Do not allow into drains or water courses or dispose of where ground or surface waters may be affected. Prevent large quantities from contacting vegetation.
- Methods for cleaning up : Recover the product by vacuuming, shoveling or sweeping and place in appropriate container to be disposed at an appropriate disposal facility according to current applicable laws and regulations and product characteristics at the time of disposal. Provide adequate ventilation. Avoid generation of dust during clean-up of spills. If uncontaminated, recover and reuse product. Practice good housekeeping – spillage can be slippery on smooth surface either wet or dry.

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6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Additional hazards when processed : When heated, material emits irritating fumes.
- Precautions for safe handling : Handle in accordance with good industrial hygiene and safety procedures. Avoid contact with skin and eyes. Do not eat, drink or smoke when using this product.
- Hygiene measures : Emergency eye wash fountains and a safety shower should be available in the immediate vicinity of any potential exposure.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Store tightly closed in a dry, cool and well-ventilated place. Protect from moisture.
- Incompatible materials : Alkalis and caustic products. strong acids. copper and its alloys.

7.3. Specific end use(s)

Agricultural chemical.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Monoammonium Phosphate (7722-76-1) as P ₂ O ₅		
USA ACGIH	ACGIH TWA (mg/m ³)	10 mg/m ³ – inhalable fraction 3 mg/m ³ – respirable fraction
USA OSHA	OSHA PEL (TWA) (mg/m ³)	15 mg/m ³ – particulate 3 mg/m ³ – respirable
Fluorides		
USA ACGIH	ACGIH TWA (mg/m ³)	2.5 mg/m ³
USA OSHA	OSHA PEL (TWA) (mg/m ³)	2.5 mg/m ³

8.2. Exposure controls

- Appropriate engineering controls : Ensure adequate ventilation, especially in confined areas and avoid high dust concentration.
- Personal protective equipment : Gloves. Safety glasses. Protective clothing.



- Hand protection : Impermeable protective gloves.
- Eye protection : Protective goggles.

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Skin and body protection	: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Wear suitable protective clothing. Wash contaminated clothing before reuse. Handle in accordance with good industrial hygiene and safety practice.
Respiratory protection	: Wear NIOSH approved respiratory protective equipment when exposure exceeds the OSHA nuisance dust standard of 15 mg/m ³ or the ACGIH nuisance dust limit of 10 mg/m ³ for the eight hour time weighted average. When stored in closed area, a self-contained breathing apparatus is required to protect against ammonia gas.
Environmental exposure controls	: Ensure adequate ventilation, especially in confined areas.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Granular solid
Molecular mass	: 115 g/mol
Colour	: Black to green
Odour	: Odourless
Odour threshold	: No data available
pH	: 4.2
pH Solution	: 0.2 M at 25 °C (aqueous solution)
Relative evaporation rate (butyl acetate=1)	: No data available
Melting point	: 190 °C (374 °F)
Freezing point	: No data available
Boiling point	: Decomposes
Flash point	: Not applicable
Self ignition temperature	: Not flammable
Decomposition temperature	: No data available
Flammability (solid, gas)	: Not flammable

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Vapour pressure	: < 1 mm Hg (at 20 °C)
Relative vapour density at 20 °C	: No data available
Relative density	: No data available
Density	: 60 - 64 lb/ft ³ (loose) 65 - 72 lb/ft ³ (tamped)
Solubility	: Soluble. Water: 328 g/l (at 20 °C)
Log Pow	: No data available. Based on water solubility it is expected that the log P _{ow} would be very low.
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: Not explosive
Oxidising properties	: Not oxidizing
Explosive limits	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable at ambient temperature and under normal conditions of use.

10.2. Chemical stability

Stable at standard temperature and pressure.

10.3. Possibility of hazardous reactions

Hazardous polymerization will not occur.

10.4. Conditions to avoid

Welding or hot work on equipment or plant which may have contained fertilizer should not be done without first washing thoroughly to remove all fertilizer.

10.5. Incompatible materials

Alkalis and caustic products; strong acids; copper and its alloys.

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10.6. Hazardous decomposition products

Ammonia is released upon reaction with strong bases or from thermal decomposition.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

(MAP) Monoammonium phosphate	
LD50 oral rat	> 2000 mg/kg OECD Guideline 425
LD50 dermal rat	> 5000 mg/kg OECD Guideline 402
Additional information	This compound is listed by the FDA as generally recognized as safe (GRAS) and may be used as a food additive, for both human food and ruminant feed, according to prescribed conditions.

Monoammonium phosphate (7722-76-1)	
LD50 oral rat	5750 mg/kg
LD50 dermal rabbit	> 7940 mg/kg

Skin corrosion/irritation : Causes skin irritation.
pH: 4.2 (0.2 M solution)

Serious eye damage/irritation : Causes eye irritation.
pH: 4.2 (0.2 M solution)

Respiratory or skin sensitisation : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : May cause respiratory irritation.

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity	EPA Ecological Toxicity rating :	Slightly toxic to practically non-toxic to aquatic organisms based on the Federal Insecticide Fungicide and Rodenticide Act (FIFRA) acute toxicity ratings.
	Acute Toxicity to Fish:	(<i>Oncorhynchus mykiss</i>) 96-hr: LC ₅₀ = > 85.9 mg/L
	Chronic Toxicity to Fish:	No data available
	Acute Toxicity to Aquatic Invertebrates:	No data available
	Toxicity to Aquatic Plants:	No data available
	Toxicity to Bacteria:	No data available

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	Toxicity to Soil Dwelling Organisms:	No data available
	Toxicity to Terrestrial Plants:	No data available
Environmental Fate:	Stability in Water:	Stable
	Stability in Soil:	Stable
	Transport and Distribution:	Calculated, fugacity level III: 3.98×10^{-12} to air, 45.3% to water, 54.6% to soil, 0.0755% to sediment. Phosphates, whether water or citrate soluble, are translocated in the soil only over very short periods and are then immobilized.
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:	The Phosphorus cycle is well understood. Phosphates are converted to calcium or iron/aluminum phosphates or are incorporated with the organic soil matter.
	Photodegradation:	No data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

- Sewage disposal recommendations : This material is hazardous to the aquatic environment. Keep out of sewers and waterways.
- Waste disposal recommendations : Place in an appropriate container and dispose of the contaminated material at a licensed site.
- Additional information : Dispose of waste material in accordance with all local, regional, national, and international regulations.

SECTION 14: Transport information

In accordance with DOT / TDG / ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number

No dangerous good in sense of transport regulations.

14.2. UN proper shipping name

Not applicable

14.2 Additional information

Other information : No supplementary information available.

Overland transport

No additional information available

Transport by sea

No additional information available

Air transport

No additional information available

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SECTION 15: Regulatory information

15.1. US Federal regulations

Monoammonium phosphate (7722-76-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard

15.2. US State regulations

The following states have an OSH program approved by OSHA. If you are located in any of these states you may be under state jurisdiction rather than federal jurisdiction and your state may have more stringent requirements than OSHA. You should consult your state regulations to ensure compliance.

Alaska	Indiana	Minnesota	North Carolina	Utah
Arizona	Iowa	Nevada	Oregon	Vermont
California	Kentucky	New Mexico	Puerto Rico	*Virgin Islands
*Connecticut	Maryland	*New Jersey	South Carolina	Virginia
Hawaii	Michigan	*New York	Tennessee	Washington
*Illinois				Wyoming

*The state plans in these states apply only to public sector employers. In these states private sector employers are subject to USOL – OSHA jurisdiction. All other state plans apply to both public and private sector employers.

Monoammonium phosphate (7722-76-1)
U.S. - Texas - Effects Screening Levels - Long Term
U.S. - Texas - Effects Screening Levels - Short Term

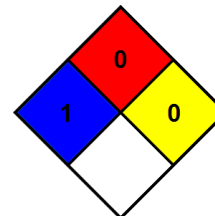
15.3. Canadian regulations

Monoammonium phosphate (7722-76-1)	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

SECTION 16: Other information

NFPA health hazard	: 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.
NFPA fire hazard	: 0 - Materials that will not burn.
NFPA reactivity	: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



Full text of H- phrases:

Eye Irrit. 2	Serious eye damage/eye irritation Category 2
Skin Irrit. 2	Skin corrosion/irritation Category 2

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STOT SE 3	H335 – May cause respiratory irritation.
H315	Causes skin irritation
H319	Causes serious eye irritation

Previous PotashCorp MSDS Number : MSDS 5 – Monoammonium Phosphate (MAP)
Logo Change : No other information changes; kept same date

SDS US (GHS HazCom 2012)

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