

**Super Rainbow® Plant Food 3-7-28**

**Section 1. Identification**

**GHS product identifier** : Super Rainbow® Plant Food 3-7-28  
**Other means of identification** :  Product code(s): 1605-25807; 1606-25807; 1634-25807  
**Product type** : Granular solid.

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

**Identified uses**

Fertilizer.

**Supplier's details** : Agrium Canada Partnership (A Subsidiary of Nutrien Ltd.)  
 13131 Lake Fraser Drive, S.E.  
 Calgary, Alberta, Canada, T2J 7E8  
  
 Agrium U.S. Inc. (A Subsidiary of Nutrien Ltd.)  
 5296 Harvest Lake Drive  
 Loveland, CO 80538  
  
 Company phone number (North America):  
 1-800-403-2861 (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:  
 Transportation or Medical Emergencies: 1-303-389-1654

**Section 2. Hazards identification**

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

**Classification of the substance or mixture** : SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (central nervous system (CNS)) (inhalation) - Category 2

GHS label elements

**Hazard pictograms** :



**Signal word** : Warning

**Hazard statements** : May cause damage to organs through prolonged or repeated exposure if inhaled. (central nervous system (CNS))

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** : Do not breathe dust or mist.  
**Response** : Get medical attention if you feel unwell.  
**Storage** : Not applicable.  
**Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations.

## Section 2. Hazards identification

**Hazards not otherwise classified** : Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose and throat.

## Section 3. Composition/information on ingredients

**Substance/mixture** : Multi-constituent substance

### CAS number/other identifiers

**CAS number** : See below.

Ingredient name	%	CAS number
Potassium chloride	37 - 39	7447-40-7
Potassium magnesium sulfate	26 - 28	14977-37-8
Ammonium dihydrogen orthophosphate	9 - 10	7722-76-1
Ammonium sulfate	3 - 7	7783-20-2
Phosphoric acid, mixed salt (EPA UVCB, generic)	3 - 4	Not applicable.
Ulexite	2.5	1319-33-1
Potassium zinc phosphate	1 - 2	13826-55-6
Calcium sulfate, dihydrate	1 - 2	10101-41-4
Manganese oxide	<1	1344-43-0

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** : No known significant effects or critical hazards. May cause irritation due to mechanical action. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. If irritation persists, get medical attention.
- Inhalation** : Not considered to be acutely toxic. Repeated or prolonged exposure to the substance can produce nervous system damage. Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs. In a fire, hazardous decomposition products may be produced. In case of inhalation of decomposition products in a fire, symptoms may be delayed. If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
- Skin contact** : No known effect after skin contact. Rinse with water for a few minutes.
- Ingestion** : Ingestion may cause gastrointestinal irritation and diarrhea. Wash out mouth with water. Never give anything by mouth to an unconscious person. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. For additional advice call the medical emergency number on this SDS or your poison center or doctor.

### Most important symptoms/effects, acute and delayed

#### Potential acute health effects

- Eye contact** : May cause irritation due to mechanical action.
- Inhalation** : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : May cause irritation of the digestive tract with accompanying nausea, vomiting and diarrhea.

#### Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:  
irritation  
watering  
redness

## Section 4. First aid measures

- Inhalation** : Adverse symptoms may include the following:  
respiratory tract irritation  
coughing  
See also: Section 11. Toxicological information
- Skin contact** : No specific data.
- Ingestion** : No specific data. Adverse symptoms may include the following:  
discomfort (gastrointestinal)  
diarrhea  
nausea or vomiting

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

- Notes to physician** : Treat symptomatically and supportively. Contact poison treatment specialist immediately if ingested or inhaled. In case of inhalation of the substance, or exposure to its decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. For professional, multilingual, medical support, in case of medical emergencies involving Nutrien products, telephone the Nutrien 24 hour Emergency Number - From Canada or the U.S., English: 1-303-389-1653; French or Spanish: 1-303-389-1654. From all other countries, English: 00-1-303-389-1653; French or Spanish: 00-1-303-389-1654.
- Specific treatments** : No specific treatment. Treat symptomatically.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. 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** : No specific fire or explosion hazard. The substance will not burn. Undergoes thermal decomposition at elevated temperatures to release toxic and flammable gases.

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:  
nitrogen oxides  
sulfur 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.

**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. Keep unnecessary and unprotected personnel from entering. Avoid breathing dust. Provide adequate ventilation. Put on appropriate personal protective equipment. Wear appropriate respirator when ventilation is inadequate.
- For emergency responders** : 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".

## Section 6. Accidental release measures

**Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Will dissolve and disperse in water. Reclaiming material may not be possible. If possible, recover spilled product and place in suitable containers for recycle, reuse, or disposal. Product will promote algae growth and may degrade water quality and taste. Notify downstream water users. 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). Move containers from spill area. Avoid dust generation. Use appropriate equipment to put the spilled substance in a container for reuse or disposal. Recycle, if possible.  
or  
Dispose of via a licensed waste disposal contractor.
- Large spill** : Put on appropriate personal protective equipment (see Section 8). Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Use appropriate equipment to put the spilled substance in a container for reuse or disposal. Avoid creating dusty conditions and prevent wind dispersal. Recycle to process, if possible.  
or  
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 ingest. Avoid contact with eyes, skin and clothing. Avoid breathing dust.

**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. May form steep piles that can collapse without warning when stored in bulk. Avoid forming steep slopes when removing product. Ensure that bulk bags or smaller packaged products stored in tiers are stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, rolling, or collapse. Use caution when opening truck or railcar doors as product may have shifted during transport.

Must be stored in a dry location. Absorbs moisture on long-term storage under high humidity conditions. Store away from incompatible materials (see Section 10). When product is stored in sealable containers, keep container tightly closed and sealed until ready for use. Sealable 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.

## Section 8. Exposure controls/personal protection

### Control parameters

#### Occupational exposure limits

Ingredient name	Exposure limits
Potassium chloride	<b>OSHA PEL (United States).</b> TWA: 15 mg/m <sup>3</sup> , (Particulates not otherwise regulated (PNOR) Total particulates) 8 hours.
Potassium magnesium sulfate	<b>OSHA PEL (United States).</b> TWA: 15 mg/m <sup>3</sup> , (Total particulates)
Ammonium dihydrogen orthophosphate	<b>OSHA (United States):</b> Particulates not otherwise regulated (PNOR) TWA (8 hours), Total dust: 15 mg/m <sup>3</sup> ; Respirable fraction: 5 mg/m <sup>3</sup> .
Ammonium sulfate	<b>OSHA (United States):</b> Particulates not otherwise regulated (PNOR) TWA (8 hours), Total dust: 15 mg/m <sup>3</sup> ; Respirable fraction: 5 mg/m <sup>3</sup> .

## Section 8. Exposure controls/personal protection

Phosphoric acid, manganese salts	<p><b>OSHA PEL 1989 (United States, 3/1989).</b> CEIL: 5 mg/m<sup>3</sup>, (as Mn)</p> <p><b>NIOSH REL (United States, 10/2013).</b> TWA: 1 mg/m<sup>3</sup>, (as Mn) 10 hours. Form: Fume STEL: 3 mg/m<sup>3</sup>, (as Mn) 15 minutes. Form: Fume</p> <p><b>OSHA PEL (United States, 2/2013).</b> CEIL: 5 mg/m<sup>3</sup>, (as Mn)</p>
Ulexite	<p>Borax (Borates): ACGIH TLV-TWA: 2 mg/m<sup>3</sup> as the inhalable fraction; 6 mg/m<sup>3</sup> as the inhalable fraction. Fed OSHA Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 15 mg/m<sup>3</sup> as total dust</p> <p><b>OSHA (United States):</b> Particulates not otherwise regulated (PNOR) TWA (8 hours), Total dust: 15 mg/m<sup>3</sup>; Respirable fraction: 5 mg/m<sup>3</sup>.</p> <p><b>ACGIH TLV (United States, 4/2014).</b> TWA: 10 mg/m<sup>3</sup> 8 hours. Form: Inhalable fraction</p>
Potassium zinc phosphate	<p><b>OSHA (United States):</b> Particulates not otherwise regulated (PNOR) TWA (8 hours), Total dust: 15 mg/m<sup>3</sup>; Respirable fraction: 5 mg/m<sup>3</sup>.</p> <p><b>ACGIH TLV (United States, 4/2014).</b> TWA: 10 mg/m<sup>3</sup> 8 hours. Form: Inhalable fraction</p>
Calcium sulfate, dihydrate	<p><b>OSHA PEL 1989 (United States, 3/1989).</b> CEIL: 5 mg/m<sup>3</sup>, (as Mn)</p> <p><b>NIOSH REL (United States, 10/2013).</b> TWA: 1 mg/m<sup>3</sup>, (as Mn) 10 hours. Form: Fume STEL: 3 mg/m<sup>3</sup>, (as Mn) 15 minutes. Form: Fume</p> <p><b>ACGIH TLV (United States, 4/2014).</b> TWA: 0.1 mg/m<sup>3</sup>, (as Mn) 8 hours. Form: Inhalable fraction TWA: 0.02 mg/m<sup>3</sup>, (as Mn) 8 hours. Form: Respirable fraction</p> <p><b>OSHA PEL (United States, 2/2013).</b> CEIL: 5 mg/m<sup>3</sup>, (as Mn)</p>
Manganese oxide	<p><b>OSHA PEL 1989 (United States, 3/1989).</b> CEIL: 5 mg/m<sup>3</sup>, (as Mn)</p> <p><b>NIOSH REL (United States, 10/2013).</b> TWA: 1 mg/m<sup>3</sup>, (as Mn) 10 hours. Form: Fume STEL: 3 mg/m<sup>3</sup>, (as Mn) 15 minutes. Form: Fume</p> <p><b>ACGIH TLV (United States, 4/2014).</b> TWA: 0.1 mg/m<sup>3</sup>, (as Mn) 8 hours. Form: Inhalable fraction TWA: 0.02 mg/m<sup>3</sup>, (as Mn) 8 hours. Form: Respirable fraction</p> <p><b>OSHA PEL (United States, 2/2013).</b> CEIL: 5 mg/m<sup>3</sup>, (as Mn)</p>

- Appropriate engineering controls** : Use only with adequate ventilation. 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. Wash contaminated clothing before reusing.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields. If operating conditions cause high dust concentrations to be produced, use dust goggles.
- Skin protection**
- Hand protection** : The personal protective equipment required varies, depending upon your risk assessment. No special protection is required. For prolonged or repeated handling, use the following type of gloves: leather work gloves
- 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. Cotton or cotton/synthetic overalls or coveralls are normally suitable.

## Section 8. Exposure controls/personal protection

- 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. No special measures are typically indicated.
- Respiratory protection** : Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Contact your personal protective equipment manufacturer to verify the compatibility of the equipment for the intended purpose. For U.S. work sites where respiratory protection is required, ensure that a respiratory protection program meeting 29 CFR 1910.134 requirements is in place.

## Section 9. Physical and chemical properties

### Appearance

- Physical state** : Granular solid.
- Color** : Grayish - Brown
- Odor** : Odorless.
- Odor threshold** : Not applicable.
- pH** : 6 [Conc. (% w/w): 10%]
- Melting point** : Not available.
- Boiling point** : Decomposes.
- Flash point** : [Product does not sustain combustion.]
- Evaporation rate** : Not applicable.
- Flammability (solid, gas)** : Not applicable. The substance will not burn. Undergoes thermal decomposition at elevated temperatures to release toxic and flammable gases.
- Lower and upper explosive (flammable) limits** : Not applicable.
- Vapor pressure** : Not applicable.
- Vapor density** : Not applicable.
- Relative density** : Not available.
- Solubility** : Easily soluble in the following materials: hot water.  
Soluble in the following materials: cold water.
- Solubility in water** : Water soluble.
- Partition coefficient: n-octanol/water** : Not available.
- Auto-ignition temperature** : Not applicable.
- Decomposition temperature** : Not available.
- Viscosity** : Not applicable.

### Aerosol product

## Section 10. Stability and reactivity

- Reactivity** : No specific test data related to reactivity available for this product or its ingredients.
- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : Absorbs moisture on long-term storage under high humidity conditions. Store in a well-ventilated, dry place. Protect from moisture.
- Incompatible materials** : Incompatible with halogens. Incompatible with oxidizers
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Potassium chloride	LD50 Oral	Rat	2600 mg/kg	-
Potassium magnesium sulfate	LD50 Oral	Rat	3 g/kg	-
Ammonium dihydrogen orthophosphate	LD50 Oral	Rat - Male, Female	>2000 mg/kg	-
Ammonium sulfate	LD50 Oral	Mouse - Male, Female	3040 mg/kg	-
	LD50 Oral	Rat	2840 mg/kg	-
	LD50 Oral	Rat - Male, Female	>2000 mg/kg	-
Manganese oxide	LD50 Oral	Rat - Female	>2000 mg/kg	-
Phosphoric acid, manganese salts	LD50 Oral	Rat - Female	>2000 mg/kg	14 days
Calcium sulfate, dihydrate	LC50 Inhalation Dusts and mists	Rat - Male, Female	>3.26 mg/l CaSO <sub>4</sub> .2H <sub>2</sub> O	4 hours
	LD50 Oral	Rat - Male, Female	1581 mg/kg	-

**Conclusion/Summary** : Not considered to be toxic to humans. Repeated or prolonged overexposure may result in chronic health effects.

#### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Potassium chloride	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
Ammonium sulfate	Skin - Edema	Rabbit	0	20 hours	24 hours
	Eyes - Irritant	Rabbit	0	-	72 hours
Calcium sulfate, dihydrate	Skin - Irritant	Rabbit	-	-	72 hours
	Eyes - Mild irritant	Rabbit	-	-	72 hours

#### Conclusion/Summary

**Skin** : No known significant effects or critical hazards.

**Eyes** : No known significant effects or critical hazards.

**Respiratory** : No known significant effects or critical hazards.

#### Sensitization

Product/ingredient name	Route of exposure	Species	Result
Ammonium sulfate	Skin	Guinea pig	Not sensitizing

#### Conclusion/Summary

**Skin** : Non-sensitizer.

**Respiratory** : No known significant effects or critical hazards.

#### Mutagenicity

Product/ingredient name	Test	Experiment	Result
Potassium chloride	-	Experiment: In vivo Subject: Mammalian-Animal Cell: Somatic	Negative
Calcium sulfate, dihydrate	OECD 476 <i>In vitro</i> Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal Cell: Germ	Negative
Ammonium sulfate	OECD 476	Experiment: In vitro Subject: Mammalian-Animal Cell: Somatic	Negative
	OECD 473	Experiment: In vitro Subject: Mammalian-Animal Cell: Germ	Negative

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

#### Carcinogenicity



## Section 11. Toxicological information

Product/ingredient name	Result	Species	Dose	Exposure
Potassium chloride Ammonium sulfate	Negative - Oral - TDLo Negative - Oral - TCLo	Rat - Male Rat - Male, Female	1820 mg/kg 1288 mg/kg	- 2 years; 7 days per week

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

### Classification

Product/ingredient name	OSHA	IARC	NTP
Ammonium sulfate	None.	-	-

### Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Development toxin	Species	Dose	Exposure
Ammonium sulfate	Negative	Negative	-	Mouse - Male, Female	Oral: 5000 mg/ kg	-
Calcium sulfate, dihydrate	Negative	Negative	Negative	Rat - Male, Female	Oral	-

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

### Teratogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Ammonium sulfate	Negative - Oral	Rat - Male, Female	1500 mg/kg	-

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

### Specific target organ toxicity (single exposure)

Not available.

### Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Phosphoric acid, manganese salts	Category 2	Inhalation	central nervous system (CNS)
Manganese oxide	Category 2	Inhalation	central nervous system (CNS)

### Aspiration hazard

Not available.

**Information on the likely routes of exposure** : Routes of entry anticipated: Inhalation.

### Potential acute health effects

- Eye contact** : May cause irritation due to mechanical action.
- Inhalation** : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : May cause irritation of the digestive tract with accompanying nausea, vomiting and diarrhea.

### Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:  
irritation  
watering  
redness
- Inhalation** : Adverse symptoms may include the following:  
respiratory tract irritation  
coughing  
See also: Section 11. Toxicological information
- Skin contact** : No specific data.



## Section 11. Toxicological information

- Ingestion** : No specific data. Adverse symptoms may include the following:  
discomfort (gastrointestinal)  
diarrhea  
nausea or vomiting

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

#### Short term exposure

- Potential immediate effects** : Acute or intermediate exposure to excess manganese affects the respiratory system and the central nervous system. Inflammation of the lungs may occur after acute toxic inhalation. "Manganese pneumonia" has been reported in mine workers with clinical signs of alveolar inflammation, marked dyspnea, shallow respiration, facial cyanosis and an increased susceptibility to infection. Acute renal failure, abdominal pain, and mild methemoglobinemia have been reported following the ingestion of manganese-containing products. These effects have not been associated with the low solubility substance used in this product.

- Potential delayed effects** : Not available.

#### Long term exposure

- Potential immediate effects** : Not available.

- Potential delayed effects** : Inhalation of large quantities of manganese containing dust over many years may result in damage to the central nervous system, with symptoms of sleepiness, tremors and weakness in the legs, slurred speech, emotional disturbances, loss of balance, and in more advanced cases, an irreversible condition with symptoms similar to Parkinsons or Lou Gehrig's disease, including a mask-like facial expression, spastic gait, tremors, slurred speech, fatigue, anorexia, apathy, and inability to concentrate in more advanced cases. The neurologic disorder that develops is known as "manganism". A syndrome may develop with symptoms of compulsive behavior, emotional volatility and hallucinations. High levels of manganese in the blood may increase anemia by interfering with iron absorption. Iron deficiency may increase an individual's susceptibility to manganese. Studies suggest that populations at risk of adverse effects due to manganese exposure are infants, and those with existing iron deficiency. These effects have not been associated with the low solubility substance used in this product.

#### Potential chronic health effects

Product/ingredient name	Result	Species	Dose	Exposure
Potassium chloride	Chronic NOAEL Oral	Rat - Male	1820 mg/kg	-
Ammonium sulfate	Chronic NOAEL Oral	Rat - Male, Female	256 mg/kg	52 weeks; 7 days per week

- Conclusion/Summary** : Repeated or prolonged overexposure may result in chronic health effects.

- General** : See above.

- Carcinogenicity** : No known significant effects or critical hazards.

- 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.

### Numerical measures of toxicity

#### Acute toxicity estimates

Not available.

## Section 12. Ecological information

### Toxicity

## Section 12. Ecological information

Product/ingredient name	Result	Species	Exposure
Potassium chloride	Acute EC50 1337000 µg/l Fresh water	Algae - Navicula seminulum	96 hours
	Acute EC50 9.24 g/L Fresh water	Algae - Desmodesmus subspicatus	72 hours
Calcium sulfate, dihydrate	Acute EC50 83000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 9.68 mg/l Fresh water	Crustaceans - Pseudosida ramosa - Neonate	48 hours
	Acute LC50 435000 µg/l Fresh water	Fish - Gambusia affinis - Adult	96 hours
	EC50 >79 mg/l	Algae	72 hours
Ammonium sulfate	EC50 >79 mg/l	Daphnia	48 hours
	EC50 >790 mg/l	Micro-organism	3 hours
	Acute LC50 >1970 mg/l	Fish	96 hours
	Acute LC50 2.6 mg/l Fresh water	Crustaceans - Ceriodaphnia dubia - Young	48 hours
	Acute LC50 14000 µg/l Fresh water	Daphnia - Daphnia magna - Young	48 hours
	Acute LC50 53 mg/l	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 143 µg/l Marine water	Fish - Salmo salar - Post-smolt	5 weeks

**Conclusion/Summary** : May be harmful to the environment if released in large quantities. Excessive nutrient runoff to a body of water may result in eutrophication.

### Persistence and degradability

Not available.

### Bioaccumulative potential

Not available.

### Mobility in soil

**Soil/water partition coefficient (K<sub>oc</sub>)** : Not available.

**Mobility** : 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. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste packaging should be recycled. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

## Section 14. Transport information

	DOT Classification	TDG Classification	Mexico Classification	ADR/RID	IMDG	IATA
<b>UN number</b>	Not regulated.	Not regulated.	Not regulated.	Not regulated.	Not regulated.	Not regulated.
<b>UN proper shipping name</b>	-	-	-	-	-	-
<b>Transport hazard class(es)</b>	-	-	-	-	-	-
<b>Packing group</b>	-	-	-	-	-	-
<b>Environmental hazards</b>	No.	No.	No.	No.	No.	No.

## Section 14. Transport information

<b>Additional information</b>	-	-	-	-	-	-
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**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.

## Section 15. Regulatory information

**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) 307:** potassium zinc phosphate

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

**SARA 304 RQ** : Not applicable.

### SARA 311/312

**Classification** : Delayed (chronic) health hazard.

### Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard.
Phosphoric acid, manganese salts	3.9	No.	No.	No.	No.	Yes.
Manganese oxide	<1	No.	No.	No.	No.	Yes.

### SARA 313

	Product name	CAS number	%
<b>Form R - Reporting requirements</b>	Ammonium dihydrogen orthophosphate	7722-76-1	9.1
	Ammonium sulfate	7783-20-2	3 - 7
	Phosphoric acid, manganese salts	Not applicable.	3.9
	Potassium zinc phosphate	13826-55-6	1.6
<b>Supplier notification</b>	Ammonium dihydrogen orthophosphate	7722-76-1	9.1
	Ammonium sulfate	7783-20-2	3 - 7
	Phosphoric acid, manganese salts	Not applicable.	3.9
	Potassium zinc phosphate	13826-55-6	1.6

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: Ammonium sulfate

**New York** : None of the components are listed.

**New Jersey** : The following components are listed: Manganese compounds, n.o.s.

**Pennsylvania** : The following components are listed: Sulfuric acid diammonium salt; Manganese Compounds

### California Prop. 65

Not applicable – This product is not registered for sale into the State of California and has not been evaluated for Prop 65 notification requirements.

## Section 15. Regulatory information

### [International regulations](#)

### [International lists](#)

#### [National inventory](#)

- Canada** : All components are listed or exempted.  
**Europe** : Not determined.

## Section 16. Other information

### [History](#)

**Date of issue/Date of revision** : 5/6/2019

**Date of previous issue** : 6/13/2018

**Version** : 2.6

**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

**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, 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

## Section 16. Other information

rev and current updates

✔ Indicates information that has changed from previously issued version.

### Notice to reader

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