



SAFETY DATA SHEET

REAX™ PLUS MICROBOOSTER 4-0-0

Section 1. Identification

Product identifier : REAX™ PLUS MICROBOOSTER 4-0-0
SDS # : 594; N-691
Product type : Liquid.

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

Identified uses

Crop nutrient solution. Soil amendment.

Uses advised against

Not available.

Supplier's details : LOVELAND PRODUCTS, INC.
P.O. Box 1286
Greeley, CO 80632-1286
Telephone no. : 1-888-574-2878 (Customer Service)
Email : retail-SDS2@nutrien.com

Emergency telephone number (with hours of operation) : CHEMTREC (24 hrs): 1-800-424-9300 or +1-703-527-3887

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) - Category 2

GHS label elements

Hazard pictograms



Signal word : Warning

Hazard statements : May cause damage to organs through prolonged or repeated exposure. (brain)

Precautionary statements

General : Read carefully and follow all instructions. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention : Do not breathe vapor.

Response : Get medical advice or attention if you feel unwell.

Storage : Not applicable.

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

Hazards not otherwise classified : None known.

Hazards identified when used : No known significant effects or critical hazards.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	% (w/w)	Identifiers
triammonium citrate	10 - 20	CAS: 3458-72-8
zinc sulfate	5 - 10	CAS: 7733-02-0
manganese sulfate	1 - 5	CAS: 7785-87-7
ferrous sulfate	1 - 5	CAS: 7720-78-7

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 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** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention if irritation occurs. Get medical attention following exposure or if feeling unwell.
- Inhalation** : Remove person to fresh air and keep comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention following exposure or if feeling unwell. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention following exposure or if feeling unwell. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. 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. Get medical attention following exposure or if feeling unwell. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.
- Skin contact** : May cause slight transient irritation.
- Ingestion** : May be harmful if swallowed. Over-exposure by ingestion is unlikely under normal working conditions.

Over-exposure signs/symptoms

- Eye contact** : No specific data.
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:
redness
irritation

Section 4. First aid measures

- Ingestion** : Adverse symptoms may include the following:
nausea or vomiting
stomach pains
diarrhea

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

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. Decontamination measures may be necessary. Personnel and equipment must be checked and decontaminated prior to leaving the area.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Not considered to be flammable. Use dry chemical, CO₂, alcohol-resistant foam or water spray (fog).
- Unsuitable extinguishing media** : None known.

- Specific hazards arising from the chemical** : Non-flammable. Material will not burn. In a fire or if heated, a pressure increase will occur and the container may burst.

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

- Special protective actions for fire-fighters** : No action shall be taken involving any personal risk or without suitable training. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Contain and collect the water used to fight the fire for later treatment and disposal.

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

Section 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. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- 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".

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

Methods and materials for containment and cleaning up

Section 6. Accidental release measures

- Small spill** : Put on appropriate personal protective equipment (see Section 8). Move containers from spill area. Recover the material and use it for the intended purpose.
or
Place spilled material in a designated, labeled waste container. 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. 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** : Read label before use. Apply this product only as specified on the label. Do not handle until all safety precautions have been read and understood. Put on appropriate personal protective equipment (see Section 8). Avoid contact with eyes, skin and clothing. Do not ingest. Do not breathe vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. 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. Do not store below the following temperature: 4.4°C (39.9°F). Contact your sales representative or a metallurgical specialist to ensure compatibility with your equipment.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

Biological exposure indices

No exposure indices known.

- Appropriate engineering controls** : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Contact your personal protective equipment supplier to verify the compatibility of the equipment for the intended purpose.

Section 8. Exposure controls/personal protection

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.
- 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.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- 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.
- 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.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

- Physical state** : Liquid.
- Color** : Brown. [Dark]
- Odor** : Mild.
- Odor threshold** : Not available.
- pH** : 7.5 to 9.5
- Melting point/freezing point** : Not available.
- Boiling point or initial boiling point and boiling range** : Not available.
- Flash point** : Not available.
- Evaporation rate** : Not available.
- Flammability** : Not available.
- Lower and upper explosion limit/flammability limit** : Not available.
- Vapor pressure** :

Ingredient name	Vapor Pressure at 20°C			Vapor pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
water	17.5	2.3				

- Relative vapor density** : Not available.
- Relative density** : 1.27 to 1.31
- Bulk density** : 10.6 to 10.9 lb/gal
- Solubility in water** : Soluble.

Section 9. Physical and chemical properties

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

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

Particle characteristics

Median particle size : Not applicable.

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 : Keep away from incompatible materials.

Incompatible materials : Strong oxidizers, halogens. May be incompatible with some materials of construction. Contact your sales representative or a metallurgical specialist to ensure compatibility with your equipment.

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

manganese sulfate

ferrous sulfate

Result

Rat - Oral - LD50 2150 mg/kg

Rat - Oral - LD50 319 mg/kg

Conclusion/Summary [Product] : May be harmful if swallowed.

Skin corrosion/irritation

Conclusion/Summary [Product] : May cause slight transient irritation.

Serious eye damage/eye irritation

Conclusion/Summary [Product] : Non-irritating to the eyes. (OECD 437: Bovine Corneal Opacity and Permeability (BCOP) assay)

Respiratory corrosion/irritation

Conclusion/Summary [Product] : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.

Respiratory or skin sensitization

Skin

Section 11. Toxicological information

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

Respiratory

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

Germ cell mutagenicity

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

Carcinogenicity

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

Reproductive toxicity

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

Specific target organ toxicity (single exposure)

Based on available data, the classification criteria are not met.

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Result
manganese sulfate	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (brain) (oral, inhalation) - Category 2

Aspiration hazard

Based on available data, the classification criteria are not met.

Information on the likely routes of exposure

Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eye contact	: No known significant effects or critical hazards.
Inhalation	: Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.
Skin contact	: May cause slight transient irritation.
Ingestion	: May be harmful if swallowed. Over-exposure by ingestion is unlikely under normal working conditions.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	: No specific data.
Inhalation	: No specific data.
Skin contact	: Adverse symptoms may include the following: redness irritation
Ingestion	: Adverse symptoms may include the following: nausea or vomiting stomach pains diarrhea

Section 11. Toxicological information

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.

Potential delayed effects : See below.

Long term exposure

Potential immediate effects : See above.

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. 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.

Potential chronic health effects

Conclusion/Summary [Product] : Repeated or prolonged overexposure may result in chronic health effects.

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

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Reproductive toxicity : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
REAX™ PLUS MICROBOOSTER 4-0-0	3911.9	N/A	N/A	N/A	N/A
zinc sulfate	500	N/A	N/A	N/A	N/A
manganese sulfate	2150	N/A	N/A	N/A	N/A
ferrous sulfate	319	N/A	N/A	N/A	N/A

Other information

Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name

zinc sulfate

Result

Acute - LC50 - Fresh water Crustaceans - Copepod - *Mesocyclops hyalinus* - Adult 4 µg/l [48 hours]

Chronic - NOEC - Fresh water Fish - Flagfish - *Jordanella floridae* 26 µg/l [100 days]

Acute - LC50 - Fresh water Fish - Carp, hawk fish - *Cirrhinus mrigala* 2.36 µg/l [96 hours]

Chronic - EC10 OECD Daphnia - Water flea - *Daphnia magna* - Juvenile (Fledgling, Hatchling, Weanling) 10 µg/l [21 days]

Acute - IC50 - Fresh water Algae - Green algae - *Raphidocelis subcapitata* - Exponential growth phase 44.8 µg/l [72 hours]

Chronic - EC10 OECD Algae - Green algae - *Raphidocelis subcapitata* - Exponential growth phase 15 µg/l [72 hours]

manganese sulfate

Acute - LC50 - Fresh water Crustaceans - Harpacticoid copepod - *Canthocamptus sp.* - Larvae 0.15 mg/l [48 hours]

Acute - EC50 - Marine water Algae - Diatom - *Phaeodactylum tricornutum* 25.7 mg/l [96 hours]

Chronic - NOEC - Fresh water Fish - Speckled Tilapia - *Tilapia guineensis* - Fingerling 2.3 mg/l [28 days]

Acute - LC50 - Fresh water Fish - Rainbow trout, donaldson trout - *Oncorhynchus mykiss* - Embryo 3.32 mg/l [96 hours]

ferrous sulfate

Acute - LC50 - Fresh water Fish - Brook trout - *Salvelinus fontinalis* 1750 µg/l [96 hours]

Acute - EC50 - Fresh water OECD Daphnia - Water flea - *Daphnia galeata* - Neonate 0.96 mg/l [48 hours]

Conclusion/Summary [Product]

: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Apply this product only as specified on the label. Do not allow to enter groundwater, surface water or drains.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
zinc sulfate	-0.07	60960	High
ferrous sulfate	-	20 [OECD 305]	Low

Mobility in soil

Soil/Water partition coefficient : Not available.

Other adverse effects

No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods

: Follow disposal instructions on label. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Triple rinse containers with water and add the rinse water to the spray tank. Do not reuse containers for any purpose. Disposal should be in accordance with applicable regional, national and local laws and regulations. Recycling decontaminated containers is the best option of container disposal. The Agricultural Container Recycling Council (ACRC) operates the national recycling program. To contact your state and local ACRC recycler visit the ACRC web

Section 13. Disposal considerations

page at <http://www.acrecycle.org/>. Do not contaminate water, food or feed by storage or disposal.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3082 <i>(See Additional Information.)</i>	UN3082	UN3082	UN3082
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (zinc sulfate, ferrous sulfate) RQ	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (zinc sulfate)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (zinc sulfate)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (zinc sulfate)
Transport hazard class(es)	9 	9  	9  	9  
Packing group	III	III	III	III
Environmental hazards	No.	Yes.	Yes.	Yes.

Additional information

DOT Classification

- : **Reportable quantity** 12746.3 lbs / 5786.8 kg [1185.1 gal / 4485.9 L]. The classification of the product is due solely to the presence of one or more US DOT-listed 'Hazardous substances' that are subject to reportable quantity requirements and only applies to shipments of a package that contains greater than, or equal to, the product reportable quantity threshold. **Package sizes containing less than the product reportable quantity are not regulated as hazardous materials.**

Remarks This product does not contain any DOT listed marine pollutants (49 CFR Appendix B to 172.101).

TDG Classification

- : Part 3 (Documentation) and Part 4 (Dangerous Goods Safety Marks) do not apply to substances that are classified as marine pollutants in accordance with section 2.43 of Part 2 (Classification) if they are in transport solely on land by road vehicle or railway vehicle.
Additional exceptions for shipment of less than a total of 450 kg or 450 L of this product by road vehicle or rail vehicle are provided under Special Provision 99 of the TDG Regulations.

IMDG

- : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.

IATA

- : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 5.0.2.4.1, 5.0.2.6.1.1 and 5.0.2.8.

- 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

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia	: Not determined.
Canada	: All components are listed or exempted.
China	: Not determined.
Eurasian Economic Union	: Russian Federation inventory : Not determined.
Japan	: Japan inventory (CSCL) : Not determined. Japan inventory (ISHL) : Not determined.
New Zealand	: Not determined.
Philippines	: Not determined.
Republic of Korea	: Not determined.
Taiwan	: Not determined.
Thailand	: Not determined.
Turkey	: Not determined.
United States	: All components are active or exempted.
Viet Nam	: Not determined.

U.S. Federal regulations

TSCA 8(a) PAIR: dimethylpolysiloxane

TSCA 8(a) CDR Exempt/Partial exemption: Not determined

Clean Water Act (CWA) 307: zinc sulfate

Clean Water Act (CWA) 311: zinc sulfate; ferrous sulfate; ammonium acetate

TSCA 12(b) - Chemical export notification

Name	One time notification		Annual notification		
	4	5	5(f)	6	7
sodium glucoheptonate	Listed	Not listed	Not listed	Not listed	Not listed

Clean Air Act Section 112 : Listed

(b) Hazardous Air Pollutants (HAPs)

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

Section 15. Regulatory information

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	triammonium citrate	3458-72-8	10 - 20
	zinc sulfate	7733-02-0	5 - 10
	manganese sulfate	7785-87-7	1 - 5
	ammonium acetate	631-61-8	1 - 5
Supplier notification	triammonium citrate	3458-72-8	10 - 20
	zinc sulfate	7733-02-0	5 - 10
	manganese sulfate	7785-87-7	1 - 5
	ammonium acetate	631-61-8	1 - 5

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: zinc sulfate; ferrous sulfate; ammonium acetate

New York : The following components are listed: zinc sulfate; ferrous sulfate; ammonium acetate

New Jersey : The following components are listed: zinc sulfate; ferrous sulfate; ammonium acetate

Pennsylvania : The following components are listed: zinc sulfate; manganese sulfate; ferrous sulfate; ammonium acetate

California Prop. 65

 **WARNING:** This product can expose you to chemicals including nickel, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

Section 16. Other information

History

Date of issue/Date of revision : 8/25/2025

Date of previous issue : 9/3/2023

Version : 2

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)
 N/A = Not available
 SGG = Segregation Group
 UN = United Nations

Procedure used to derive the classification

Classification	Justification
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2	Calculation method

 Indicates information that has changed from previously issued version.

Notice to reader

Section 16. Other information

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

DISCLAIMER AND LIMITATION OF LIABILITY

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

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