

# SAFETY DATA SHEET

REAX™ COMPLETE



## Section 1. Identification

**Product identifier** : REAX™ COMPLETE  
**SDS #** : 419  
**Product type** : Liquid.

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

<b>Identified uses</b>
Crop nutrient solution.
<b>Uses advised against</b>
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: 1-800-424-9300 (24 hrs)  
Medical Emergencies: 1-866-944-8565 (24 hrs)

## Section 2. Hazard 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** : SKIN IRRITATION - Category 2  
SERIOUS EYE DAMAGE - Category 1  
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

### GHS label elements

**Hazard pictograms** : The image shows two GHS hazard pictograms side-by-side. The first is a red diamond with a black border containing a black icon of a liquid droplet falling from two test tubes onto a hand and a surface, representing Corrosion. The second is a red diamond with a black border containing a black icon of a human silhouette with a star on the chest, representing Health Hazard.

**Signal word** : Danger  
**Hazard statements** : Causes skin irritation.  
Causes serious eye damage.  
May cause damage to organs through prolonged or repeated exposure.

### 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** : Wear protective gloves. Wear eye or face protection. Do not breathe vapor. Wash thoroughly after handling.

## Section 2. Hazard identification

- Response** : Get medical advice or attention if you feel unwell. Take off contaminated clothing and wash it before reuse. IF ON SKIN: Wash with plenty of water. If skin irritation occurs: Get medical advice or attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.
- Storage** : Not applicable.
- Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations.

## Section 3. Composition/information on ingredients

**Substance/mixture** : Mixture

Ingredient name	% (w/w)	CAS number
ammonium citrate dibasic	15 - 20	3012-65-5
manganese sulfate	4 - 5	7785-87-7
zinc sulfate	4 - 5	7733-02-0
copper sulfate	1 - 2	7758-98-7
ferrous sulfate	1 - 2	7720-78-7
diammonium tetraborate	1 - 2	12007-58-8

**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** : CORROSIVE. Begin eye irrigation immediately. All eye exposures require medical evaluation following decontamination. Immediately rinse eyes with large quantities of water or saline for a minimum 30 minutes, longer irrigation time is preferred if possible. If possible, remove contact lenses being careful not to cause additional eye damage. If the initial water supply is insufficient, keep the affected area wet with a moist cloth and transfer the person to the nearest place where rinsing can be continued for the recommended length of time. Call an ambulance for transport to hospital. Continue eye irrigation during transport. For additional advice call the medical emergency number on this safety data sheet or your poison center or doctor.
- Inhalation** : Remove person to fresh air. Seek medical attention for any signs of wheezing and/or breathing difficulties. For additional advice call the medical emergency number on this SDS or your poison center or medical provider.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 15 minutes. Get medical attention. 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

## Section 4. First-aid measures

### Potential acute health effects

- Eye contact** : Corrosive to eyes. Causes serious eye damage.
- Inhalation** : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.
- Skin contact** : Causes skin irritation.
- Ingestion** : No known significant effects or critical hazards. Over-exposure by ingestion is unlikely under normal working conditions.

### Over-exposure signs/symptoms

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

### 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** : Improved outcome requires prolonged rinsing or soaking with water in order to extract corrosive ions that have penetrated through the stratum corneum. Expert opinion indicates an extended duration of rinsing is required to remove corrosive chemicals - 60 minutes for strong alkalis, and 30 minutes for other corrosive substances. Water should be maintained at a comfortable temperature. It may be necessary to delay transport to emergency care facilities in order to ensure 30 or 60 minutes of rinsing time. However, transporting the patient may be necessary depending on the condition of the patient or the availability of a water supply. If transport is necessary, rinsing the affected area should continue, if possible, during transport.
- 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** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

**Specific hazards arising from the chemical** : 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  
metal oxide/oxides

## Section 5. Fire-fighting measures

- 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. 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. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe 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

- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor. Use appropriate equipment to put the spilled substance in a container for reuse or disposal.
- Large spill** : Stop leak if without risk. Approach release from upwind. 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. Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not ingest. Do not breathe vapor or mist. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. 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.

## Section 7. Handling and storage

**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. Store locked up. 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: 4.4444°C (40°F).

## Section 8. Exposure controls/personal protection

### Control parameters

#### Occupational exposure limits

Ingredient name	Exposure limits
manganese sulfate	<b>NIOSH REL (United States, 10/2016).</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 <b>ACGIH TLV (United States, 3/2020).</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 <b>OSHA PEL (United States, 5/2018).</b> CEIL: 5 mg/m <sup>3</sup> , (as Mn)
copper sulfate	<b>ACGIH TLV (United States, 3/2020).</b> TWA: 1 mg/m <sup>3</sup> , (as Cu) 8 hours. Form: Dust and mist <b>NIOSH REL (United States, 10/2016).</b> TWA: 1 mg/m <sup>3</sup> , (as Cu) 10 hours. Form: Dusts and Mists <b>OSHA PEL (United States, 5/2018).</b> TWA: 1 mg/m <sup>3</sup> 8 hours. Form: Dusts and Mists
ferrous sulfate	<b>ACGIH TLV (United States, 3/2020).</b> TWA: 1 mg/m <sup>3</sup> , (as Fe) 8 hours. <b>NIOSH REL (United States, 10/2016).</b> TWA: 1 mg/m <sup>3</sup> , (as Fe) 10 hours.

**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 manufacturer to verify the compatibility of the equipment for the intended purpose.**

**General information** : Do not handle until all safety precautions have been read and understood.

**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. Ensure that eyewash stations and safety showers are close to the workstation location.

## Section 8. Exposure controls/personal protection

- 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: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.
- 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.
- 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 and safety characteristics

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

### Appearance

- Physical state** : Liquid.
- Color** : Black. [Dark]
- Odor** : Mild.
- Odor threshold** : Not available.
- pH** : 7.5 to 8.5
- Melting point/freezing point** : Not available.
- Boiling point, 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** : Not available.
- Relative vapor density** : Not available.
- Relative density** : Not available.
- Density** : 1.3 g/cm<sup>3</sup>

## Section 9. Physical and chemical properties and safety characteristics

<b>Bulk density</b>	: 10.8 lb/gal
<b>Solubility in water</b>	: Soluble.
<b>Partition coefficient: n-octanol/water</b>	: Not applicable.
<b>Auto-ignition temperature</b>	: Not available.
<b>Decomposition temperature</b>	: Not available.
<b>Viscosity</b>	: Not available.
<b><u>Particle characteristics</u></b>	
<b>Median particle size</b>	: Not applicable.

## Section 10. Stability and reactivity

<b>Reactivity</b>	: No specific test data related to reactivity available for this product or its ingredients.
<b>Chemical stability</b>	: The product is stable.
<b>Possibility of hazardous reactions</b>	: If mixed with chlorine or hypochlorites, it may form nitrogen trichloride which may explode spontaneously in air.
<b>Conditions to avoid</b>	: Keep from freezing. Keep away from incompatible materials.
<b>Incompatible materials</b>	: Strong acids, strong alkalis. Strong oxidizers.
<b>Hazardous decomposition products</b>	: 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
manganese sulfate	LD50 Oral	Rat	2150 mg/kg	-
copper sulfate	LD50 Oral	Rat	300 mg/kg	-
ferrous sulfate	LD50 Oral	Rat	319 mg/kg	-

#### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
zinc sulfate	Eyes - Moderate irritant	Rabbit	-	420 ug	-

#### Conclusion/Summary

<b>Skin</b>	: Causes skin irritation.
<b>Eyes</b>	: Corrosive to eyes. Causes serious eye damage.
<b>Respiratory</b>	: No known significant effects or critical hazards.

#### Sensitization

Not available.

#### Conclusion/Summary

<b>Skin</b>	: No known significant effects or critical hazards.
<b>Respiratory</b>	: No known significant effects or critical hazards.



## Section 11. Toxicological information

### Mutagenicity

Not available.

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

### Carcinogenicity

Not available.

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

### Classification

Product/ingredient name	IARC	NTP	ACGIH
manganese sulfate	-	-	A4

### Reproductive toxicity

Not available.

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

### Teratogenicity

Not available.

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

### Specific target organ toxicity (single exposure)

Not available.

### Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
manganese sulfate	Category 2	-	-

### Aspiration hazard

Not available.

**Information on the likely routes of exposure** : Dermal contact. Eye contact. Inhalation.

### Potential acute health effects

- Eye contact** : Corrosive to eyes. Causes serious eye damage.
- Inhalation** : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.
- Skin contact** : Causes skin irritation.
- Ingestion** : No known significant effects or critical hazards. Over-exposure by ingestion is unlikely under normal working conditions.

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

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



## Section 11. Toxicological information

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

#### Short term exposure

**Potential immediate effects** : See above.

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** : Not available.

#### 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

Not available.

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

**General** : Repeated or prolonged overexposure may result in chronic health effects.

**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™ COMPLETE	5036.4	N/A	N/A	N/A	N/A
manganese sulfate	2150	N/A	N/A	N/A	N/A
zinc sulfate	500	N/A	N/A	N/A	N/A
copper sulfate	300	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	Result	Species	Exposure
manganese sulfate	Acute EC50 25700 µg/l Marine water	Algae - Phaeodactylum tricornutum	96 hours
	Acute EC50 8.28 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 0.15 mg/l Fresh water	Crustaceans - Canthocamptus sp. - Larvae	48 hours
	Acute LC50 3.32 mg/l Fresh water	Fish - Oncorhynchus mykiss - Embryo	96 hours
zinc sulfate	Chronic NOEC 1270 µg/l Fresh water	Fish - Pimephales promelas - Egg	28 days
	Acute EC50 724.4 µg/l Fresh water	Algae - Stichococcus bacillaris	72 hours
	Acute EC50 202 µg/l Marine water	Algae - Ulva fasciata - Zoea	96 hours
	Acute LC50 4 µg/l Fresh water	Crustaceans - Mesocyclops hyalinus - Adult	48 hours
	Acute LC50 21.8 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 2.36 µg/l Fresh water	Fish - Cirrhinus mrigala	96 hours
	Chronic NOEC 142.5 µg/l Marine water	Algae - Ulva fasciata - Zoea	96 hours
	Chronic NOEC 0.2 mg/l Marine water	Crustaceans - Litopenaeus vannamei - Post-larvae	21 days
copper sulfate	Chronic NOEC 1.7 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	21 days
	Chronic NOEC 26 µg/l Fresh water	Fish - Jordanella floridae	100 days
	Acute EC50 0.4 µg/l Marine water	Algae - Isochrysis galbana	72 hours
	Acute EC50 16.2 µg/l Fresh water	Aquatic plants - Lemna aequinoctialis	96 hours
	Acute EC50 1.4 µg/l Fresh water	Crustaceans - Bosmina longirostris - Neonate	48 hours
	Acute LC50 0.01 ng/ml Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 0.057 µg/l Fresh water	Fish - Cirrhinus mrigala	96 hours
	Chronic NOEC 0.0003 mg/l Marine water	Algae - Entomoneis punctulata - Exponential growth phase	72 hours
	Chronic NOEC 0.0018 mg/l Fresh water	Aquatic plants - Lemna minor	96 hours
	Chronic NOEC 5.06 µg/l Marine water	Crustaceans - Moina mongolica - Neonate	21 days
	Chronic NOEC 10 µg/l Fresh water	Daphnia - Daphnia magna - Instar	21 days
	Chronic NOEC 0.46 µg/l Fresh water	Fish - Acipenser transmontanus - Larvae	53 days
ferrous sulfate	Acute EC50 143000 µg/l Fresh water	Crustaceans - Crangonyx pseudogracilis - Adult	48 hours
	Acute EC50 7.2 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 1750 µg/l Fresh water	Fish - Salvelinus fontinalis	96 hours

**Conclusion/Summary** : Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

### Persistence and degradability

Not available.

### Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
zinc sulfate	-0.07	60960	high
ferrous sulfate	-	20	low

### Mobility in soil









## Section 12. Ecological information

- Soil/water partition coefficient (K<sub>oc</sub>)** : Not available.
- Other adverse effects** : No known significant effects or critical hazards.

## Section 13. Disposal considerations

- Disposal methods** : Read label before use. Apply this product only as specified on the 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. 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 page at <http://www.acrecycle.org/>. Do not contaminate water, food or feed by storage or disposal.

## Section 14. Transport information

	TDG	DOT	IMDG	IATA
<b>UN number</b>	UN3082	UN3082	UN3082	UN3082
<b>UN proper shipping name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (zinc sulfate, copper sulfate)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (zinc sulfate, copper sulfate)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (zinc sulfate, copper sulfate)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (zinc sulfate, copper sulfate)
<b>Transport hazard class(es)</b>	9  	9  	9  	9  
<b>Packing group</b>	III	III	III	III
<b>Marine pollutant</b>	Yes.	Yes.	Yes.	Yes.

### Additional information

- TDG** : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.43-2.45 (Class 9), 2.7 (Marine pollutant mark). Non-bulk packages of this product are not regulated as dangerous goods when transported by road or rail.
- DOT** : **Except when all or part of the transportation is by vessel, the marine pollutant mark does not apply to non-bulk packages transported domestically by motor vehicle, rail car or aircraft.**  
**Reportable quantity** 500 lbs / 227 kg [46.129 gal / 174.62 L]. Packages of less than the reportable quantity are not subject to Hazmat transportation requirements.  
**Remarks** The letters "RQ" must also be entered on the shipping paper either before or after the basic description when the quantity in a package exceeds the reportable quantity.
- 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.

## Section 14. Transport information

**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

### Canadian lists

**Canadian NPRI** : The following components are listed: ammonia (total); manganese (and its compounds); zinc (and its compounds); copper (and its compounds)

**CEPA Toxic substances** : None of the components are listed.

### 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** : At least one component is not listed in DSL but all such components are listed in NDSL.

**China** : Not determined.

**Japan** : **Japan inventory (CSCL):** Not determined.  
**Japan inventory (ISHL):** Not determined.

**New Zealand** : All components are listed or exempted.

**Philippines** : Not determined.

**Republic of Korea** : All components are listed or exempted.

**Taiwan** : All components are listed or exempted.

**Thailand** : Not determined.

**Turkey** : Not determined.

**United States** : All components are active or exempted.

**Viet Nam** : All components are listed or exempted.

**U.S. Federal regulations** : **TSCA 8(a) CDR Exempt/Partial exemption:** Not determined

**Clean Water Act (CWA) 307:** zinc sulfate; copper sulfate

**Clean Water Act (CWA) 311:** diammonium hydrogen 2-hydroxypropane-1,2,3-tricarboxylate; zinc sulfate; copper sulfate; ferrous sulfate; ammonium acetate

**Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)** : Listed

## Section 15. Regulatory information

**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 302/304

#### Composition/information on ingredients

No products were found.

### SARA 311/312

**Classification** : SKIN IRRITATION - Category 2  
 SERIOUS EYE DAMAGE - Category 1  
 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

#### Composition/information on ingredients

Name	%	Classification
ammonium citrate dibasic	15 - 20	SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A
trisodium citrate	4 - 5	COMBUSTIBLE DUSTS
manganese sulfate	4 - 5	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
zinc sulfate	4 - 5	ACUTE TOXICITY (oral) - Category 4 SERIOUS EYE DAMAGE - Category 1
copper sulfate	1 - 2	ACUTE TOXICITY (oral) - Category 3 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A
ferrous sulfate	1 - 2	ACUTE TOXICITY (oral) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A
diammonium tetraborate	1 - 2	SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A TOXIC TO REPRODUCTION - Category 1B

### SARA 313

	Product name	CAS number	%
<b>Form R - Reporting requirements</b>	ammonium citrate dibasic	3012-65-5	15 - 20
	manganese sulfate	7785-87-7	4 - 5
	zinc sulfate	7733-02-0	4 - 5
	copper sulfate	7758-98-7	1 - 2
<b>Supplier notification</b>	ammonium citrate dibasic	3012-65-5	15 - 20
	manganese sulfate	7785-87-7	4 - 5
	zinc sulfate	7733-02-0	4 - 5
	copper sulfate	7758-98-7	1 - 2

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 CITRATE, DIBASIC; ZINC SULFATE; CUPRIC SULFATE; FERROUS SULFATE

**New York** : The following components are listed: Ammonium citrate, dibasic; Zinc sulfate; Cupric sulfate; Ferrous sulfate

## Section 15. Regulatory information

- New Jersey** : The following components are listed: AMMONIUM CITRATE; ZINC SULFATE; CUPRIC SULFATE; FERROUS SULFATE
- Pennsylvania** : The following components are listed: 1,2,3-PROPANETRICARBOXYLIC ACID, 2-HYDROXY-, DIAMMONIUM SALT; MANGANESE COMPOUNDS; SULFURIC ACID, ZINC SALT (1:1); SULFURIC ACID COPPER(2+) SALT (1:1); SULFURIC ACID, IRON(2+) SALT (1:1)

### California Prop. 65

**⚠ WARNING:** This product can expose you to chemicals including Nickel, which are known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## Section 16. Other information

### History

- Date of issue/Date of revision** : 12/1/2022
- Date of previous issue** : No previous validation
- Version** : 1
- Key to abbreviations** :
- ATE = Acute Toxicity Estimate
  - BCF = Bioconcentration Factor
  - GHS = Globally Harmonized System of Classification and Labelling of Chemicals
  - HPR = Hazardous Products Regulations
  - 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
SKIN IRRITATION - Category 2	Calculation method
SERIOUS EYE DAMAGE - Category 1	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2	Calculation method

🔄 Indicates information that has changed from previously issued version.

### Notice to reader

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

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## Section 16. Other information

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