1. IDENTIFICATION

Product Identifier
Product Name: Zinc Sulfate Granular & Fines
Other Means of Identification
SDS #: MAS-007

Recommended Use of the Chemical and Restrictions on Use
Recommended Use: General fertilizer.

Details of the Supplier of the Safety Data Sheet
Supplier Address: Marion Ag Service
7746 St. Paul Hwy N.E.
St. Paul, OR 97137

Emergency Telephone Number
Company Phone Number: 503-633-4281
Emergency Telephone: INFOTRAC 1-352-323-3500 (International)
1-800-535-5053 (North America)

2. HAZARDS IDENTIFICATION

This chemical does not meet the hazardous criteria set forth by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). However, this Safety Data Sheet (SDS) contains valuable information critical to the safe handling and proper use of this product. This SDS should be retained and available for employees and other users of this product.

Emergency overview: White free-flowing granules that may cause irritation to the skin and eyes (possibly severe). Product dusts may irritate respiratory tract. Harmful if swallowed.

NFPA Rating: Health=2, Fire=0, Reactivity=0

Potential Health Effects:
Inhalation: May cause irritation of the nasal membranes and upper respiratory tract, possibly serve. Significant exposures may result in difficulty breathing low blood pressure, dizziness, bluish skin color and lung congestion.

Skin contact: May cause irritation, possibly severe.

Eye contact: Contact may cause irritation, possibly severe. Additional effects may include tearing and/or blurred vision.

Ingestion: May irritate or cause burns to digestive tract. Significant exposures may cause effects such as fever, nausea, vomiting, diarrhea, stomach pain, blood in stool, inability to urinate, low blood pressure, kidney damage, liver damage and convulsions.

Long – Term and/or delayed effects: Continued and prolonged overexposure may result in digestive disorders, kidney and/or liver damage.

Carcinogen Status: OSHA: Not listed NTP: Not listed IARC: Not listed

Hazardous Statement – Causes skin irritation
3. COMPOSITION/INFORMATION ON INGREDIENTS

Product Name: Zinc Sulfate Monohydrate
CAS Number: 7446-19-7 or 7733-02-0 (anhydrous form)
Chemical Formula: Zn SO4

4. FIRST AID MEASURES

First Aid Measures

Inhalation: Remove from exposure area to fresh air immediately. If breathing is difficult, oxygen may be administered by a qualified operator. Keep person warm and at rest. Get medical attention for irritation or any other symptom.

Eye Contact: Flush eyes immediately with large amounts of water or normal saline solution occasionally lifting upper and lower lids until no evidence of product remains (approximately 15-20 minutes). Cover with sterile bandages. Call a physician if irritation persists.

Ingestion: Dilute the product immediately with large amounts of water or milk. Do not induce vomiting unless directed to do so by medical personal. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately.

Skin Contact: Remove contaminated clothing and shoes. Wash affected area with soap or mild detergent and rinse with water until no evidence of product remains. Get medical assistance for irritation, or any other symptom.

Note to Physicians: The decision as to whether the severity of poisoning requires administration of any antidote and actual dose required should be made by a qualified medical personnel. The antidote for poisoning from zinc salts is calcium disodium edetate (oral or IV) Dreisbach, Handbook of Poisoning 12th Edition.

5. FIRE-FIGHTING MEASURES

Flash Point: None
Auto Ignition Temperature: Not Determined

Fire and Explosion Hazard: Product burns only with great difficulty but will decompose in the heat of a fire. Containers involved in a fire may rupture (possibly explosively) releasing decomposition products.

Extinguishing Media: Use any standard agent suitable for surrounding structural fire or for other chemicals that may be involved.

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Dike area to prevent runoff and contamination of water sources.

Hazardous Combustion Products: Thermal decomposition may include toxic and hazardous oxides of zinc and sulfur.

6. ACCIDENTAL RELEASE MEASURES

In Case of Spill: Pick up dry spills by scooping, shoveling or vacuuming and place into containers for reuse of disposal. Wear respirator, protective clothing and gloves. Keep unnecessary people away. Obey all federal, State, and local regulations when storing or disposing of ferrous sulfate.

Environmental Precautions: See Section 12 for additional ecological information.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Normal Handling: Avoid contact with skin and eyes. Do not breathe product dusts. Wash thoroughly after handling.

Storage Conditions: Store in a cool, dry place, Protect from exposure to fire.

.8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
<th>OTHER VALUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>No ingredients</td>
<td>-------</td>
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*=ACGIH Biological Exposure Value **= AIHA Workplace Environmental Exposure Level

Ventilation: Use of local exhaust is recommended at product transfer points and where dusty conditions exist.

Eye Protection: Wear safety glasses. Use splash shields or safety goggles are recommended for very dusty conditions.

Clothing: Wear trousers and long sleeve shirt to avoid skin contact with this product. Clean work clothing before taking them home (preferred) or launder separately from household laundry.
**Gloves:** Wear cotton or canvas protective gloves to prevent contact with this product. Use rubber gloves if it is likely material may become moist or wet.

**Respirator:** For normal product handling, use an NIOSH approved air-purifying dust respirator. For extremely dusty condition, the use of a full face air purifying particulate respirator is recommended.

**EMERGENCY WASH FACILITIES:** Where there is the potential that an employee’s eyes and/or skin may be exposed to this product; the employer should provide an eye wash fountain and safety shower or another source of running water within the immediate work area.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Information on Basic Physical and Chemical Properties**

**Description:** White, free-flowing fine granules.

**Molecular formula:** Zn SO4 (zinc ingredient – anhydrous form)

**Molecular Weight:** 179.46 (zinc sulfate monohydrate); 161.44 (anhydrous form of zinc sulfate)

**Melting Point:** Decomposes above 500 degrees C (932 degrees F)

**Boiling Point:** 1364 F (740C)

**Vapor Pressure:** Not applicable

**Water Solubility:** 50% by weight

**Specific Gravity:** 3.25

## 10. STABILITY AND REACTIVITY

**Reactivity:** Stable under normal conditions

**Conditions to Avoid:** Avoid contact with strong oxidizers and/or excess heat. Do not allow spilled material to contaminate water sources. Keep out of reach of children.

**Incompatible Materials:** Contact with strong oxidizers may result in a fire and explosion hazard.

**Hazardous Decomposition:** Thermal decomposition products may include toxic and hazardous oxides of zinc and sulfur.

**Polymerization:** Has not been reported to occur under normal temperatures and pressures but may occur in fire conditions.

## 11. TOXICOLOGICAL INFORMATION

Toxicological information listed below is for Zinc Sulfate (anhydrous)

**Acute Toxicity:**

LD50: 1710 mg/kg, oral, rat

LD50: 245 mg/kg, oral, mouse

**Local Effects:** Solutions may be corrosive inhalation, skin, eye, ingestion.

**Eyes:** dose-420 ug: moderate (rabbit)

**Inhalation:** Inhalation of dust may cause irritation of the respiratory tract with sore throat, coughing, shortness of breath, labored breathing, pain in the nose, mouth and throat and burns of the mucous membranes. If sufficient qualities are inhaled pulmonary edema may develop, often with a latent period of 5-72 hours. The symptoms may include tightness in the chest, dyspnea, frothy sputum, cyanosis, and dizziness. Physical findings may include weak, rapid pulse, hypotension, hemconcentration, and moist rales.

**Ingestion:** Ingestion may cause a burning pain in the mouth and throat, fever, nausea, violent vomiting with severe abdominal pain, watery or bloody diarrhea, prostration, tenemus, retching, hyperglycemia, anuria, liver damage, kidney damage with albuminuria, and glycosuria, hypotension, sudden collapse and convulsions.

**Delayed/Chronic:**

**Carcinogen status:** Data not available.

**Chronic Exposure:** Depending on the concentration and duration of exposure, repeated or prolonged exposure may cause inflammatory and uncreative changes in the mouth and possibly bronchial and gastrointestinal disturbances.

## 12. ECOLOGICAL INFORMATION

**Acute Aquatic Toxicity:**

LC50 rainbow trout 4.76 MG/L/48HR, hard water/ continuous flow condition.

LC50 rainbow trout 4.6 ppm/96hr/fresh water/conditions of bioassay not specified.

**Degradability:** No data available.

**Log Bio concentration Factor (BCF):** No data available

**Log Octanol/Water partition coefficient:** No data available
13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes: Disposal should be in accordance with applicable regional, national and local laws and regulations.
Contaminated Packaging: Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

This product is not regulated in surface transportation in non-bulk quantities. The information below is for shipments exceeding 1,000 pounds in single package, container, truck, or trailer.

US DOT Shipping name: Environmentally hazardous substances, solid, n.o.s. (Zinc Sulfate), 9, UN 3077, PGIII, ERG31
US DOT Hazard Class: 9- Miscellaneous hazardous material.
US DOT Identification Number: UN 3077
US DOT Packing Group: III
US DOT Label Code: 9
Reportable Quantity: 1,000 lbs. (454kg)

15. REGULATORY INFORMATION

TSCA Status: All ingredients are listed on the TSCA Inventory of Chemical Substances.
Other TSCA Issues: None
SARA 311 Classifications: Acute Hazard.
SARA 313 Notification: There are no ingredients on the SARA 313 reporting list.
California Proposition 65: This product contains chemical known to the state of California to cause cancer and birth defects or other reproductive harm.
Canadian Inventory: All ingredients are listed on the Canadian domestic Substances List.
WHMIS: This Product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the controlled Products Regulations. Classification: D2B

16. OTHER INFORMATION

NFPA Rating: Health: 2 Flammability: 0 Reactivity: 0
Label Hazard Warning: Warning! Harmful if swallowed, affects the liver and kidneys. Causes irritation to skin, eyes and respiratory tract.
Label Precaution: Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Avoid breathing dust. Use with adequate ventilation.
Product Use: Fertilizer and animal feed ingredient additive.

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.