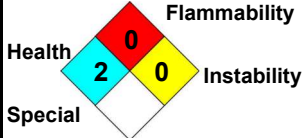

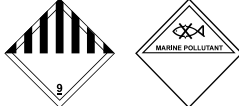



# Material Safety Data Sheet

| NFPA   | HMIS   | WHMIS  | TDG | DOT          |   |                  |   |               |   |   |  |   |
|--|--|--------|-----|--------------|---|------------------|---|---------------|---|---|--|---|
|  | <table border="1"> <tr><td>Health</td><td>2</td></tr> <tr><td>Flammability</td><td>0</td></tr> <tr><td>Physical hazards</td><td>0</td></tr> <tr><td>Suggested PPE</td><td>F</td></tr> </table> | Health | 2   | Flammability | 0 | Physical hazards | 0 | Suggested PPE | F |  | <br>See Section 14 | <br>See Section 14 |
| Health   | 2  |        |     |              |   |                  |   |               |   |   |  |   |
| Flammability   | 0  |        |     |              |   |                  |   |               |   |   |  |   |
| Physical hazards   | 0  |        |     |              |   |                  |   |               |   |   |  |   |
| Suggested PPE  | F  |        |     |              |   |                  |   |               |   |   |  |   |

## 1 . Product and Company Identification

|                      |   |  |           |
|----------------------|---|--|-----------|
| <b>Product name</b>  | Feed Grade Powder Zinc  |  |           |
| <b>Synonym</b>       | Zinc Sulfate Monohydrate  | <b>MSDS prepared by the Environment, Health &amp; Safety Department on:</b>  | 2/7/2012. |
| <b>Material uses</b> | Feed Additive   | <b>Version</b>   | 1.01      |
| <b>MSDS Number</b>   | 53487, 53495, 53508, 53509, 53516   | <b><u>In Case of Emergency</u></b>   |           |
|                      |   | <b>Transportation: 1-800-792-8311<br/>Medical: 1-888-615-0015</b>  |           |
| <b>Manufacturer</b>  | Agrium Advanced Technologies<br>Fairbury Micronutrients<br>71025 569th Avenue<br>Fairbury, Nebraska | For more information on Agrium AT or our products, please go to:<br><a href="http://www.agriumat.com">http://www.agriumat.com</a><br>or contact us at Toll-Free:800-461-6471 |           |

## 2 . Hazards Identification

|  |  |
|--|--|
| <b>Physical state</b>                          | Solid.   |
| <b>Odor</b>                                    | Odorless.  |
| <b>OSHA/HCS status</b>                         | While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product. |
| <b>Routes of entry</b>                         | Inhalation.<br>Ingestion.<br>Dermal  |
| <b><u>Potential acute health effects</u></b>   |  |
| <b>Inhalation</b>                              | May irritate the respiratory tract if inhaled.   |
| <b>Ingestion</b>                               | May be harmful if swallowed.   |
| <b>Skin</b>                                    | May cause skin irritation.   |
| <b>Eyes</b>                                    | May irritate the eyes upon contact.  |
| <b><u>Potential chronic health effects</u></b> |  |
| <b>Chronic effects</b>                         | No known significant effects or critical hazards.  |
| <b>Carcinogenicity</b>                         | No known significant effects or critical hazards.  |
| <b>Mutagenicity</b>                            | No known significant effects or critical hazards.  |
| <b>Teratogenicity</b>                          | No known significant effects or critical hazards.  |
| <b>Developmental effects</b>                   | No known significant effects or critical hazards.  |
| <b>Fertility effects</b>                       | No known significant effects or critical hazards.  |

## 2 . Hazards Identification

### Over-exposure signs/symptoms

|  |                   |
|--|-------------------|
| Inhalation                                     | No specific data. |
| Ingestion                                      | No specific data. |
| Skin   | No specific data. |
| Eyes   | No specific data. |
| Medical conditions aggravated by over-exposure | None known.       |

See toxicological information (Section 11)

## 3 . Composition / Information on Ingredients

### United States

| <u>Name</u>                                 | <u>CAS number</u> | <u>%</u> |
|---|-------------------|----------|
| Sulfuric acid, zinc salt (1:1), monohydrate | 7446-19-7         | > 90     |

### Canada

| <u>Name</u>                                 | <u>CAS number</u> | <u>%</u> |
|---|-------------------|----------|
| Sulfuric acid, zinc salt (1:1), monohydrate | 7446-19-7         | > 90     |

### Mexico

| <u>Name</u>                                 | <u>CAS number</u> | <u>UN number</u> | <u>%</u> | <u>IDLH</u> | <u>Classification</u> |          |          |                |
|---|-------------------|------------------|----------|-------------|-----------------------|----------|----------|----------------|
|   |                   |                  |          |             | <u>H</u>              | <u>F</u> | <u>R</u> | <u>Special</u> |
| Sulfuric acid, zinc salt (1:1), monohydrate | 7446-19-7         | Not available.   | > 90     | -           | 0                     | 0        | 0        |                |

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.

## 4 . First Aid Measures

|                                   |  |
|-----------------------------------|--|
| <b>Eye contact</b>                | Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention if symptoms occur.   |
| <b>Skin contact</b>               | In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.                                      |
| <b>Inhalation</b>                 | Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms occur. |
| <b>Ingestion</b>                  | Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.   |
| <b>Protection of first-aiders</b> | No action shall be taken involving any personal risk or without suitable training.   |
| <b>Notes to physician</b>         | No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.   |

## 5 . Fire-fighting Measures

|   |   |
|---|---|
| <b>Flammability of the product</b>                    | No specific fire or explosion hazard.   |
| <b><u>Extinguishing media</u></b>                     |   |
| <b>Suitable</b>                                       | Use an extinguishing agent suitable for the surrounding fire.   |
| <b>Not suitable</b>                                   | None known.   |
| <b>Special exposure hazards</b>                       | 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. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. |
| <b>Hazardous thermal decomposition products</b>       | Decomposition products may include the following materials:<br>sulfur oxides<br>metal oxide/oxides  |
| <b>Special protective equipment for fire-fighters</b> | Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.   |

## 6 . Accidental Release Measures

|                                       |   |
|---------------------------------------|---|
| <b>Personal precautions</b>           | 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. Put on appropriate personal protective equipment (see Section 8).   |
| <b>Environmental precautions</b>      | Avoid dispersal of spilled material and runoff into waterways, drains, and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers or waterways).   |
| <b><u>Methods for cleaning up</u></b> |   |
| <b>Small spill</b>                    | Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.   |
| <b>Large spill</b>                    | Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal. |

## 7 . Handling and Storage

|                 |  |
|-----------------|--|
| <b>Handling</b> | Put on appropriate personal protective equipment (see Section 8). 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. Avoid release to the environment.   |
| <b>Storage</b>  | 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. |

## 8 . Exposure Controls / Personal Protection

### Canada

| Occupational exposure limits   |           | TWA (8 hours) |                   |       | STEL (15 mins) |                   |       | Ceiling |                   |       | Notations |
|--------------------------------|-----------|---------------|-------------------|-------|----------------|-------------------|-------|---------|-------------------|-------|-----------|
| Ingredient                     | List name | ppm           | mg/m <sup>3</sup> | Other | ppm            | mg/m <sup>3</sup> | Other | ppm     | mg/m <sup>3</sup> | Other |           |
| No exposure limit value known. |           |               |                   |       |                |                   |       |         |                   |       |           |

### Consult local authorities for acceptable exposure limits.

#### Recommended monitoring procedures

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

#### Engineering measures

No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.

#### 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.

### Personal protection

#### Respiratory

Use a properly fitted, air-purifying or air-fed 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.

#### Hands

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.

#### Eyes

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to dusts.

#### Skin

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.

#### Personal protective equipment (Pictograms)



### 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.

## 9 . Physical and Chemical Properties

|                               |   |
|-------------------------------|---|
| <b>Physical state</b>         | Solid.  |
| <b>Flash point</b>            | Non-flammable.                                    |
| <b>Color</b>                  | White. [Light]                                    |
| <b>Odor</b>                   | Odorless.   |
| <b>Molecular weight</b>       | 179.47 g/mol                                      |
| <b>Molecular formula</b>      | ZnSO4.1H2O  |
| <b>Melting/freezing point</b> | 212 deg F (100 deg C)                             |
| <b>Relative density</b>       | >2.072 g/cm <sup>3</sup> < 3.54 g/cm <sup>3</sup> |
| <b>Volatility</b>             | Non-volatile.                                     |
| <b>VOC</b>                    | 0 % (w/w)   |
| <b>Solubility</b>             | Soluble in alcohol.                               |

## 10 . Stability and Reactivity

|   |  |
|---|--|
| <b>Chemical stability</b>                 | The product is stable.   |
| <b>Possibility of hazardous reactions</b> | Under normal conditions of storage and use, hazardous reactions will not occur.  |
| <b>Hazardous polymerization</b>           | Under normal conditions of storage and use, hazardous polymerization will not occur.   |
| <b>Conditions to avoid</b>                | No specific data.  |
| <b>Materials to avoid</b>                 | No specific data.  |
| <b>Hazardous decomposition products</b>   | Under normal conditions of storage and use, hazardous decomposition products should not be produced. When heated to decomposition this product emits toxic fumes of sulfur oxides and zinc oxides. |

## 11 . Toxicological Information

Canada

Acute toxicity

## 11 . Toxicological Information

Mexico

Acute toxicity

## 12 . Ecological Information

**Environmental effects**      Water polluting material. May be harmful to the environment if released in large quantities.

United States

Canada

Mexico

## 13 . Disposal Considerations

**Waste disposal**      The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. 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. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

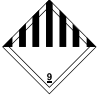

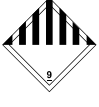



**Disposal should be in accordance with applicable regional, national and local laws and regulations.**

**Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.**

## 14 . Transport Information

| Regulatory information | UN number | Shipping name | Classes | PG* | Label | Additional information |
|------------------------|-----------|---------------|---------|-----|-------|------------------------|
|                        |           |               |         |     |       |                        |

## 14 . Transport Information

|                              |      |  |   |     |  |   |
|------------------------------|------|--|---|-----|--|---|
| <b>DOT Classification</b>    | 3077 | Environmentally Hazardous Substance; Solid; N.O.S. (Zinc Sulphate Monohydrate) | 9 | III | <br> | Regulated if greater than the Reportable Quantity: 1,000 LBS (454 KG) |
| <b>TDG Classification</b>    | 3077 | Environmentally Hazardous Substance; Solid; N.O.S. (Zinc Sulphate Monohydrate) | 9 | III | <br> | Regulated if greater than the Reportable Quantity: 1,000 LBS (454 KG) |
| <b>Mexico Classification</b> | 3077 | Environmentally Hazardous Substance; Solid; N.O.S. (Zinc Sulphate Monohydrate) | 9 | III | <br> | RQ (1,000 Lbs)  |
| PG* : Packing group          |      |  |   |     |  |   |

## 15 . Regulatory Information

### United States

**HCS Classification**

Not regulated.

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

**United States inventory (TSCA 8b):** All components are listed or exempted.

**SARA 302/304/311/312 extremely hazardous substances:** No products were found.

**SARA 302/304 emergency planning and notification:** No products were found.

**SARA 302/304/311/312 hazardous chemicals:** No products were found.

**SARA 311/312 MSDS distribution - chemical inventory - hazard identification:** No products were found.

**Clean Water Act (CWA) 307:** Sulfuric acid, zinc salt (1:1), monohydrate

**Clean Air Act (CAA) 112 accidental release prevention:** No products were found.

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

Not 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

## 15 . Regulatory Information

### State regulations

**Connecticut Carcinogen Reporting:** None of the components are listed.  
**Connecticut Hazardous Material Survey:** None of the components are listed.  
**Florida substances:** None of the components are listed.  
**Illinois Chemical Safety Act:** None of the components are listed.  
**Illinois Toxic Substances Disclosure to Employee Act:** None of the components are listed.  
**Louisiana Reporting:** None of the components are listed.  
**Louisiana Spill:** None of the components are listed.  
**Massachusetts Spill:** None of the components are listed.  
**Massachusetts Substances:** None of the components are listed.  
**Michigan Critical Material:** None of the components are listed.  
**Minnesota Hazardous Substances:** None of the components are listed.  
**New Jersey Hazardous Substances:** The following components are listed: ZINC compounds  
**New Jersey Spill:** None of the components are listed.  
**New Jersey Toxic Catastrophe Prevention Act:** None of the components are listed.  
**New York Acutely Hazardous Substances:** None of the components are listed.  
**New York Toxic Chemical Release Reporting:** None of the components are listed.  
**Pennsylvania RTK Hazardous Substances:** The following components are listed: ZINC COMPOUNDS  
**Rhode Island Hazardous Substances:** None of the components are listed.

### United States inventory (TSCA 8b)

All components are listed or exempted.

### Canada

#### WHMIS (Canada)

Not controlled under WHMIS (Canada).

#### Canadian lists

**CEPA Toxic substances:** None of the components are listed.  
**Canadian ARET:** None of the components are listed.  
**Canadian NPRI:** The following components are listed: Zinc  
**Alberta Designated Substances:** None of the components are listed.  
**Ontario Designated Substances:** None of the components are listed.  
**Quebec Designated Substances:** None of the components are listed.

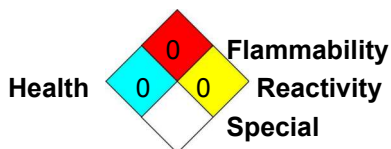
#### Canada inventory

All components are listed or exempted.

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

### Mexico

#### Classification



### EU regulations

#### Hazard symbol or symbols



#### Risk phrases

R22- Harmful if swallowed.  
R41- Risk of serious damage to eyes.  
R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.



## 15 . Regulatory Information

**Safety phrases** S2- Keep out of the reach of children.  
 S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
 S29- Do not empty into drains.  
 S39- Wear eye/face protection.  
 S46- If swallowed, seek medical advice immediately and show this container or label.  
 S61- Avoid release to the environment. Refer to special instructions/safety data sheet.

### International regulations

**International lists** **Australia inventory (AICS):** All components are listed or exempted.  
**China inventory (IECSC):** All components are listed or exempted.  
**Japan inventory:** All components are listed or exempted.  
**Korea inventory:** All components are listed or exempted.  
**New Zealand Inventory of Chemicals (NZIoC):** All components are listed or exempted.  
**Philippines inventory (PICCS):** All components are listed or exempted.

**Chemical Weapons Convention List Schedule I Chemicals** Not listed

**Chemical Weapons Convention List Schedule II Chemicals** Not listed

**Chemical Weapons Convention List Schedule III Chemicals** Not listed

## 16 . Other information

**Label requirements** NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.

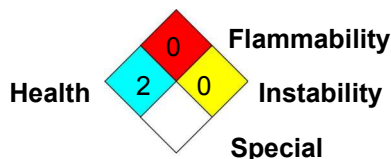
**Hazardous Material Information System (U.S.A.)**

|                         |   |
|-------------------------|---|
| <b>Health</b>           | 2 |
| <b>Flammability</b>     | 0 |
| <b>Physical hazards</b> | 0 |
|                         |   |

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material. Suggested protective clothing might not be adequate. Consult a specialist before handling this product.

**National Fire Protection Association (U.S.A.)**



## 16 . Other information

Date of issue 2/7/2012.

Version 1.01

✔ Indicates information that has changed from previously issued version.

### Notice to Reader:

The buyer assumes all risk in connection with the use of this material. The buyer assumes all responsibility for ensuring this material is used in a safe manner in compliance with applicable environmental, health and safety laws, policies and guidelines. Agrium Inc. assumes no responsibility or liability for the information supplied on this sheet, including any damages or injury caused thereby. Agrium Inc. does not warrant the fitness of this 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. The information contained in this sheet is developed from what Agrium Inc. believes to be accurate and reliable sources, and is based on the opinions and facts available on the date of preparation.