SAFETY DATA SHEET

Revision date 2015-03-03

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product name Aluminum Sulfate I. F. Hydrate

Other means of identification

Product code 3208A
Synonyms None

Recommended use of the chemical and restrictions on use

Recommended use [RU] No information available
Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier GEO Specialty Chemicals, Inc.
9213 Arch Street Pike
Little Rock, AR 72206
1-800-453-2586
Hours: Monday-Friday 9:00-5:00 CST (Central Standard Time)

Emergency telephone number

24 Hour Emergency Phone Number CHEMTREC: (800) 424-9300
Outside USA - 00 1 (703) 527-3887 collect calls accepted

Contact Point safety-data-sheet-fp@geosc.com

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

<table>
<thead>
<tr>
<th>Risk Phrase</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin corrosion/irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>Category 3</td>
</tr>
</tbody>
</table>

GHS Label elements, including precautionary statements

EMERGENCY OVERVIEW
3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>weight-%</th>
<th>TRADE SECRET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum sulfate</td>
<td>10043-01-3</td>
<td>&gt; 55%</td>
<td>--</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>&lt; 45%</td>
<td>--</td>
</tr>
</tbody>
</table>

*The exact percentage (concentration) of composition has been withheld as a trade secret*
**Eye contact**
Remove contact lenses, if worn. Immediately flush with plenty of water for at least 15 minutes, holding eyelids apart to ensure flushing of the entire surface. Washing within one minute is essential to achieve maximum effectiveness. Seek medical advice immediately.

**Skin contact**
Immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical advice/attention.

**Ingestion**
Do NOT induce vomiting. If vomiting should occur spontaneously, keep airway clear. Never give anything by mouth to an unconscious person. Get medical attention.

**Inhalation**
Remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

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**Most important symptoms and effects, both acute and delayed**

**Acute effects**
None known.

**Chronic effects**
None known.

**Indication of any immediate medical attention and special treatment needed**

**Note to physicians**
Aluminum soluble salts may cause gastroenteritis if ingested. Treatment includes the use of demulcents. Note: Consideration should be given to the possibility that overexposure to materials other than this product may have occurred. Treat symptomatically.

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### 5. FIRE-FIGHTING MEASURES

**Extinguishing media**

**Suitable extinguishing media**
Water fog, carbon dioxide, foam, dry chemical.

**Extinguishing media which must not be used for safety reasons**
No information available

**Special hazards arising from the substance or mixture**

**Special Hazard**
Under fire conditions (or at temperatures greater than 650 °C or 1202 °F), product decomposes to give off sulfur trioxide, an oxidizing agent which will support combustion. Sulfur trioxide will react with water to form sulfuric acid.

**Advice for firefighters**

**Firefighting measures**
Cool exposed containers with water spray after extinguishing fire.

**Special protective equipment for firefighters**
Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**Explosion data**

**Sensitivity to Mechanical Impact**
None.
Sensitivity to Static Discharge
None.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions
Wear suitable protective clothing and gloves.

Environmental precautions
Do not permit solutions of product into sewers or waterways.

Methods and material for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Large spills should be handled according to a predetermined plan. For assistance in developing a plan, call 1-800-453-2586. Use with adequate ventilation where dust may be generated. Ensure adequate decontamination of tools and equipment following clean-up. Sweep up or vacuum into labeled waste containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling
Keep container closed when not in use
Avoid creating dust
Do not take internally
Avoid contact with eyes, skin and clothing

Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions
Store in a cool, dry place away from ignition sources and open flame.

Incompatible products
Reacts with strong alkali to form aluminum hydroxide. Weakly corrosive to carbon steel. On contact with moisture, an acidic solution forms.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines
This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Appropriate engineering controls

Engineering controls
Local exhaust ventilation as necessary to maintain exposures to within applicable limits. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details. If there are no applicable or established exposure limit requirements or guidelines, general ventilation should be sufficient.
Individual protection measures, such as personal protective equipment

Eye/face Protection
Wear chemical splash goggles and face shield (when eye and face contact is possible due to splashing or spraying of material).

Hand Protection
Appropriate chemical resistant gloves should be worn.

Skin and body protection
Standard work clothing and work shoes.

Respiratory protection
When exposed to elevated dust levels, use NIOSH/MSHA approved respirator in accordance with OSHA Respiratory Protection Requirements under 29 CFR 1910.134.

Other personal protection data
Eyewash fountains and safety showers must be easily accessible.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks / Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>solid</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>White to light tan</td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td>crystalline</td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td>odorless</td>
<td></td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No information available</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks / Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>3.5</td>
<td>aqueous solution (1%)</td>
</tr>
<tr>
<td>Melting / freezing point</td>
<td>Loses water of hydration at 88 °C (190 °F)</td>
<td>No information available</td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
<td>No information available</td>
<td>No information available</td>
</tr>
<tr>
<td>Flash point</td>
<td>No information available</td>
<td>No information available</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No information available</td>
<td>No information available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No information available</td>
<td>No information available</td>
</tr>
<tr>
<td>Flammability Limit in Air</td>
<td>No information available</td>
<td>No information available</td>
</tr>
<tr>
<td>Upper flammability limit</td>
<td>No information available</td>
<td>No information available</td>
</tr>
<tr>
<td>Lower flammability limit</td>
<td>No information available</td>
<td>No information available</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No information available</td>
<td>No information available</td>
</tr>
<tr>
<td>Vapor density</td>
<td>No information available</td>
<td>No information available</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>No information available</td>
<td>No information available</td>
</tr>
<tr>
<td>Solubility (water)</td>
<td>87.3 g/100 g water</td>
<td>No information available</td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>No information available</td>
<td>No information available</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>No information available</td>
<td>No information available</td>
</tr>
</tbody>
</table>
Autoignition temperature: No information available  
Decomposition temperature: No information available  
Kinematic viscosity: No information available  
Dynamic viscosity: No information available  
Other information:

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>No information available</td>
<td>Bulk Density</td>
<td>65 lb/ft³</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No information available</td>
<td>Oxidizing properties</td>
<td>No information available</td>
</tr>
<tr>
<td>Softening point</td>
<td>No information available</td>
<td>Molecular weight</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Volatile organic compounds (VOCs) content</td>
<td>No information available</td>
<td>Percent Volatile, wt.%</td>
<td>No information available</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Reactivity

Reactivity
No data available.

Chemical stability

Chemical stability
Stable at ambient temperatures and atmospheric pressure.

Possibility of hazardous reactions

Possibility of hazardous reactions
None under normal processing.

Hazardous polymerization
Not anticipated under normal or recommended handling and storage conditions.

Conditions to avoid

Conditions to avoid
Avoid high temperatures greater than 650° C (1200° F) as material may decompose to form aluminum oxide and sulfur trioxide (an oxidizing agent that supports combustion).

Incompatible materials

Materials to avoid
Reacts with strong alkali to form aluminum hydroxide. Weakly corrosive to carbon steel. On contact with moisture, an acidic solution forms.

Hazardous decomposition products

Hazardous decomposition products
Thermal decomposition products include oxides of aluminum and sulfur.

11. TOXICOLOGICAL INFORMATION

Autoignition temperature: No information available  
Decomposition temperature: No information available  
Kinematic viscosity: No information available  
Dynamic viscosity: No information available  
Other information:

<table>
<thead>
<tr>
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<th>Value</th>
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<td>No information available</td>
<td>Percent Volatile, wt.%</td>
<td>No information available</td>
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</table>

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Information on likely routes of exposure

Eye contact
Concentrated solutions (over 20%) may cause severe eye damage or burns. May cause irritation and inflammation of the eye.

Skin contact
May cause skin irritation or burns if the product is wet or in the presence of perspiration.

Ingestion
May be harmful if swallowed. May cause abdominal pain, nausea, or vomiting. Concentrated solutions can cause burns of the mouth, bleeding stomach, muscle spasms and kidney injury.

Inhalation
Dust extremely irritating to respiratory tract.

Acute toxicity - Product Information

<table>
<thead>
<tr>
<th></th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral LD50</td>
<td>&gt; 2,000 (rat)</td>
<td>1930 mg/kg (Rat)</td>
<td>--</td>
</tr>
<tr>
<td>Dermal LD50</td>
<td>&gt; 5,000 mg/kg (rabbit)</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Inhalation LC50</td>
<td>No information available</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Acute toxicity - Component Information

<table>
<thead>
<tr>
<th>Component</th>
<th>weight-%</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum sulfate 10043-01-3</td>
<td>&gt; 55%</td>
<td>1930 mg/kg (Rat)</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Information on toxicological effects

Symptoms
No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation
Irritating to skin

Serious eye damage/eye irritation
Causes serious eye irritation

Sensitization
No information available

Germ cell mutagenicity
No information available

Carcinogenicity
This product does not contain any components in concentrations greater than or equal to 0.1% that are listed as known or suspected carcinogens by NTP, IARC, ACGIH, or OSHA.

Reproductive toxicity
No information available

Specific target organ toxicity - Single exposure
Irritating to respiratory system.

Specific target organ toxicity - Repeated exposure
No information available

Aspiration hazard
No information available.
Numerical measures of toxicity - Product Information

The following values are calculated based on chapter 3.1 of the GHS document

| ATEmix (oral) | 3386 mg/kg |

Other information
Conclusions are drawn from sources other than direct testing.

12. ECOLOGICAL INFORMATION

Ecotoxicity
• Harmful to aquatic life with long lasting effects

Acute aquatic toxicity - Product Information

| Fish | No information available |
| Crustacea | No information available |
| Algae/aquatic plants | No information available |

Acute aquatic toxicity - Component Information

<table>
<thead>
<tr>
<th>Component</th>
<th>weight-%</th>
<th>Algae/aquatic plants</th>
<th>Fish</th>
<th>Toxicity to daphnia and other aquatic invertebrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum sulfate 10043-01-3</td>
<td>&gt; 55%</td>
<td>--</td>
<td>LC50 (96 h) = 100 mg/L (Carassius auratus) LC50 (96 h static) = 37 mg/L (Gambusia affinis)</td>
<td>EC50 (15 min) = 136 mg/L (Daphnia magna)</td>
</tr>
</tbody>
</table>

Persistence and degradability

| Persistence and degradability | No information available |

Bioaccumulative potential

| Bioaccumulative potential | No information available |

Mobility

| Mobility | No information available |

Results of PBT and vPvB assessment

| PBT and vPvB assessment | No information available |

Other adverse effects

| Other information | No other ecological studies have been carried out on this product. |

13. DISPOSAL CONSIDERATIONS

Waste treatment methods
Disposal of wastes
Dispose of product in an approved chemical waste landfill or incinerate in accordance with applicable Federal, state and local regulations.

Contaminated packaging
Since empty containers retain product residue, follow label warnings even after container is emptied.

14. TRANSPORT INFORMATION

DOT
Regulated in quantities above RQ.

Reportable Quantity (RQ) 8500 pounds as hydrate
DOT Shipping Name > RQ UN3077, Environmentally Hazardous Substance, Solid, N.O.S. (Aluminum Sulfate, Hydrate), 9, PG III, RQ, ERG# 171

ICAO/IATA
Not regulated

IMDG
Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA (United States)
All ingredients are on the inventory or exempt from listing

Australia (AICS)
All ingredients are on the inventory or exempt from listing

Canada (DSL)
All ingredients are on the inventory or exempt from listing

Canada (NDSL)
None of the ingredients are on the inventory.

China (IECSC)
All ingredients are on the inventory or exempt from listing

EINECS (European Inventory of Existing Chemical Substances)
All ingredients are on the inventory or exempt from listing

ELINCS (European List of Notified Chemical Substances)
None of the ingredients are on the inventory.

ENC (Japan)
All ingredients are on the inventory or exempt from listing

South Korea (KECL)
All ingredients are on the inventory or exempt from listing

Philippines (PICCS)
All ingredients are on the inventory or exempt from listing

Legend
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
AICS - Australian Inventory of Chemical Substances
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
IECSC - China Inventory of Existing Chemical Substances
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCs - Japan Existing and New Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances

U.S. Federal Regulations

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302).

<table>
<thead>
<tr>
<th>Component</th>
<th>CERCLA/SARA Hazardous Substance RQ</th>
<th>CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs</th>
<th>Calculated Product RQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum sulfate</td>
<td>5000 lb final RQ; 2270 kg final RQ</td>
<td>--</td>
<td>8,500 lb as hydrate</td>
</tr>
</tbody>
</table>

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

<table>
<thead>
<tr>
<th>Component</th>
<th>CWA - Hazardous Substances</th>
<th>CWA - Reportable Quantities</th>
<th>CWA - Priority Pollutants</th>
<th>CWA - Toxic Pollutants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum sulfate</td>
<td>Present</td>
<td>5000 lb RQ</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

SARA 311/312 Hazard Categories
Acute health hazard Yes
Chronic health hazard No
Fire hazard No
Sudden release of pressure hazard No
Reactive hazard No

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

U.S. State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

| Aluminum sulfate  | Massachusetts Right to Know Law Present | Minnesota Hazardous Substance List Present | New Jersey Right to Know List sn 0068 | Pennsylvania Right to Know List Environmental hazard |

16. OTHER INFORMATION

NFPA Rating
Health - 1
Flammability - 0
Instability - 1
Special Hazard -

HMIS Rating
Health - 1
Flammability - 0
Physical hazard - 1
Personal protection - X

Product code 3208A
Revision date 2015-03-03
Revision number 1
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 a 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.

End of Safety Data Sheet