



ALUMINUM SULFATE SOLUTION

Safety Data Sheet

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product/Chemical Name: Aluminum Sulfate Solution

Chemical Family: Inorganic aluminum salt

General Use: Drinking water treatment, waste water treatment, papermaking and other manufacturing applications

Company Information:

GAC Chemical Corporation

34 Kidder Point Road

Searsport, Maine 04974 U.S.A.

Phone: 207-548-2525 FAX: 207-548-2891 Toll Free: 800-266-5155

Emergency Phone:

1-800-424-9300 Chemtrec (USA)

SECTION 2. HAZARDS IDENTIFICATION



Signal Word: WARNING

Hazard Statements: May be corrosive to metals
 Causes skin irritation
 Causes serious eye irritation

Precautionary Statements: Do not get in eyes, on skin or on clothing
 Wear gloves, eye and face protection and protective clothing
 Avoid release to the environment
 IF ON SKIN: Wash with plenty of soap and water
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 If skin irritation occurs: get medical advice or attention
 If eye irritation persists: get medical advice or attention
 Take off contaminated clothing and wash before reuse
 Collect spillage
 Store in a closed container
 Dispose of container in accordance with local, state, province and federal regulations.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance Aluminum Sulfate Solution

Chemical Name: Aluminum Sulfate CAS#: 10043-01-3 (47.0 - 48.7%)
Water CAS#: 7732-18-5 (51.3 - 53.0%)

Synonyms: Liquid Alum, Papermaker's Alum, Iron Free Alum, Clear Alum, NSF Alum

Impurities: NA. No impurities or additives which are themselves classified and which contribute to the classification of the substance.

SECTION 4. FIRST AID MEASURES

Inhalation of mist or liquid:

Remove person from source of exposure to fresh air. If breathing is difficult, administer oxygen. If not breathing, start CPR. Get medical attention immediately.

Skin contact:

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing.

If irritation or burning sensation develops get medical attention.

Eye contact:

Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Get medical attention if irritation persists. Untreated exposure may result in damage to the eyes.

Ingestion:

If fully conscious, drink as much water as can be tolerated. DO NOT induce vomiting. DO NOT give bicarbonate. Get medical attention.

Most Important Symptoms/Effects:

Inhalation:

Mists may irritate nose, throat, lungs, mucous membranes, respiratory tract. Mists may cause sore throat, coughing, sneezing, labored breathing, burning sensation. Effects will depend on concentration and length of time of exposure.

Skin contact:

May cause moderate to severe irritation. May cause redness, itching, inflammation. May cause sensitization and an allergic reaction in a small portion of individuals. Prolonged and repeated exposure may cause dermatitis.

Eye Contact:

May cause severe irritation. May cause pain, tearing, swelling, conjunctivitis, corneal damage.

Ingestion:

May cause irritation of the mouth, throat, gastrointestinal tract. May cause salivation, pain, nausea, vomiting, diarrhea.

SECTION 5. FIRE FIGHTING MEASURES

Flammability:

Product is not flammable and will not burn.

Suitable Extinguishing Media:

For fires in area use appropriate extinguishing media.

Specific Hazards Arising from the Chemical:

In a fire, dried aluminum sulfate can decompose at temperatures above 1400°F (760°C) and may release sulfur oxides which are toxic and may be flammable. Spilled liquid aluminum sulfate can cause slippery footing.

Special Protective Equipment and Precautions for Firefighters:

Wear full protective fire fighting clothing including NIOSH approved self contained breathing apparatus. Remain upwind of fire to avoid hazardous vapors and decomposition products.

SECTION 6. ACCIDENTAL RELEASE MEASURES

General:

Site specific procedures to address accidental spills are necessary as dictated by facility design, location, staffing, containment structures, and regulatory requirements. Consult engineers if needed.

Personal Precautions, Protective Equipment and Emergency Procedures:

In the event of a spill, clear unnecessary personnel from spill area. If direct contact with spilled material is likely, use personal protective equipment recommended in Section 8. Neutralization may release carbon dioxide gas (CO₂). Maintain adequate ventilation. Spilled material will be slippery.

Methods and Materials for Containment and Cleaning Up:

Shut off source of leak if safe to do so. Manage spill using containment structures or inert materials and collect for reuse. Product not reused can be neutralized using soda ash or powdered limestone. Neutralized residue can be swept up or rinsed down with water and captured using absorbent materials for disposal in accordance with local, state, province, and federal regulations. Avoid direct discharge to sewers and surface waters. Notify authorities if entry occurs.

SECTION 7. HANDLING AND STORAGE
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Incompatible Chemicals:

Avoid contact with alkalis and basic (high pH) materials.

Containment:

To minimize the possibility of a release into the environment and contact with other incompatible chemicals, storage tanks and containers should have a dedicated liquid tight secondary containment system. Consult engineers if needed.

General Hygiene:

Do not eat, drink, take medication or smoke when direct contact is possible.

Always thoroughly wash hands after leaving a work area where contact is possible or has occurred.

Storage:

Keep storage tanks and containers closed and contents protected from dust, dirt, and moisture.

Clean storage tanks on a regular schedule based on inspection and experience.

Have storage tanks, containers, and transfer systems properly labeled for contents.

Have procedures for determining product quantity in storage tanks and for accepting deliveries.

Use tanks, transfer lines, pumps valves and process instrumentation designed for this material using approved materials of construction. Some materials commonly used are stainless steel, some plastics, and FRP. Mild steel, iron and nonferrous metals will be damaged by corrosion. Consult engineers if needed.

Temperature for Storage:

Preferred storage temperature range is 4°C-43°C (40°F-110°F).

Outside of these temperature ranges optimal product stability and shelf life may be affected.

Ventilation:

No special requirements.

Personal Protection:

If direct contact with material is likely use personal protective equipment.

SECTION 8. EXPOSURE CONTROL / PERSONAL PROTECTION
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Exposure Limits

Ingredient: aluminum soluble salts

<p>OSHA PEL</p> <p>TWA STEL</p> <p>2mg/m³ as Al none est.</p>	<p>ACGIH TLV</p> <p>TWA STEL</p> <p>2mg/m³ as Al none est.</p>	<p>NIOSH TLV</p> <p>TWA STEL</p> <p>2mg/m³ as Al none est.</p>	<p>NIOSH</p> <p>IDLH</p> <p>none est.</p>
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Respiratory - Ventilation:

Local passive ventilation is typically used. Under normal conditions respiratory protective equipment is not needed. If work requires direct exposure to product mist, use appropriate, NIOSH approved respiratory protection. Consult engineers if necessary.

Eye - Skin wash:

Have appropriate eye wash and safety shower stations available in the work area.

Eyes:

Use protective eye glasses with side shields/goggles and face shield protection to prevent direct contact.

Skin:

Wear long sleeve shirt, full length trousers, and gloves. No open-toed footwear. For spill cleanup, use impervious pants, jacket, gloves and boots.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES
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Appearance: Liquid, clear to slight haze, colorless to light amber tint.

Odor: No odor

Odor Threshold: NA

pH: 2.0-2.4

Melting/Freeze point: -16°C (4°F)

Boiling point-range: 101°C-109°C (214°F- 228°F) approx.

Flash point: NA

Evaporation rate: 1 (water=1)

Flammability: Not flammable.

Upper/lower flammability limits: NA

Vapor pressure: NA

Vapor density: NA

Relative Density (Specific Gravity): 1.32-1.33 S.G. @ 15.5°C (60°F)

Water Solubility: Complete.

Partial coefficient: n-octanol/water: NA

Auto ignition: NA

Decomposition temperature: >760°C (1400°F)

Viscosity: 25 cps @ 20°C (68°F)

SECTION 10. STABILITY AND REACTIVITY

Reactivity:

No data available

Chemical Stability:

Product is chemically stable under normal ambient temperature and conditions while stored or used.

Possibility of Hazardous Reactions:

Product will not polymerize.

Conditions to Avoid:

Avoid elevated temperatures. Avoid Freezing. Keep away from incompatibles.

Incompatible Materials:

Alkalis & bases, oxidizing agents, water reactive substances, mild steel, iron, and non-ferrous metals.

Consult engineers if necessary.

Hazardous Decomposition Products:

At temperatures above 760°C (1400°F) sulfur oxide gasses are released. These gasses are toxic, corrosive and are oxidizers. Sulfur trioxide is a fire hazard.

SECTION 11. TOXICOLOGICAL INFORMATION

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

Aluminum sulfate (10043-01-3)

Oral LD50 Rat 1930 mg/kg

RTECS Acute Toxicity (selected)

The components of this material have been reviewed, and RTECS publishes the following endpoints:

Aluminum sulfate (10043-01-3)

Oral: 6207 mg/kg Oral Mouse LD50

Acute Toxicity Level

Aluminum sulfate (10043-01-3)

Slightly Toxic: ingestion

Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, or DFG.

RTECS Irritation

The components of this material have been reviewed, and RTECS publishes the following endpoints:

Aluminum sulfate (10043-01-3)

10 mg/24 hour Eyes Rabbit severe

Local Effects

Aluminum sulfate (10043-01-3)

Irritant: inhalation, skin, eye

RTECS Mutagenic

The components of this material have been reviewed, and RTECS publishes the following endpoints:

Aluminum sulfate (10043-01-3)

20 mg/L human; 20 mg/L human; 20 mg/L human; 20 mg/L human; 762 mg/kg/7 day(s) continuous rat; 762 mg/kg/7 day(s) continuous rat

RTECS Reproductive Effects

The components of this material have been reviewed, and RTECS publishes the following endpoints:

Aluminum sulfate (10043-01-3)

800 mg/kg Intraperitoneal Mouse TDLo (pregnant 10-13 day(s)); 27371 ug/kg Subcutaneous Mouse TDLo (male 30 day(s)); 27371 ug/kg Intratesticular Rat TDLo (male 1 day(s))

HEALTH EFFECTS**Inhalation - Acute Exposure**

Inhalation may cause irritation of mucous membranes with sore throat and cough due to sulfuric acid which is formed by the hydrolysis of the salt upon contact with moisture.

Inhalation - Chronic Exposure

Repeated or prolonged exposure may cause bronchial irritation, leading to nocturnal wheezing, and breathlessness. Prolonged inhalation of dusts containing high concentrations of aluminum have produced emphysema, non-nodular pulmonary fibrosis and fatalities.

Skin Contact - Acute Exposure

Aluminum sulfate hydrolyzes readily with moisture to form some sulfuric acid which may produce irritation, dermatitis and eczema. Excessive formation of sulfuric acid may produce possible burns. Aluminum sulfate may rarely cause skin sensitization.

Skin Contact - Chronic Exposure

Repeated or prolonged contact with some soluble salts of aluminum results in acid irritation from hydrolysis. A congestive, anesthetic condition of the fingers (acroanesthesia) may occur from prolonged contact. Repeated exposure may result in sensitization.

Eye Contact - Acute Exposure

May cause irritation, redness, and corneal burns due to the reaction of the compound with moisture to form sulfuric acid.

Eye Contact - Chronic Exposure

Repeated or prolonged contact with irritants may cause conjunctivitis or effects similar to those for acute exposure.

Ingestion - Acute Exposure

Ingestion of a large dose was lethal in mice. Aluminum salts, particularly concentrated solutions (20%), may produce gingival necrosis and fatal hemorrhagic gastroenteritis, in coordination, colonic contractions, evidence of nephritis and death.

Ingestion - Chronic Exposure

No data available.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity (aquatic):**Aluminum sulfate (10043-01-3)**

Fish: 96 Hr LC50 Carassius auratus: 100 mg/L; 96 Hr LC50 Gambusia affinis: 37 mg/L [static]; 14 ppm/36 hr/fundulus/fatal/fresh water; 240 ppm/48 hr/mosquito fish/TLm/water type not specified; TLm Mosquito fish, 235 ppm, 96 hours; LC50 Largemouth bass, 250 ppm, 96 hours

Invertebrate: 15 Min EC50 Daphnia magna: 136 mg/L

Persistence and Degradability:

No information available

Bioaccumulation Potential:

This product is not expected to bioaccumulate.

Mobility in Soil:

No information available.

Other Adverse Effects:

No information available

SECTION 13. DISPOSAL CONSIDERATIONS

RCRA Hazardous Waste: Not listed. Waste product may be D002 under §261.22(a)(2) due to the rate of corrosion of steel or if the pH <2.

Neutralization:

Product can be neutralized using soda ash or powdered limestone. Neutralized residue can be swept up or rinsed down with water and captured using absorbent materials for reuse or disposal in accordance with local, state, province, and federal regulations.

Contaminated Packaging:

Packaging and storage containers that cannot be thoroughly cleaned must be disposed of in accordance with local, state, province, and federal regulations.

SECTION 14. TRANSPORTATION INFORMATION

Land (DOT), Sea (IMDG), Air (ICAO/IATA)

Identification Number: UN3264

Proper Shipping Name: Corrosive Liquid, Acidic, Inorganic, N.O.S. (Aluminum Sulfate Solution)

Hazard Class: 8

Packing Group: III

Environmental Hazards: Marine pollutant: no; Hazardous substance: yes (RQ=5000lbs.)

Special Precautions: None known

SECTION 15. REGULATORY INFORMATION

RCRA Hazardous Waste: Not Listed.

Unused, un-neutralized product may be a Characteristic Waste (D002). Consult engineers if necessary.

CERCLA Hazardous Substance: Yes

CERCLA Reportable Quantity (RQ): 5000 lbs.

SARA 311/312 Categories:

Acute (immediate) health effects: Yes

Chronic (delayed) health effects: No

Sudden release of pressure hazard: No

Reactivity hazard: No

Fire hazard: No

SARA 313 Toxic Chemical Listing: Not listed

SARA Extremely Hazardous Substance (EHS): Not listed

OSHA Air (29CFR 1910.10000, Table Z-1, Z-1A): Not listed

OSHA Special Regulated Substance (29CFR 1910): Not listed

California Prop 65 Chemical: No

United States TSCA Section Inventory Status: Product exempt or listed on the TSCA Inventory.

State Regulations: State specific regulations have not been determined by GAC Chemical Corporation. Consult engineers if necessary.

SECTION 16. OTHER INFORMATION

NSF/ANSI 60 Drinking Water Treatment Chemicals:

Maximum use 150mg/L

HMIS Rating:

Health: 2

Flammability: 0

Reactivity: 0

NFPA Rating:

Health: 2

Fire: 0

Reactivity: 0

Special: NA

Preparatory Statement:

The information in this Safety Data Sheet (SDS) is correct to the best of our knowledge, information we have available, and belief as of the publication date. The information is designed solely as guidance for handling, storage, transportation, release, and disposal 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 other materials or in any process unless specified in the text.

Date Sources for the SDS:

Literature, databases, practice, publications, own tests, regulations

Revision:

February 2015 replaces all earlier

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