

MATERIAL SAFETY DATA SHEET**I - PRODUCT IDENTIFICATION**

Product: aluminum sulfate, hydrate
Synonyms: dry alum
Formula: $\text{Al}_2(\text{SO}_4)_3 \cdot 14.3\text{H}_2\text{O}$
Molecular Weight: 599.75
CAS Number: 10043-01-3

II - TRANSPORTATION DATA

U.S. Department of Transportation - 49 CFR

Proper Shipping Name: Hazardous substance, solid, n.o.s.
Hazard Class/Division Number: ORM-E
ID Number: NA 9188
Label Required: none, mark ORM-E
Emergency Telephone Number: Chemtrec 800-424-9300

III - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

<u>Chemical or Common Name</u>	<u>Percent</u>	<u>CAS Number</u>	<u>OSHA Class</u>
Aluminum sulfate, anhydrous	57.0 min	10043-01-3	Hazardous
Water		8832-18-5	Non-hazardous

IV - PHYSICAL/CHEMICAL CHARACTERISTICS

Odor: odorless
Appearance: white to tan ground crystalline solid or powder
Total acidity: 3.5
Solubility in Water: 87.3g/100g water
Melting Point: loses water of hydration at 88°C. Anhydrous salt decomposes at 650°C

V - FIRE AND EXPLOSION HAZARD DATA

Flash Point:
None
Flammable Limits
LEL: N/A
UEL: N/A
Auto-ignition Temperature:

Not applicable

Extinguishing Media:

Not combustible. Use appropriate extinguishing media for material that is supplying fuel. Use water spray to cool the surrounding area and to maintain fire temperature below decomposition temperature

Special Fire-fighting Procedures:

Wear NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing. Dike area to prevent runoff and contamination of water source

Unusual Explosion Hazards:

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

VI - REACTIVITY DATA

Stability:

Stable at ambient temperatures and atmospheric pressure. At temperatures greater than 650°C, product decomposes to form aluminum oxide and sulfur trioxide.

Conditions to Avoid:

Protect from high temperatures at or near the decomposition temperature

Incompatibility:

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

Hazardous Decomposition or By-Products:

Thermal decomposition products include aluminum oxide and sulfur oxides

Hazardous Polymerization:

May Occur Will Not Occur

VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps To Be Taken In Case Material Is Spilled Or Released:

To the extent possible, clean up spillage using shovels, sweeping, or vacuuming. Stand upwind if possible. Avoid dust generation. Place in appropriate containers for disposal. Residual spillage that cannot be removed by shoveling should be cleaned from hard surfaces as appropriate.

If spilled on the ground, the affected area should be scraped clean and the material placed in an appropriate container for disposal. Do not flush material to public sewer systems or any waterways. Wear appropriate protective clothing to public sewer systems or any waterways. Wear appropriate protective clothing and equipment during clean up activities. Ensure adequate decontamination of tools and equipment following clean up.

Large spills should be handled according to a predetermined plan.

Waste Disposal Method:

Dispose of in accordance with local, state and federal regulations

Precautions to Be Taken in Handling and Storage:

Do not breathe dusts. Do not swallow. Do not get in eyes, on skin, or on clothing.

Containers should be stored in a cool, dry area in tightly closed containers

VIII - HEALTH HAZARD DATA

Warning Statement:

WARNING! CAUSES SKIN AND EYE IRRITATION

Avoid contact with skin and eyes. Wash thoroughly after handling. Store in a cool, dry place. Avoid breathing dust.

NFPA-HMIS Ratings:

Health: 1
Flammability: 0
Reactivity: 1

SARA Title III Classification:

Immediate Health: yes
Delayed Health: no
Fire: no
Sudden release of pressure: no
Reactive: no

Exposure Limits:

<u>Chemical Name</u>	<u>ACGIH (TLV)</u>	<u>OSHA (PEL)</u>
Aluminum, soluble salts, as Al	2 mg/m ³	2 mg/m ³

Medical Conditions Aggravated By Exposure:

Skin irritation may be aggravated in persons with existing skin lesions. Breathing of dust or sprays (mists) of solutions may aggravate acute or chronic asthma and other chronic pulmonary disease

Effects of Single Exposure to Material:

Ingestion: may cause abdominal pain, nausea, vomiting. Concentrated solutions (over 20%) can cause burns of the mouth, bleeding stomach incoordination, muscle spasms and kidney injury

Inhalation: dusts are severely irritating to the mucous membranes and respiratory tract

Skin Contact: no information available

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

Effects of Repeated Exposure:

No evidence of additional adverse effects from available information

Other Effects of Over Exposure:

No evidence of additional adverse effects from available information

Emergency and First Aid Procedures:

Remove the patient from the immediate source of exposure and assure that the individual is breathing. If not breathing, use artificial respiration or cardiopulmonary resuscitation. GET MEDICAL ATTENTION

Ingestion: if patient is conscious and alert, give two or more glasses of water or milk to drink.

Inhalation: remove patient to fresh air. If not breathing administer cardiopulmonary resuscitation or artificial respiration. If breathing is difficult or irritation develops, GET MEDICAL ATTENTION

Skin Contact: immediately wash skin with soap and plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing separately before reuse

Eye Contact: in case of contact, immediately flush eyes with plenty of water for at least 15 minutes using an eyewash fountain if available. Lift upper and lower lids and rinse well under them. GET MEDICAL ATTENTION, preferably and OPHTHALMOLOGIST.

Notes to Physician: all treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Aluminum soluble salts may cause gastroenteritis if ingested. Treatment includes the use of demulcents.

IX - CONTROL MEASURES

Protective Equipment should be used During the Following Procedures:

Manufacture or formulation of this product

Repair and maintenance of contaminated equipment

Clean up of leaks and spills

Any activity that may result in exposures to concentrations that exceed exposure limits

Exposure Control/Personal Protection:

Respiratory: use NIOSH/MSHA approved respirator suitable for protection from acid dusts and mists if concentration exceeds suggested exposure limits. Use positive pressure supplied air or self-contained breathing apparatus for emergency or other conditions where a higher level of protection is required

Ventilation: provide adequate ventilation. Use local exhaust as needed to maintain airborne exposure below control limits

Skin: long-sleeved clothing, rubber gloves and boots

Eye: chemical safety goggles

Other: maintain a sink, safety shower and eyewash fountain in the work area. Have oxygen readily available

X - TOXICOLOGICAL INFORMATION

Oral LD50 rat: >2000 mg/kg body weight
Dermal LD50 rabbit: >5000 mg/kg body weight
Inhalation LC50 rat: no information available
Skin Effects rabbit: non-irritating
Eye effects rabbit: severe irritation

XI – REGULATORY INFORMATION

TSCA Inventory Status:

This product is listed on the TSCA inventory
Reportable Quantity under 49 CFR 172.01 Appendix:
5,000 lb. Aluminum sulfate

SARA Title III

Section 302 Extremely Hazardous Substance List: not listed
Section 313 Toxic Chemicals: not listed

Reportable Quantity under US EPA CERCLA:
5,000 lb. Aluminum Sulfate

RCRA Hazardous Waste:
Not listed

State/International Right-to-Know Regulations:

California: not listed
Connecticut: survey
Florida: not listed
Illinois: chemical list
Louisiana: spill list, RQ=5,000 lb.
Massachusetts: RTK, Spill, RQ=100 lb.
New Jersey: ID#:0068, RTK, Tax
New York: Spill, RQ=5,000 lb. (A); 100 lb. (L/W)
Pennsylvania: RTK, ENV
Rhode Island: not listed
Canada: list, 1% No. 9078

XII – CARCINOGENICITY INFORMATION

This product does not contain any ingredient designated by IARC, NTP, ACGIH, or OSHA as a probable human carcinogen

XIII - ADDITIONAL INFORMATION

ALWAYS COMPLY WITH ALL APPLICABLE INTERNATIONAL, FEDERAL, STATE AND LOCAL REGULATIONS REGARDING THE TRANSPORTATION, STORAGE, USE AND DISPOSAL OF THIS CHEMICAL.

Due to the changing nature of regulatory requirements, the REGULATORY INFORMATION listed in Section XI of this document should NOT be considered all-inclusive or authoritative. International, Federal, State and Local regulations should be consulted to determine compliance with all required reporting requirements.

The information in this MSDS was obtained from sources which we believe are reliable. **HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, REGARDING ITS CORRECTNESS.** The conditions or methods of handling, storage, use, and disposal of the product are beyond our control and may be beyond our knowledge. **FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.** This MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

Revised: 30-Jun-98