An ISO 9001:2000 Certified Company

THE POWER OF THREE[3]
PHARMCO-AAPER
AND COMMERCIAL ALCOHOLS

Product Information (203) 740-3471 / Emergency Assistance CHEMTREC 1-800-424-9300

MATERIAL SAFETY DATA SHEETS

SECTION I
PRODUCT AND COMPANY IDENTIFICATION

Product: Aluminum sulfate USP & Purified
This MSDS is valid for all grades and catalog #'s

Synonyms: Dialuminum trisulate hydrate; Aluminum sulfate hydrate; Aluminum sulfate (2:3) hydrate; Aluminum trisulfate hydrate; Cake alum hydrate; Dialuminum sulfate hydrate; Patent alum hydrate
Formula: Al2(SO4)3.xH2O or Al.3/2 H2SO4.XH2
Manufacturer: PHARMCO-AAPER
58 Vale Road
Brookfield, Connecticut 06804, USA
Phone (203) 740-3471
Fax (203) 740-3481

1101 Isaac Shelby Drive
Shelbyville, KY 40065
Phone (502) 633-0650
Fax (502) 633-0685

Emergency Contact:
CHEMTREC 1-800-424-9300

SECTION II
COMPOSITION /INFORMATION ON INGREDIENTS

% by weight	Material	CAS #	TLV/PEL	LC50/LD50
17927-65-0	Aluminum sulfate hydrate	100	TWA: 0.14	ORAL LD50): Acute: >9000 mg/kg [Mouse]. >9000 mg/kg [Rat]. 6307 mg/kg [Rat].

SECTION III
HAZARDS IDENTIFICATION

Potential Acute Health Effects: Hazardous in case of skin contact (irritant), of eye Health Effects contact (irritant), of inhalation (lung irritant). Slightly hazardous in case of ingestion.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Not available
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Not available.
The substance may be toxic to mucous membranes, skin, eyes. Repeated or prolonged exposure to the substance can produce target organs damage.

SECTION IV
FIRST AID

Obtain medical attention for all cases of over-exposure.
Eye Contact: Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.
Skin Contact: In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Hazardous Skin Contact: Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Hazardous Inhalation: Not available.
Ingestion: Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.
Hazardous Ingestion: Not available

SECTION V
FIRE FIGHTING MEASURES

Fire:
Flammability of the Product: Non-flammable
Auto-Ignition temperature: Not applicable.
Flash point: Not applicable.
Flammable limits: Not applicable.
Products of Combustion: Not applicable.
Fire Hazards: Not applicable.
Explosion Hazards: Risks of explosion of the product in presence of mechanical impact: Not Available. Risks of explosion of the product in presence of static discharge: not available.
Fire Extinguishing Media: Not applicable.
Special Information: It may burn, but it will not ignite. Fire may produce irritating, corrosive and/or toxic gases.

SECTION VI
SPILL/ACCIDENTAL RELEASE MEASURES

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.
Large Spill: Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

SECTION VII
HANDLING AND STORAGE

Precautions: Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.
Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

SECTION VIII
EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Personal Protection: Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.
Personal Protection in Case of a Large Spill: Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
Exposure Limits: TWA: 2 (mg (Al)/m3) from ACGIH (TLV) [United States] TWA: 2 (mg (Al)/m3) [United Kingdom (UK)]

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

Physical State/Appearance: Solid. (Crystals solid.)
Molecular Weight: 342.14 g/mole + xH2O
Odor: Odorless
Taste: Sweet. Mildly Astringent.
Color: White
pH (1% Solution in Water): Not available.
Boiling Point: Not available.
Melting Point: Not available.
Critical Temperature: Not available.
Specific Gravity: Not available.
Vapor Pressure (mm Hg): Not applicable
Vapor Density (Air=1): Not available.
Volatility: Not available.
Odor Threshold: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Water/Oil Dist. Coefficient: Not available.
Ionicity (in water): Not available.
Dispersion Properties: See solubility in water
Solubility: Easily soluble in hot water. Soluble in cold water. It will hydrolyze in water to form sulfuric acid.

SECTION X
STABILITY/REACTIVITY INFORMATION

Stability: The product is stable
Instability Temperature: Not available.
Conditions of Instability: Incompatible materials, moisture
Incompatibilities: Reactive with oxidizing agents
Corrosivity: Non-corrosive in presence of glass.
Special Information: It melts when gradually heated; at 250°C it loses its water. May corrode metals in the presence of moisture

SECTION XI
TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation. Ingestion.
Toxicity to Animals: Acute oral toxicity (LD50): 6307 mg/kg [Rat].
Chronic Effects on Humans: May cause damage to the following organs: mucous membranes, skin, eyes.
Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant), of inhalation (lung irritant). Slightly hazardous in case if ingestion.
Special Information on Toxicity to Animals: Not available.
Special Information on Chronic Effects/Toxicity on Humans: May affect genetic material (mutagenic). May cause adverse reproductive effects based on animal test data. Acute Potential Health Effects: Skin: Causes skin irritation, particularly if moisture is present. Symptoms include redness, itching, and pain Eyes: Causes eye irritation. Symptoms include redness and pain. Inhalation: Causes mouth and respiratory tract irritation. Symptoms may include coughing, shortness of breath. It may cause airway constriction in rare instances. Symptoms are usually transient. Ingestion: May cause irritation to the gastrointestinal tract. Symptoms may include cramping, nausea, vomiting, diarrhea. Ingestion also produces a feeling of dryness and puckering of the mucous membranes of the mouth and throat. It may affect behavior/central nervous system and cause ataxia and seizures. High blood concentrations of aluminum may cause aluminum-induced encephalopathy with confusion, lethargy, respiratory depression, cognitive impairment, dysarthria, asterixis, seizure, coma. It may also affect the liver. Individuals with renal failure may more readily accumulate toxic levels of aluminum which can result in encephalopathy and seizures. Chronic Potential Health Effects: Skin: Repeated or prolonged skin contact may cause irritation, especially if moisture is present. Ingestion: Repeated or prolonged ingestion may affect metabolism, urinary system, blood

(changes in serum composition - e.g. TP, bilirubin, cholesterol), skeletal system, and brain (degenerative changes). High blood concentrations of aluminum may cause aluminum to be deposited in the bones. Accumulation of aluminum in the bone appears to reduce the positive effects of vitamin D and may prevent calcium deposition into the bones. The prevention of calcium deposition leads to the return of the calcium to the blood. This may cause bone/skeletal abnormalities, osteomalacia, painful joints. The elevated serum calcium levels in turn inhibit the release of parathyroid hormone by the parathyroid glands.

SECTION XII
ECOLOGICAL INFORMATION

Ecotoxicity: Not available.
BOD5 and COD: Not available.
Products of Biodegradation: Possibly hazardous short-term degradation products are not likely. However, long-term degradation products may arise.
Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.
Special Information on Products of Biodegradation: Not available.

SECTION XIII
DISPOSAL CONSIDERATIONS

Waste Disposal: Recycle to process, if possible. Consult your local or regional authorities.

SECTION XIV
TRANSPORTATION INFORMATION

DOT Classification: DOT Not a DOT controlled material (United States).
UN: Not applicable.
Special Provisions for Transport: Not applicable.

SECTION XV
REGULATORY INFORMATION

Federal and State Regulations: Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312). Components present in this product at a level which could require reporting under the statute are: **NONE**

Superfund Amendments and Reauthorization Act of (SARA) Title III requires submission of annual report release of toxic chemicals that appear in 40 CFR 372 (used for SARA 313). This information must be included in all MSDSs that are copied and distributed for this material. Components present in this product at a level which could require reporting under the statute are: **NONE**

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.

California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

Other Classifications:

WHMIS (Canada): CLASS D-2B: Material causing other toxic
Classification (Canada) effects (TOXIC). Aluminum Sulfate anhydrous (CAS no. 10043-01-3) is on the Canadian DSL. Aluminum Sulfate hydrate (Cas no. 17927-65-0) is not on the Canadian DSL.

DSCL (EEC): R36/37/38- Irritating to eyes, respiratorysystem and skin.

Protective Equipment: Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

References:
The Sigma-Aldrich Library of Chemical Safety Data, Edition II.
SAX, N.I. Dangerous Properties of Indutrial Materials.
Toronto, Van Nostrand Reinold, 6e ed. 1984.
Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed.,
New York N.Y., Van Nostrand Reinold, 1987.
Other Special Considerations: Not available.