ASTRO PRODUCT CODE 9004000

Holland Company

LIQUID ALUMINUM SULFATE

Aluminum Sulfate Hydrate

Safety Data Sheet

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product/Chemical Name: Liquid Aluminum Sulfate Hydrate
Chemical Family: Inorganic aluminum salt
General use: Water treatment and industrial applications

Company Information:
Holland Company, Inc.
153 Howland Avenue
Adams, MA 01220 U.S.A.
Phone: 413-743-1292 FAX: 413-743-1298

Emergency Phone:
1-800-424-9300 Chemtrac (USA)
1-613-996-6666 or Cell *666 CANTUTEC (Canada)

SECTION 2. HAZARDS IDENTIFICATION

WARNING - IRRITANT
AVOID CONTACT

Hazard Statements
Harmful if ingested.
Contact with eyes may result in damage.
Irritating to skin and eyes.
Mist is irritating to respiratory system.

Precautionary Statements
Avoid direct contact.
Use protective equipment if direct contact is possible.
Wash hands thoroughly after contact.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance
Chemical name: Aluminum soluble salts (liquid)
Name: Liquid Aluminum Sulfate Hydrate / Synonyms: Liquid Alum, Basic Alum, Filter Alum
CAS#: 17927-65-0
Impurities: NA. No impurities or additives which are themselves classified and which contribute to the classification of this substance.

SECTION 4. FIRST AID MEASURES

Inhalation of mist or liquid:
Remove from continued exposure.
Get medical attention if difficulty with breathing or uncontrolled coughing occurs.
Skin contact:
Remove contaminated clothing - footwear and wash skin with water.
If irritation develops get medical attention. Areas on skin with cuts /abrasions may sting until washed.
Eye contact:
An irritating sensation will occur.
Immediately rinse eyes with water for an extended period.
If irritation persists get medical attention. Untreated exposure may result in damage to the eyes.
Ingestion:
Spontaneous vomiting may occur.
Do not actively induce vomiting.
Rinse mouth and drink water.
Get medical attention.

SECTION 5. FIRE FIGHTING MEASURES

Flammability:
Product is not flammable and will not burn.
Controls:
To maintain integrity use water to keep product storage containers and transfer systems cool.
If possible remove portable product storage containers from areas under fire threat.
Hazards:
In a fire dried product can decompose at elevated temperatures (>650C / >1202F) resulting in the formation of oxides of sulfur fumes. Exposure to products of decomposition during a fire may be hazardous to health. Stay up wind and avoid low areas.
Special equipment:
In case of possible exposure to products of decomposition use appropriate self-contained or other approved respiratory protection. Consult engineers if necessary.
Mechanical impact:
Not sensitive.
Static discharge:
Not sensitive.

SECTION 6. ACCIDENTIAL RELEASE MEASURES

General:
Site specific procedures to address accidental spills will be necessary as dictated by facility design, location, staffing, containment structures, and regulatory requirements. Consult engineers if needed.
Personal protection:
In the event of a spill clear unnecessary staff from spill area.
If direct contact with spilled material is likely use protective equipment.
Small spills:
Manage spill using containment structures or inert materials and collect for reuse.
Product not reused can be neutralized and converted to aluminum hydroxide using a mild alkali such as calcium carbonate (agricultural lime), soda ash or sodium bicarbonate. 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. Consult engineers if needed.
Large spills:
Manage spill using containment structures or inert materials and collect for reuse.
Product not reused can be neutralized and converted to aluminum hydroxide using a mild alkali such as calcium carbonate (agricultural lime), soda ash or sodium bicarbonate.
Caution: When neutralizing large spills CO_2 will be created and can be a breathing hazard. Take steps to provide adequate ventilation. 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. Consult engineers if needed.

SECTION 7. HANDLING AND STORAGE

Incompatible Chemicals:
Avoid contact with sodium hypochlorite (bleach), chlorites, sulfites, strong bases, aqua ammonia.
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.
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: As with all chemicals, clean storage containers 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 made using approved materials of construction. Some materials commonly used are FRP, plastic, Teflon®, and Stainless Steel alloys. Will corrode common metals such as steel, iron, copper, and aluminum. Consult engineers if needed.
Temperature for storage: Preferred storage temperature range is 7C-38C (45F-100F).
Outside of these temperature ranges product shelf life may be affected.
Ventilation: No special requirements.
Personal protection: If direct contact with material is likely use protective equipment.

SECTION 8. EXPOSURE CONTROL / PERSONNAL PROTECTION

Exposure Limits

Ingredient: aluminum soluble salts

OSHA PEL		ACGIH TLV		ACGIH TLV		NIOSH
TWA	ST	TWA	STEL	TWA	STEL	IDLH
2mg/m^3 as Al	none est.	2mg/m^3 as Al	none est.	2mg/m^3 as Al	none est.	none est.

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, approved respiratory protection.
Consult engineers if necessary.
Eye – Skin wash: Have an appropriate eye wash and safety shower stations available in the work area.
Eyes: Use protective eye glasses-goggles and face shield protection to prevent direct contact.
Skin: Use impervious gloves and foot covering. Wear long sleeve shirts and full length trousers.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Liquid clear to slight haze, amber to colorless.
Flammability: Not flammable.
Upper/lower flammability limits: NA
Auto ignition: NA
Flash point: NA
Odor: Not significant.
Vapor density: NA
pH: >2.0 @ 25C (77F) liquid as is basis / Typical: 2.2-2.5
Density: 1.30-1.35 S.G. @ 21C (70F)
Melting/Freeze point: -16C (4F) + -
Boiling point-range: > 100C (212 F)
Water Solubility: Complete.
Evaporation rate: NA
Partial coefficient: n-octanol/water; NA, inorganic compound column 2 of REACH Annex VII.
Decomposition temperature: >650C (>1202F)
Viscosity: 20-30 centipoise/mPa.s @ 23C (73F)
VOC: 0.0

SECTION 10. STABILITY AND REACTIVITY

Reactivity: Not reactive
Chemical stability:
Product is chemically stable under normal ambient temperature and conditions while stored or used.
Conditions to avoid: Do not freeze**.** Do not exceed 650C (1202F)
Materials to avoid: Chlorite, hypochlorite, sulfites, strong bases, common metals.
Hazardous reactions: Contact with strong bases may result in exothermic reactions.
Hazardous decomposition products:
Thermal decomposition of dried product can release irritating fumes.

SECTION 11. TOXICOLOGY INFORMATION

Toxicity:
Low order of acute toxicity
Oral (ingestion) estimate:
LD50/Oral Rat >2,000mg/kg (as aluminum)
Inhalation estimate:
LC50/Inhalation rat >5.6mg/l (as aluminum)
Dermal estimate:
LD50/dermal: >2,000mg/kg (as aluminum)
Effects of exposure
Skin: Repeated contact may dry and irritate skin.
Eyes: Will cause irritation, untreated exposure may result in damage to the eye.
Respiratory: Inhalation of liquid or mist may cause bronchial / lung irritation and coughing.
Mucous membranes: May cause irritation.
Ingestion: May cause vomiting, pain and discomfort to mouth, throat, and stomach.
Sensitization: Not sensitizing
Carcinogenicity: NTP: Not listed. IARC: Not listed. OSHA: Not listed.
Reproductive Toxicity, Mutagenic or teratogenic effects:
No known reproductive toxicity, mutagenic or teratogenic effects in animal experiments are known.

SECTION 12. ECOLOGICAL INFORMATION

Aquatic toxicity: Material not neutralized may exhibit toxicity to some aquatic organisms in waters having a pH of <5.5 or >8.5.
With preapproval; Federal, State, and EU regulators allow the direct application of aluminum salts into surface waters such as lakes, ponds, and streams for beneficial use in:
Phosphorus inactivation.
Cyanobacteria (Blue-Green Algae) control.
Turbidity reduction for improved water clarity.
Reported at the environmentally relevant pH range of 5.5-8.5 the solubility of aluminum is low. Aluminum salts dissociate with water resulting in rapid formation and precipitation of aluminum hydroxides. Aluminum salts must not be introduced into lakes or rivers in an uncontrolled way. In aquatic environments at a pH <5.5 and >8.5 the direct addition of aluminum salts may result in soluble aluminum, and until a pH range of 5.5-8.5 is reached could demonstrate toxicity and become harmful to some aquatic organisms.
For Aluminum (read across analogy PACL data)**:**
LC50/96h/Danio rerio guideline 203: >1,000 mg/l as Al
EC50/water flea/semi static test guideline 202: 98mg/l as Al
Toxicity to other organisms: No data available
Bioaccumulation potential: This product is not expected to bioaccumulate.
Octanol-water coefficient: NA, inorganic compound.
Biodegradability: Not applicable to inorganic substances.
Chemical degradability: In water at pH range of 5.5-8.5 precipitates of aluminum hydroxide are formed.
Mobility in Soil: No data available.

SECTION 13. DISPOSAL CONSIDERATIONS

RCRA Hazardous waste: Unused material is not listed as a hazardous waste.
Consult engineers if necessary.
Neutralization:
Product can be neutralized and converted to aluminum hydroxide using a mild alkali such as calcium carbonate (agricultural lime), soda ash or sodium bicarbonate. 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. Consult engineers if necessary.
Special precautions: None known
Container reuse:
Packaging and storage containers that cannot be thoroughly cleaned must be disposed of in accordance with local, state, province, and federal regulations. Consult engineers if necessary.

SECTION 14. TRANSPORTATION INFORMATION

Land (DOT), Sea (IMDG), Air (ICAO/IATA)
UN number: UN3082
Shipping name: Environmentally Hazardous substance (aluminum sulfate solution) N.O.S.
Hazard class: 9
Packing group: III
Environmental hazards: Not a marine pollutant
Special precautions: None known

SECTION 15. REGULATORY INFORMATION

RCRA Hazardous waste: Not Listed. Consult engineers if necessary.
CERCLA Hazardous substance: Not listed CWA, Sec.311 (b) (4)
CERCLA Reportable Quantity (RQ): 5,000lbs as $Al_2(SO_4)_3$ / anhydrous, containing 29.8% Al_2O_3 which is equivalent to 1,600 gallons of liquid aluminum sulfate hydrate (8.3% Al_2O_3).
SARA 311/312 Categories: Acute (immediate) health effects
Chronic (delayed) health effects: No
Sudden release of pressure hazard: No
Reactivity 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
WHMIS: E corrosive
United States TSCA Section Inventory Status: Product exempt or listed on the TSCA Inventory.
Canada CEPA / Canadian Domestic Substances List (DSL):
All components of this product are included on the Domestic Substance List (DSL) or are not required to be listed.
State - Province regulations: State and Province specific regulations have not been determined by the Holland Company. Consult engineers if necessary.
Inventories: Chinese, Korean (ECL), Philippines (PICCS), Japanese (ENCS), European (EINECS), NZ.

SECTION 16. OTHER INFORMATION

NSF / ANSI 60 Drinking Water Treatment Chemicals:
Maximum use 150mg/L

HMIS Rating:
Health: 1
Flammability: 0
Reactivity: 0
NFPA Rating:
Health: 1
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. Reference OSHA guidance document 3695-03-2014 information for SDS preparation.

Date Sources for the SDS:
Literature, databases, experience and practice, publications, own tests, regulations.

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