

MATERIAL SAFETY DATA SHEET**Aluminum Sulphate Solution****Section 01 - Product And Company Information**

Product Identifier Aluminium sulphate solution

Product Use Coagulating agent in municipal and industrial water and wastewater treatment, additive in papermaking.

Supplier Name ClearTech Industries Inc.
1500 Quebec Avenue
Saskatoon, SK. Canada
S7K 1V7

Prepared By..... ClearTech Industries Inc. Technical Department
Phone: (306)664-2522

Preparation Date..... October 25, 2012

24-Hour Emergency Phone..... 306-664-2522

**Section 02 - Composition / Information on Ingredients**

Hazardous Ingredients..... Aluminum sulphate hydrate 45-55%

CAS Number..... Aluminum sulphate hydrate 16828-12-9

Synonym (s)..... Liquid alum; aluminum sulfate solution; papermaker's alum; sulphuric acid, aluminum salt.

Section 03 - Hazard Identification

Inhalation..... Inhalation of mists can be irritating to the respiratory tract and lungs.



- Skin Contact / Absorption**..... Mild to moderate irritation can occur. Aluminum is very poorly absorbed through the skin and toxic effects would not be expected following short-term skin contact.
- Eye Contact**..... May result in mild to moderate irritation to eyes.
- Ingestion**..... Amounts ingested incidental to industrial handling are not likely to cause injury. Large amounts may cause abdominal pain, nausea, vomiting. Can cause burns of the mouth, bleeding stomach, incoordination, muscle spasms, and kidney injury.
- Exposure Limits**..... ACGIH/TLV-TWA= 2mg/m³(Soluble Aluminum Salts)
OSHA/PEL-TWA= 2mg/m³(Soluble Aluminum Salts)

Section 04 - First Aid Measures

- Inhalation**..... Remove victim to fresh air. Give artificial respiration only if breathing has stopped. If breathing is difficult, give oxygen. Seek immediate medical attention.
- Skin Contact / Absorption**..... Remove contaminated clothing. Wash affected area with soap and water. Seek medical attention if irritation occurs or persists.
- Eye Contact**..... Flush immediately with water for at least 20 minutes. Forcibly hold eyelids apart to ensure complete irrigation of eye tissue. Seek immediate medical attention.
- Ingestion**..... Do not induce vomiting. If vomiting occurs, lean victim forward to prevent breathing in vomitus. Give large amounts of water. Do not give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention.
- Additional Information**..... Not available

Section 05 - Fire Fighting Measures

- Conditions of Flammability**..... Non-flammable
- Means of Extinction**..... Product itself does not burn. However, decomposition product sulfur trioxide will react with water to form sulfuric acid. Use appropriate extinguishing agent.
- Flash Point**..... Not applicable



- Auto-ignition Temperature**..... Not applicable
- Upper Flammable Limit** Not applicable
- Lower Flammable Limit**..... Not applicable
- Hazardous Combustible Products**... Under fire conditions (or at temperatures greater than 650°C), product decomposes to give off sulfur trioxide, an oxidizing agent which will support combustion.
- Special Fire Fighting Procedures**..... Wear NIOSH-approved self-contained breathing apparatus and protective clothing.
- Explosion Hazards**..... Liquid alum may react with some metals, to give flammable, potentially explosive hydrogen gas. Hydrogen gas can accumulate to explosive concentrations inside confined spaces. Follow appropriate NFPA codes.

Section 06 - Accidental Release Measures

- Leak / Spill**..... Wear appropriate personal protective equipment. Ventilate area. Stop or reduce leak if safe to do so. Prevent material from entering sewers. Cover spill with dry earth, sand or other non-combustible material.
- Deactivating Materials**..... Lime, limestone, soda ash, sodium bicarbonate, dilute sodium hydroxide or dilute aqua ammonia.

Section 07 - Handling and Storage

- Handling Procedures**..... Use proper equipment for lifting and transporting all containers. Use sensible industrial hygiene and housekeeping practices. Wash thoroughly after handling. Avoid all situations that could lead to harmful exposure.
- Storage Requirements**..... Store in a cool, dry, well-ventilated place. Keep container tightly closed, and away from incompatible materials. Store at temperatures below 40°C and above 0°C.

Section 08 - Personal Protection and Exposure Controls

Protective Equipment

- Eyes**..... Chemical goggles, full-face shield, or a full-face respirator is to be worn at all times when product is handled. Contact lenses should not be worn; they may contribute to severe eye injury.



- Respiratory**..... A NIOSH/MSHA approved air-purifying respirator equipped with acid gas/fume, mist cartridges for concentrations up to 20 mg/m³. An air-supplied respirator if concentrations are higher or unknown.
- Gloves**..... Impervious gloves of chemically resistant material (rubber or PVC) should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.
- Clothing**..... Body suits, aprons, and/or coveralls of chemical resistant material should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.
- Footwear**..... Impervious boots of chemically resistant material should be worn at all times.

Engineering Controls

- Ventilation Requirements**..... Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions should be provided. Supply sufficient replacement air to make up for air removed by exhaust systems.
- Other**..... Emergency shower and eyewash should be in close proximity.

Section 09 - Physical and Chemical Properties

- Physical State**..... Liquid
- Odor and Appearance**..... Pale straw coloured, clear odourless liquid.
- Odor Threshold**..... Not available
- Specific Gravity (Water=1)**..... 1.335
- Vapor Pressure (mm Hg, 20C)**..... Not available
- Vapor Density (Air=1)**..... Not available
- Evaporation Rate**..... Not available
- Boiling Point**..... 101°C
- Freeze/Melting Point**..... -16°C
- pH**..... 1.9-2.3



Water/Oil Distribution Coefficient.... Not available
Bulk Density..... Not available
% Volatiles by Volume..... Not available
Solubility in Water..... Completely miscible
Molecular Formula..... $\text{Al}_2(\text{SO}_4)_3 \cdot 14\text{H}_2\text{O}$
Molecular Weight..... 594.14

Section 10 - Stability and Reactivity

Stability..... Stable under normal conditions.
Incompatibility..... Corrosive to carbon steel, aluminum, and zinc. Reacts with strong bases to form aluminum hydroxide.
Hazardous Products of Decomposition.. May react with many metals including carbon steel and aluminum to form flammable gases including sulphur oxides and hydrogen. Liquid alum is stable below 60°C.
Polymerization..... Will not occur

Section 11 - Toxicological Information

Irritancy..... Corrosive
Sensitization..... Not available
Chronic/Acute Effects..... Skin irritation may be aggravated in individuals with existing skin lesions. Breathing of vapors or sprays (mists) may aggravate acute or chronic asthma and chronic pulmonary disease such as emphysema and bronchitis.
Synergistic Materials..... Not available
Animal Toxicity Data..... $\text{LD}_{50}(\text{mouse, oral}) = >9000 \text{ mg/kg}$
 $\text{LD}_{50}(\text{rat, oral}) = >9000 \text{ mg/kg}$
Carcinogenicity..... Sulfuric acid mist: Classified 1 (Proven for humans) by IARC, 1 (Known to be human carcinogens) by NTP
Sulfuric acid mist: Classified A2 (Suspected for humans) by ACGIH



Reproductive Toxicity..... Not available

Teratogenicity..... Not available

Mutagenicity..... Not available

Section 12 - Ecological Information

Fish Toxicity..... LD₅₀(72 hrs, goldfish)= 100mg/L

Biodegradability..... The products of biodegradation are more toxic than the original product.

Environmental Effects..... May be harmful to aquatic life. Toxicity is primarily associated with the acidic pH. Acidic soil conditions develop where contamination with this material occurs.

Section 13 - Disposal Consideration

Waste Disposal..... Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

Section 14 - Transport Information

TDG Classification

Class..... 8

Group..... III

PIN Number..... UN 3264

Other..... Secure containers (full and/or empty) with suitable hold down devices during shipment.

Section 15 - Regulatory Information

WHMIS Classification.....E

NOTE: THE PRODUCT LISTED ON THIS MSDS HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CANADIAN CONTROLLED PRODUCTS REGULATIONS. THIS MSDS CONTAINS ALL INFORMATION REQUIRED BY THOSE REGULATIONS.

NSF Certification.....Product is certified under NSF/ANSI Standard 60 for coagulation and flocculation at a maximum dosage of 330mg/L.

Section 16 - Other Information

Note: The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations.

Attention: Receiver of the chemical goods / MSDS coordinator

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If you have any questions or concerns please call our customer service or technical service department.

ClearTech Industries Inc. - Locations

Corporate Head Office: 1500 Quebec Avenue, Saskatoon, SK, S7K 1V7

Phone: 306-664-2522

Fax: 306-665-6216

www.ClearTech.ca

Location	Address	Postal Code	Phone Number	Fax Number
Richmond, B.C.	12431 Horseshoe Way	V7A 4X6	604-272-4000	604-272-4596
Calgary, AB.	5516E - 40 th St. S.E.	T2C 2A1	403-279-1096	403-236-0989
Edmonton, AB.	11750 - 180 th Street	T5S 1N7	780-452-6000	780-452-4600
Saskatoon, SK.	19 Peters Ave, North Corman Park	S7L 5Z3	306-933-0177	306-933-3282
Regina, SK.	555 Henderson Drive	S42 5X2	306-721-7737	306-721-8611
Winnipeg, MB.	340 Saulteaux Crescent	R3J 3T2	204-987-9777	204-987-9770
Mississauga, ON.	7480 Bath Road	L4T 1L2	905-612-0566	905-612-0575

24 Hour Emergency Number - All Locations - 306-664-2522