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## Section 01 Identification

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<b>Product Identifier</b>	Aluminum Sulphate Solution NSF® - 60
<b>Other Means of Identification</b>	Liquid alum; aluminum sulfate solution; papermaker's alum; sulphuric acid, aluminum salt; CAS: 10043-01-3
<b>Product Use and Restrictions on Use</b>	Coagulating agent in municipal and industrial water and wastewater treatment, additive in papermaking. This product is NSF certified for use in drinking water, see section 15 and the NSF website for further information.
<b>Initial Supplier Identifier</b>	ClearTech Industries Inc. 1500 Quebec Avenue Saskatoon, SK. Canada S7K 1V7  Phone: 800.387.7503 Fax: 888.281.8109 <a href="http://www.cleartech.ca">www.cleartech.ca</a>
<b>Prepared By</b>	ClearTech Industries Inc. technical writer
<b>24-Hour Emergency Phone</b>	306.664.2522

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## Section 02 Hazard Identification

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### Physical Hazards

**Corrosive to metals** Category 1

### Health Hazards

**Serious eye damage / eye irritation** Category 1

### Signal Word

**Danger**

### Hazard Statements

H290 May be corrosive to metals.

H318 Causes serious eye damage.

### Pictograms



### Precautionary Statements

#### **Prevention**

P234 Keep only in original packaging.

- P264 Wash affected body parts thoroughly after handling.  
P280 Wear protective gloves, eye protection, face protection.

## Response

- P305 P351 P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.  
P390 Absorb spillage to prevent material damage.

## Hazards Not Otherwise Classified

Not available

## Supplemental Information

Not available

## Section 03 Composition / Information on Ingredients

### Hazardous Ingredients:

Chemical name	Common name(s)	CAS number	Concentration (w/w%)
Sulfuric acid, aluminum salt (3:2)	Aluminum sulphate; Alum	10043-01-3	48-49%

## Section 04 First-Aid Measures

### Description of necessary first-aid measures

- Inhalation** Get medical advice / attention if you feel unwell or are concerned.
- Ingestion** Get medical advice / attention if you feel unwell or are concerned.
- Skin contact** Rinse skin with lukewarm, gently flowing water / shower for 5 minutes or until product is removed. If skin irritation occurs or if you feel unwell: Get medical advice / attention.
- Eye contact** Remove source of exposure or move person to fresh air. Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for 30 minutes. Take care not to rinse contaminated water into the unaffected eye or onto the face. Immediately call a POISON CENTER or doctor.

### Most important symptoms and effects, both acute and delayed

- Inhalation** May cause respiratory irritation.
- Ingestion** May cause discomfort or nausea.
- Skin contact** Not available
- Eye contact** Causes serious eye damage.
- Further information** For further information see Section 11 Toxicological Information.

## Section 05 Fire Fighting Measures

- Suitable extinguishing media** Extinguish fire using extinguishing agents suitable for the surrounding fire.
- Unsuitable extinguishing media** Water jets are not recommended in fires involving chemicals.
- Specific hazards arising from the chemical** Reacts with many metals to liberate hydrogen gas that can form explosive mixtures. In the event of a fire oxides of sulphur may be released.
- Special protective equipment for fire-fighters** Wear NIOSH-approved self-contained breathing apparatus and chemical-protective clothing.

## Section 06 Accidental Release Measures

<b>Personal Precautions / Protective Equipment / Emergency Procedures</b>	Wear appropriate personal protective equipment (See Section 08 Exposure Controls and Personal Protection). Stay upwind, ventilate area. Do not use material handling equipment with exposed metal surfaces.
<b>Environmental Precautions</b>	Prevent material from entering waterways, sewers or confined spaces. Notify local health and wildlife officials. Notify operators of nearby water intakes.
<b>Methods and Materials for Containment and Cleaning Up</b>	SMALL SPILLS: Stop or reduce leak if safe to do so. Clean up spill with non-reactive absorbent and place in suitable, covered, labeled containers. Flush area with water. Contaminated absorbent material may pose the same hazards as the spilled product. LARGE SPILLS: Contact fire and emergency services and supplier for advice.

## Section 07 Handling and Storage

<b>Precautions for Safe Handling</b>	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. Inspect containers for damage or leaks before handling. If the original label is damaged or missing replace with a workplace label. Have suitable emergency equipment for fires, spills and leaks readily available.
<b>Conditions for Safe Storage</b>	Store in a cool, dry area, out of direct sunlight, away from heat sources and incompatible materials. Always store in original labeled container. Keep containers tightly closed when not in use and when empty. Empty containers may contain hazardous residues. Protect label and keep it visible. Do not transfer to metal containers.
<b>Incompatibilities</b>	Bases, such as potassium hydroxide, sodium hydroxide, calcium hydroxide (slaked lime), ammonia, carbonates. Metals, such as aluminum, carbon steel, and brass.

## Section 08 Exposure Controls and Personal Protection

### Exposure limits

Component	Regulation	Type of listing	Value
Aluminum sulphate	OSHA	PEL-TWA	2 mg/m <sup>3</sup> as aluminum

### Engineering controls

<b>Ventilation Requirements</b>	Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions should be provided in accordance with all fire codes and regulatory requirements. Supply sufficient replacement air to make up for air removed by exhaust systems.
<b>Other</b>	A soak hose and eyewash station or emergency shower and eyewash station should be available, tested, and be in close proximity to the product being handled in accordance with provincial regulations.

### Protective equipment

The following are recommendations only. It is the responsibility of the employer / user to conduct a hazard assessment of the process in which this product being used and determine the proper engineering controls and PPE for their process. Additional regulatory and safety information should be sought from local authorities and, if needed, a professional industrial hygienist.

<b>Eye and face protection</b>	Where there is potential eye or face exposure, tightly fitting safety goggles and a face shield or a full face respirator or similar protective equipment which protects the wearer's face and eyes are recommended. Contact lenses are not recommended; they may contribute to severe eye injury.
<b>Hand and body protection</b>	Where handling this product it is recommended that skin contact is avoided.
<b>Respiratory protection</b>	In case of insufficient ventilation wear suitable respiratory equipment.
<b>Thermal hazards</b>	Not available

## Section 09 Physical and Chemical Properties

### Appearance

<b>Physical state</b>	Liquid
<b>Colour</b>	Clear to pale yellow
<b>Odour</b>	Odourless
<b>Odour threshold</b>	Not available

### Property

<b>pH</b>	1.4-2.6
<b>Melting point / freezing point</b>	-1 °C to -16 °C
<b>Initial boiling point and boiling range</b>	101 °C
<b>Flash point</b>	Not applicable
<b>Evaporation rate</b>	Not available
<b>Flammability</b>	Not applicable
<b>Upper flammable limit</b>	Not available
<b>Lower flammable limit</b>	Not available
<b>Vapour pressure</b>	Not available
<b>Vapour density</b>	Not available
<b>Relative density</b>	Not applicable
<b>Solubility</b>	Soluble in water
<b>Partition coefficient: n-octanol/water</b>	Not available
<b>Auto-ignition temperature</b>	Not applicable
<b>Decomposition temperature</b>	650-760 °C
<b>Viscosity</b>	Not available
<b>Specific gravity</b>	~1.3 g/ml
<b>Particle characteristics</b>	Not applicable
<b>Formula</b>	Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>
<b>Molecular weight</b>	342.131 g/mol

## Section 10 Stability and Reactivity

<b>Reactivity</b>	May be corrosive to metals. Reacts with many metals to liberate hydrogen gas that can form explosive mixtures. Reacts violently with bases.
<b>Stability</b>	This product is stable if stored according to the recommendations in Section 07.

<b>Possibility of hazardous reactions</b>	Hazardous polymerization is not known to occur.
<b>Conditions to avoid</b>	Avoid contact with incompatible materials. Do not freeze.
<b>Incompatible materials</b>	Bases, such as potassium hydroxide, sodium hydroxide, calcium hydroxide (slaked lime), ammonia, carbonates. Metals, such as aluminum, carbon steel, and brass.
<b>Hazardous decomposition products</b>	Thermal decomposition may produce oxides of sulphur.

## Section 11 Toxicological Information

### Acute Toxicity (LD50 / LC50 values)

Component	Route	Species	Value	Exposure time
Aluminum sulphate, hydrate	Oral	Rat	>2000 mg/kg bw	
	Dermal	Rabbit	>5000 mg/kg bw	24 hours

### Toxic Health Effect Summary

<b>Chemical characteristics</b>	No known effects
<b>Skin</b>	Not available
<b>Ingestion</b>	May cause discomfort or nausea.
<b>Inhalation</b>	May cause respiratory irritation.
<b>Eye contact</b>	Causes serious eye damage.
<b>Sensitization</b>	This product and its components at their listed concentration have no known sensitizing effects.
<b>Mutagenicity</b>	This product and its components at their listed concentration have no known mutagenic effects.
<b>Carcinogenicity</b>	This product and its components at their listed concentration have no known carcinogenic effects.
<b>Reproductive toxicity</b>	This product and its components at their listed concentration have no known reproductive effects.
<b>Specific organ toxicity</b>	This product and its components at their listed concentration have no known effects on specific organs.
<b>Aspiration hazard</b>	Not available
<b>Synergistic materials</b>	Not available

## Section 12 Ecological Information

### Ecotoxicity

Component	Type	Species	Value	Exposure Time
Aluminum	LC50	Fish	9.4 mg/L (pH 5)	96 hours
			>85.9 mg/L (pH 7.5)	
	EC50	Algae	0.12-3.2 mg/L (pH dependant)	72 hours

**Biodegradability** The domestic substance list categorizes aluminum sulphate as persistent.

**Bioaccumulation** The domestic substance list categorizes all of the components of this product as non-bioaccumulative.

<b>Mobility</b>	This product is water soluble, but is expected to adsorb to soil and is not expected to contaminate ground water.
<b>Other adverse effects</b>	The domestic substance list categorizes aluminum sulphate as inherently toxic to aquatic organisms. Not available

## Section 13 Disposal Considerations

<b>Waste From Residues / Unused Products</b>	Dispose in accordance with all federal, provincial, and local regulations including the Canadian Environmental Protection Act.
<b>Contaminated Packaging</b>	Do not remove label, follow label warnings even after the container is empty. Empty containers should be recycled or disposed of at an approved waste handling facility.

## Section 14 Transport Information

<b>UN number</b>	UN3264
<b>UN proper shipping name and description</b>	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Aluminum Sulphate)
<b>Transport hazard class(es)</b>	8
<b>Packing group</b>	III
<b>Excepted quantities</b>	5 L
<b>Environmental hazards</b>	Not listed as a marine pollutant under Canadian TDG Regulations, schedule III.
<b>Special precautions</b>	
<b>Transport in bulk</b>	ERAP index: not available
<b>Additional information</b>	<p>MARPOL 73/78 and IBC Code: This product is not listed in Chapter 17 of the IBC Code.</p> <p>Secure containers (full or empty) during shipment and ensure all caps, valves, or closures are secured in the closed position.</p> <p><b>Special Provisions:</b></p> <p>16 (1) The technical name of at least one of the most dangerous substances that predominantly contributes to the hazard or hazards posed by the dangerous goods must be shown, in parentheses, on the shipping document following the shipping name in accordance with clause 3.5(1)(c)(ii)(A) of Part 3 (Documentation). The technical name must also be shown, in parentheses, on a small means of containment or on a tag following the shipping name in accordance with subsections 4.11(2) and (3) of Part 4 (Dangerous Goods Safety Marks).</p>

**TDG PRODUCT CLASSIFICATION:** This product has been classified on the preparation date specified at section 16 of this SDS, for transportation in accordance with the requirements of part 2 of the Transportation of Dangerous Goods Regulations. If applicable, testing and published test data regarding the classification of this product are listed in the references at section 16 of this SDS.

## Section 15 Regulatory Information.

**NOTE: THE PRODUCT LISTED ON THIS SAFETY DATA SHEET HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CANADIAN HAZARDOUS PRODUCTS REGULATIONS. THIS SAFETY DATA SHEET CONTAINS ALL INFORMATION REQUIRED BY THOSE REGULATIONS.**

All components of this product appear on the domestic substance list.

NSF Certification: Aluminum Sulphate Solution is certified under NSF / ANSI Standard 60 for coagulation & flocculation at a maximum dosage of: 330 mg/L. NSF product use restrictions based on requirements obtained from the NSF website; consult NSF website for current requirements.

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## Section 16 Other Information

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**Date of latest revision: May 31, 2023**

**Note:** The responsibility to provide a safe workplace remains with the buyer / user. The buyer / 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 buyer / user to comply with all applicable laws and regulations regarding handling, using, reselling and shipping this product.

**Attention: Receiver of the chemical goods / SDS coordinator**

As part of our commitment to the RDC Responsible Distribution® initiative, ClearTech Industries Inc. and its associated companies require, as a condition of sale, that you forward the attached Safety Data Sheet(s) to all affected employees, customers, and end-users. ClearTech will send any available supplementary handling, health, and safety information to you at your request.

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

**References:**

- 1) *NIOSH Pocket Guide to Chemical Hazards*; U.S. Department of Health and Human Services, <https://www.cdc.gov/niosh/npg/default.html>
- 2) *WorkSafe BC E-Limit*; Workers' Compensation Foard of British Columbia, <https://elimit.online.worksafebc.com/>
- 3) *ECHA - Registered Substance Dossier*; European Chemicals Agency, <https://echa.europa.eu/registration-dossier/-/registered-dossier/16061>
- 4) *Transportation of Dangerous Goods Regulations*; Transport Canada, <https://laws-lois.justice.gc.ca/eng/regulations/SOR-2001-286/index.html>
- 5) Globally Harmonized System of Classification and Labeling of Chemicals (GHS) *Seventh revised edition*
- 6) International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code) 2007 Edition
- 7) The ACS Style Guide