

# Material Safety Data Sheet - MSDS

# MARSULEX

## Liquid Alum

### Section 1. Chemical Product and Company Identification

<b>Trade name</b>	: Liquid Aluminum Sulphate	<b>Headquarters</b>	: Marsulex Inc. 111 Gordon Baker Road Suite 300 North York, ON M2H 3R1 (416) 496-9655 www.marsulex.com
<b>Material uses</b>	: Alum is used as a coagulating agent in municipal and industrial water and wastewater treatment and as an additive in papermaking.		
<b>Validation date</b>	: 11/15/2007		
<b>In case of emergency</b>	: Canada : CANUTEC 1-613-996-6666 US : CHEMTREC: 1-800-424-9300		

### Section 2. Hazards identification

<b>Physical state and Appearance</b>	: Liquid.
<b>Emergency overview</b>	: DANGER! CAUSES EYE AND SKIN BURNS. Risk of cancer depends on duration and level of exposure to the sulfuric acid mist. Do not get in eyes, on skin or on clothing. Avoid breathing vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.
<b>Routes of entry</b>	: Dermal contact. Eye contact. Inhalation. Ingestion.
<b>Potential acute health effects</b>	: <b>Eyes</b> : Corrosive to eyes. <b>Skin</b> : Corrosive to the skin. Aluminum is very poorly absorbed through the skin and toxic effects would not be expected following short-term skin contact. Prolonged and repeated exposure to dilute solutions may cause irritation, redness, pain and drying and cracking of the skin. <b>Inhalation</b> : Mists and vapors cause varying degrees of irritation of the nose, throat and respiratory tract. <b>Ingestion</b> : May cause irritation of the lining of the stomach. Ingestion is not a typical route of occupational exposure.
<b>Potential chronic health effects</b>	: CARCINOGENIC EFFECTS: 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. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available.
<b>Medical conditions aggravated by over-exposure</b>	: 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.
<b>Over-exposure signs/symptoms</b>	: Not available.
<a href="#">See Section 11 for Toxicological Data.</a>	

### Section 3. Composition/information on ingredients

Name	CAS #	% by weight
Aluminum Sulfate Hydrate	16828-12-9	45-55

This material is classified hazardous under OSHA regulations in the United States and the WHMIS Controlled Product Regulation in Canada.

[See Section 8 for Exposure Limits.](#)  
[See Section 11 for Toxicological Data.](#)

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## Section 4. First Aid Measures

- Eye contact** : Immediately flush eyes with lukewarm, gently running water for a minimum of 20 minutes or until the chemical is removed. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY. Do not transport victim until the recommended flushing period is completed unless flushing can be continued during transport.
- Skin contact** : Flush skin with lukewarm running water for a minimum of 5 minutes or until the chemical is removed. Start flushing while removing contaminated clothing. If irritation persists, repeat flushing and obtain medical attention. Do not transport victim unless the recommended flushing period is completed or flushing can be continued during transport.
- Inhalation** : Move victim to fresh air. If irritation persists, obtain medical attention immediately. Give artificial respiration ONLY if breathing has stopped. Give Cardiopulmonary Resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical attention IMMEDIATELY.
- Ingestion** : If irritation or discomfort occur, obtain medical advice immediately.
- Notes to physician** : Not available.

## Section 5. Fire Fighting Measures

- Flammability of the product** : Non-flammable.
- Auto-ignition temperature** : Not applicable.
- Flash points** : Not applicable.
- Flammable limits** : Not applicable.
- Products of combustion** : Forms aluminum oxide, sulfur dioxide and/or sulfur trioxide at temperatures reported above 650°C (1200°F).
- Fire hazards in the presence of various substances** : Not applicable.
- Explosion hazards in the presence of various substances** : 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.
- Fire-fighting media and instructions** : Use appropriate extinguisher for surrounding material.
- Protective clothing (fire)** : Wear a NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing if vapors or mists are present. For fighting fires in close proximity to spill or vapors, use acid-resistant personal protective equipment. Evacuate residents who are downwind of fire. Prevent unauthorized entry to fire area. Dike area to contain runoff and prevent contamination of water sources. Neutralize runoff with lime, soda ash or other suitable neutralizing agents (see Deactivating Chemicals, Section 6). Cool containers that are exposed to flame with streams of water until fire is out.

## Section 6. Accidental Release Measures

- Small spill and leak** : Cover with dry earth, sand or other non-combustible material. Use clean tools to collect material and place it into loosely covered plastic containers for later disposal.
- Large spill and leak** : Prevent liquid from entering sewers or waterways. Dike with inert material (sand, earth, etc.). Stop or reduce leak if safe to do so. Consider in situ neutralization and disposal. Ensure adequate decontamination of tools and equipment following clean up. Comply with Federal, Provincial/State and local regulations on reporting releases.
- Deactivating Chemicals:** Lime, limestone, soda ash, sodium bicarbonate, dilute sodium hydroxide or dilute aqua ammonia.

## Section 7. Handling and Storage

- Handling** : Do not breathe dust or mist. Do not ingest. Do not get in eyes, on skin or on clothing. Aluminum sulfate in solution is acidic. Use corrosion-resistant transfer equipment. Use only with adequate ventilation. Wash thoroughly after handling.
- Storage** : Liquid alum may be received and stored in corrosion-resistant tanks. Keep container tightly closed. Keep container in a cool, well-ventilated area. Store at temperatures below 40°C (104°F) and above 0°C (32°F).

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## Section 8. Exposure Controls, Personal Protection

**Engineering controls** : Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of the material below occupational exposure limits.

### Personal protection

**Eyes** : Splash goggles./Face shield.

**Body** : Lab coat or coveralls.

**Respiratory** : A NIOSH/MSHA approved air-purifying respirator equipped with acid gas/fume, mist cartridges for concentrations up to 20 mg/m<sup>3</sup>. An air-supplied respirator if concentrations are higher or unknown.

**Hands** : Gloves: Neoprene, PVC, vinyl or rubber.

**Feet** : Appropriate industrial footwear.

### Protective clothing (pictograms)



**Personal protection in case of a large spill** : Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be adequate. Consult a specialist before handling this product.

### Exposure limits

#### Product name

Aluminum Sulfate Hydrate

#### Exposure limits

##### ACGIH TLV (United States).

TWA: 2 mg/m<sup>3</sup> 8 hour(s). Form: as Aluminium (soluble salts)

##### OSHA PEL (United States).

TWA: 2 mg/m<sup>3</sup> 8 hour(s). Form: as Aluminium (soluble salts)

[Consult local authorities for acceptable exposure limits.](#)

## Section 9. Physical and Chemical Properties

**Physical state and Appearance** : Liquid.

**Color** : Clear.

**Odor** : Odorless.

**Molecular formula** : Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> 14 H<sub>2</sub>O

**pH** : 1.9 to 2.3 [Acidic.]

**Boiling/condensation point** : 101°C (213.8°F)

**Melting/freezing point** : -16°C (3.2°F)

**Specific gravity** : 1.335 (Water = 1)

**Vapor pressure** : Not available.

**Vapor density** : Not available.

**Odor threshold** : Not available.

**Evaporation rate** : Not available.

**LogK<sub>ow</sub>** : Not available.

**Solubility** : Completely miscible in water.

## Section 10. Stability and Reactivity

**Stability and reactivity** : The product is stable.

**Incompatibility with various substances** : Strong bases such as sodium hydroxide. Reaction may be violent.

**Hazardous decomposition products** : Sulfuric acid vapors may be released upon heating and sulfur dioxide and sulfur trioxide may be released upon decomposition.

**Hazardous polymerization** : Will not occur.

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## Section 11. Toxicological Information

### Toxicity data

<u>Ingredient name</u>	<u>Test</u>	<u>Result</u>	<u>Route</u>	<u>Species</u>
Aluminum Sulfate Hydrate	LD50	>9000 mg/kg	Oral	Rat
	LD50	>9000 mg/kg	Oral	Mouse

**Chronic effects on humans** : See Section 2.

**Other toxic effects on humans** : Corrosive to skin and eyes on contact.

## Section 12. Ecological Information

### Ecotoxicity data

<u>Ingredient name</u>	<u>Species</u>	<u>Period</u>	<u>Result</u>
Aluminum Sulfate Hydrate	Goldfish (LC50)	72 hour(s)	100 mg/l

**Products of degradation** : Decomposition products may include the following materials: carbon oxides (CO, CO<sub>2</sub>) and water, sulfur oxides (SO<sub>2</sub>, SO<sub>3</sub> etc.), phosphates. Toxicity is primarily associated with acidic pH. Acidic soil conditions can develop with the material present leading to release of some trace metals.

**Toxicity of the products of biodegradation** : The products of biodegradation are more toxic than the original product.

## Section 13. Disposal Considerations

**Waste information** : Waste must be disposed of in accordance with federal, state and local environmental control regulations.

[Consult your local or regional authorities.](#)

## Section 14. Transport Information

**Canada (TDG)** : RQ, UN3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Aluminum Sulfate), 8, PG III.

**United States (DOT)** : RQ, UN3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Aluminum Sulfate), 8, PG III.

**ERG** : 154

## Section 15. Regulatory Information

**WHMIS (Canada)** : Class E: Corrosive material

**Canada inventory**: All components are listed or exempted.

**CEPA Toxic substances**: None of the components are listed.

**Canadian ARET**: None of the components are listed.

**Canadian NPRI**: None of the components are listed.

**Alberta Designated Substances**: None of the components are listed.

**Ontario Designated Substances**: None of the components are listed.

**Quebec Designated Substances**: None of the components are listed.

**This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.**

**HCS Classification** : Corrosive material

**U.S. Federal Regulations** : **United States inventory (TSCA 8b)**: All components are listed or exempted.

**SARA 302/304/311/312 extremely hazardous substances**: No products were found.

**SARA 302/304 emergency planning and notification**: No products were found.

**SARA 302/304/311/312 hazardous chemicals**: No products were found.

**SARA 311/312 MSDS distribution - chemical inventory - hazard identification**: No products were found.

**Clean Water Act (CWA) 311**: Sulfuric acid

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**State Regulations**

- : **Connecticut Carcinogen Reporting:** None of the components are listed.
- Connecticut Hazardous Material Survey:** None of the components are listed.
- Florida substances:** None of the components are listed.
- Illinois Chemical Safety Act:** None of the components are listed.
- Illinois Toxic Substances Disclosure to Employee Act:** None of the components are listed.
- Louisiana Reporting:** None of the components are listed.
- Louisiana Spill:** None of the components are listed.
- Massachusetts Spill:** None of the components are listed.
- Massachusetts Substances:** None of the components are listed.
- Michigan Critical Material:** None of the components are listed.
- Minnesota Hazardous Substances:** None of the components are listed.
- New Jersey Hazardous Substances:** None of the components are listed.
- New Jersey Spill:** None of the components are listed.
- New Jersey Toxic Catastrophe Prevention Act:** None of the components are listed.
- New York Acutely Hazardous Substances:** None of the components are listed.
- New York Toxic Chemical Release Reporting:** None of the components are listed.
- Pennsylvania RTK Hazardous Substances:** None of the components are listed.
- Rhode Island Hazardous Substances:** None of the components are listed.

#### California Prop. 65

No products were found.

## Section 16. Other Information

### Hazardous Material Information System (U.S.A.)

Health	*	3
Fire hazard		0
Physical Hazard		0
Personal protection		D

### National Fire Protection Association (U.S.A.)



**References**

- : - 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. ANSI Z400.1, MSDS Standard, 2004. - Canada Gazette Part II, Vol. 122, No. 2. Registration SOR/88-64, 31 December 1987. Hazardous Products Act "Ingredient Disclosure List"
- Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - Manufacturer's Material Safety Data Sheet.

**Responsible name** : 11/15/2007

**Date of previous issue** : 07/15/2006

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#### Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.