

# Aluminum Sulfate, Solution

Safety Data Sheet

SDS ID: 00231225

## Section 1 - PRODUCT AND COMPANY IDENTIFICATION

**Material Name:** Aluminum sulfate, solution

### Synonyms

ALUM

### Chemical Family

inorganic, salt

### Product Use

water treatment coagulant, flocculent, alumina source for catalyst, pH control in papermaking/water treatment

## Section 2 - HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

**Color:** colorless to amber, colorless to green

**Physical Form:** liquid

**Odor:** odorless

**Health Hazards:** respiratory tract irritation, skin irritation, eye irritation

### POTENTIAL HEALTH EFFECTS

#### Inhalation

**Short Term:** irritation, cough, sore throat

**Long Term:** irritation, difficulty breathing, wheezing, lung damage

#### Skin

**Short Term:** irritation (possibly severe), allergic reactions

**Long Term:** irritation (possibly severe), allergic reactions

#### Eye

**Short Term:** irritation (possibly severe)

**Long Term:** irritation (possibly severe)

#### Ingestion

**Short Term:** digestive disorders

**Long Term:** no information is available

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component	Percent	Symbol(s)	Risk Phrase(s)
7732-18-5	Water 231-791-2	>50	---	---
10043-01-3	Aluminum sulfate 233-135-0	<50	Xi	R:36-37-38

### Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Aluminium compounds.

## Section 4 - FIRST AID MEASURES

### Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

### Skin

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

### Eyes

Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

### Ingestion

If a large amount is swallowed, get medical attention.

## Section 5 - FIRE FIGHTING MEASURES

See Section 9 for Flammability Properties

**NFPA Ratings: Health: 1 Fire: 0 Reactivity: 0**

Hazard Scale: 0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe

### Flammable Properties

Negligible fire hazard.

### Extinguishing Media

Use extinguishing agents appropriate for surrounding fire.

### Fire Fighting Measures

Move container from fire area if it can be done without risk. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

### Thermal Decomposition Products

**Combustion:** oxides of sulfur

### Sensitivity to Mechanical Impact

Not sensitive

### Sensitivity to Static Discharge

Not sensitive

## Section 6 - ACCIDENTAL RELEASE MEASURES

### Occupational spill/release

Stop leak if possible without personal risk. **Small spills:** Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Keep unnecessary people away, isolate hazard area and deny entry. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

## Section 7 - HANDLING AND STORAGE

### Handling Procedures

Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

### Storage Procedures

Store and handle in accordance with all current regulations and standards. Store with acids. See original container for storage recommendations. Keep separated from incompatible substances.

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### Component Exposure Limits

ACGIH and EU have not developed exposure limits for any of this product's components.

### Ventilation

Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

### PERSONAL PROTECTIVE EQUIPMENT

#### Eyes/Face

Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

#### Protective Clothing

Wear appropriate chemical resistant clothing.

#### Glove Recommendations

Wear appropriate chemical resistant gloves.

#### Respiratory Protection

Under conditions of frequent use or heavy exposure, respiratory protection may be needed.

Respiratory protection is ranked in order from minimum to maximum.

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Consider warning properties before use.

Any air-purifying full-facepiece respirator equipped with an N95, R95, or P95 filter. The following filters may also be used: N99, R99, P99, N100, R100 or P100.

Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter.

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode.

### For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator or self-contained breathing apparatus (SCBA) with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State:</b>	Liquid	<b>Odor Threshold:</b>	Not applicable
<b>Characteristics:</b>	colorless to clear amber or clear light green liquid	<b>Odor:</b>	Negligible odor
<b>pH:</b>	2.0 – 2.4 @ 20°C	<b>Boiling Point:</b>	109° C/228° F
<b>Evaporation Rate:</b>	1 water=1	<b>Melting Point:</b>	-13° C/9° F
<b>%VOC</b>	0.0	<b>Flash Point:</b>	Not applicable
<b>Vapor Density (air = 1):</b>	Not applicable	<b>Density:</b>	11.1 lbs/gal 15.5 °C
<b>Vapor Pressure:</b>	Not applicable	<b>Specific Gravity (water = 1):</b>	1.32 - 1.34 @ 15.5 °C
<b>Viscosity:</b>	25 cps @ 20°C/68° F	<b>Water Solubility:</b>	Complete

## Section 10 - STABILITY AND REACTIVITY

### Chemical Stability

Stable at normal temperatures and pressure.

### Conditions to Avoid

Protect from freezing. Keep separated from incompatible substances.

### Materials to Avoid

Alkalis, metals

Alkalis (bases): Violent reaction.

Metals: May be corrosive in the presence of moisture.

### Thermal Decomposition Products

**Combustion:** Thermal oxidative decomposition of Aluminum Sulfate occurs at temperatures greater than 1400°F and can produce sulfur oxides.

### Possibility of Hazardous Reactions

Will not polymerize.

## Section 11 - TOXICOLOGICAL INFORMATION

### Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

#### Aluminum sulfate (10043-01-3)

Oral LD50 Rat 1930 mg/kg

#### Water (7732-18-5)

Oral LD50 Rat >90 mL/kg

### RTECS Acute Toxicity (selected)

The components of this material have been reviewed, and RTECS publishes the following endpoints:

#### Aluminum sulfate (10043-01-3)

Oral: 6207 mg/kg Oral Mouse LD50

#### Water (7732-18-5)

Oral: >90 mL/kg Oral Rat LD50

### Acute Toxicity Level

**Aluminum sulfate (10043-01-3)**

**Slightly Toxic:** ingestion

### Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, or DFG.

### RTECS Irritation

The components of this material have been reviewed, and RTECS publishes the following endpoints:

**Aluminum sulfate (10043-01-3)**

10 mg/24 hour Eyes Rabbit severe

### Local Effects

**Aluminum sulfate (10043-01-3)**

**Irritant:** inhalation, skin, eye

### RTECS Mutagenic

The components of this material have been reviewed, and RTECS publishes the following endpoints:

**Aluminum sulfate (10043-01-3)**

20 mg/L human; 20 mg/L human; 20 mg/L human; 20 mg/L human; 762 mg/kg/7 day(s) continuous rat; 762 mg/kg/7 day(s) continuous rat

### RTECS Reproductive Effects

The components of this material have been reviewed, and RTECS publishes the following endpoints:

**Aluminum sulfate (10043-01-3)**

800 mg/kg Intraperitoneal Mouse TDLo (pregnant 10-13 day(s)); 27371 ug/kg Subcutaneous Mouse TDLo (male 30 day(s)); 27371 ug/kg Intratesticular Rat TDLo (male 1 day(s))

### HEALTH EFFECTS

#### Inhalation - Acute Exposure

Aluminum sulfate: Inhalation may cause irritation of mucous membranes with sore throat and cough due to sulfuric acid which is formed by the hydrolysis of the salt upon contact with moisture.

#### Inhalation - Chronic Exposure

Aluminum sulfate: Repeated or prolonged exposure may cause bronchial irritation, leading to nocturnal wheezing, and breathlessness. Prolonged inhalation of dusts containing high concentrations of aluminum have produced emphysema, non-nodular pulmonary fibrosis and fatalities.

#### Skin Contact - Acute Exposure

Aluminum sulfate: Aluminum sulfate hydrolyzes readily with moisture to form some sulfuric acid which may produce irritation, dermatosis and eczema. Excessive formation of sulfuric acid may produce possible burns. Aluminum sulfate may rarely cause skin sensitization.

#### Skin Contact - Chronic Exposure

Aluminum sulfate: Repeated or prolonged contact with some soluble salts of aluminum results in acid irritation from hydrolysis. A congestive, anesthetic condition of the fingers (acroanesthesia) may occur from prolonged contact. Repeated exposure may result in sensitization.

#### Eye Contact - Acute Exposure

Aluminum sulfate: May cause irritation, redness, and corneal burns due to the reaction of the compound with moisture to form sulfuric acid.

#### Eye Contact - Chronic Exposure

Aluminum sulfate: Repeated or prolonged contact with irritants may cause conjunctivitis or effects similar to those for acute exposure.

#### Ingestion - Acute Exposure

Aluminum sulfate: Ingestion of a large dose was lethal in mice. Aluminum salts, particularly concentrated solutions (20%), may produce gingival necrosis and fatal hemorrhagic gastroenteritis, in coordination, colonic contractions, evidence of nephritis and death.

#### Ingestion - Chronic Exposure

Aluminum sulfate: No data available.

**Section 12 - ECOLOGICAL INFORMATION**

**Component Analysis - Aquatic Toxicity**

**Aluminum sulfate (10043-01-3)**

**Fish:** 96 Hr LC50 Carassius auratus: 100 mg/L; 96 Hr LC50 Gambusia affinis: 37 mg/L [static]

**Invertebrate:** 15 Min EC50 Daphnia magna: 136 mg/L

**Section 13 - DISPOSAL CONSIDERATIONS**

**Disposal Methods**

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D002 (Corrosive) if the pH is <2. May be D002 under §261.22(a)(2) due to the rate of corrosion of steel.

**Component Waste Numbers**

The U.S. EPA has not published waste numbers for this product's components.

**Section 14 - TRANSPORT INFORMATION**

**US DOT Information, TDG Information, ADR Information, RID Information, IATA Information, ICAO Information, IMDG Information**

**Shipping Name:** UN3264, Corrosive, liquid, acidic, inorganic, n.o.s., (Aluminum sulfate), 8, III, RQ

**Required Label(s):** 8

**Section 15 - REGULATORY INFORMATION**

**U.S. Federal Regulations**

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

**Aluminum sulfate (10043-01-3)**

**CERCLA:** 5000 lb final RQ; 2270 kg final RQ

**SARA Section 311/312 (40 CFR 370 Subparts B and C)**

**Acute Health:** Yes; **Chronic Health:** No; **Fire:** No; **Pressure:** No; **Reactive:** No

**U.S. State Regulations**

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
Aluminum sulfate	10043-01-3	Yes	Yes	No	Yes	Yes

Not regulated under California Proposition 65

**Germany Water Classification**

**Aluminum sulfate (10043-01-3)**

ID Number 486, hazard class 1 - low hazard to waters (footnote 8)

**EU Marking and Labeling**

**Symbols**

**Xi** Irritant

**Risk Phrases**

**R36/37/38** Irritating to eyes, respiratory system and skin.

**Component Analysis - Inventory**

Component	CAS	US	CA	EU	AU	PH	JP	KR	CN	NZ
Aluminum sulfate	10043-01-3	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes
Water	7732-18-5	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes

**Section 16 - OTHER INFORMATION****Key / Legend**

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

**Full text of R phrases in Section 3**

**R36** Irritating to eyes.

**R37** Irritating to respiratory system.

**R38** Irritating to skin.

**Other Information**

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