

Aluminum Sulfate

Version number: 1.0

SECTION 1: Identification

1.1 Product identifier

| | |
|---------------------------------|---------------------------|
| Identification of the substance | <u>aluminium sulphate</u> |
| Trade name | <u>Aluminum Sulfate</u> |
| CAS number | 10043-01-3 |

1.2 Relevant identified uses of the substance or mixture and uses advised against

| | |
|--------------------------|--|
| Relevant identified uses | Water treatment chemical Flocculant |
|--------------------------|--|

1.3 Details of the supplier of the safety data sheet

| | |
|--------------------------------|------------------------------|
| Valudor Products, LLC | Telephone: +1 (760) 635 8500 |
| 179 Calle Magdalena Suite 100 | e-mail: info@valudor.com |
| Encinitas, California CA 92024 | Website: www.valudor.com |
| United States | |

1.4 Emergency telephone number

| | |
|--|-------------------------|
| Emergency information service | 800-535-5053 (Infotrac) |
| As above or next toxicological information centre. | |

SECTION 2: Hazard(s) identification

2.1 Classification of the substance or mixture

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

| Classification | | | | |
|----------------|-----------------------------------|----------|---------------------------|------------------|
| Section | Hazard class | Category | Hazard class and category | Hazard statement |
| A.3 | serious eye damage/eye irritation | 1 | Eye Dam. 1 | H318 |

For full text of abbreviations: see SECTION 16

2.2 Label elements

Labelling acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

| | |
|-------------|--------|
| Signal word | danger |
|-------------|--------|

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Pictograms

GHS05



Hazard statements

H318 Causes serious eye damage.

Precautionary statements

P280 Wear eye protection/face protection.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a poison center/doctor.

2.3 Other hazards

Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance aluminium sulphate

Identifiers

CAS No 10043-01-3

Molecular formula $\text{Al}_2(\text{SO}_4)_3$

Molar mass 342.1 g/mol

SECTION 4: First-aid measures

4.1 Description of first-aid measures

General notes

Take off immediately all contaminated clothing.

In all cases of doubt, or when symptoms persist, seek medical advice.

Following inhalation

Provide fresh air.

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions.

Following skin contact

Wash with plenty of soap and water.

If skin irritation occurs: Get medical advice/attention.

Wash contaminated clothing before reuse.

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Following eye contact

Rinse immediately carefully and thoroughly with eye shower or water.
Remove contact lenses, if present and easy to do. Continue rinsing.
Get immediate medical advice/attention.

Following ingestion

Rinse mouth. Do not induce vomiting.
Get medical advice/attention.

Notes for the doctor

None.

4.2 Most important symptoms and effects, both acute and delayed

These information are not available.

4.3 Indication of any immediate medical attention and special treatment needed

None.

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

water, foam, alcohol resistant foam, fire extinguishing powder

Unsuitable extinguishing media

water jet

5.2 Special hazards arising from the substance or mixture

Hazardous decomposition products: Section 10.

Hazardous combustion products

sulfur oxides (SO_x)

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes.
Coordinate firefighting measures to the fire surroundings.
Do not allow firefighting water to enter drains or water courses.
Collect contaminated firefighting water separately.
Fight fire with normal precautions from a reasonable distance.

Special protective equipment for firefighters

chemical protection suit, self-contained breathing apparatus (SCBA)

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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety.

Ventilate affected area.

Control of dust.

Do not breathe dust.

Do not get in eyes, on skin, or on clothing.

Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing.

For emergency responders

Wear breathing apparatus if exposed to vapors/dust/aerosols/gases.

6.2 Environmental precautions

Keep away from drains, surface and ground water.

Retain contaminated washing water and dispose of it.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Take up mechanically.

Advice on how to clean up a spill

Take up mechanically.

Collect spillage.

Other information relating to spills and releases

Place in appropriate containers for disposal.

Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5.

Personal protective equipment: see section 8.

Incompatible materials: see section 10.

Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation.

Specific notes/details

Dust deposits may accumulate on all deposition surfaces in a technical room.

Measures to protect the environment

Avoid release to the environment.

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Advice on general occupational hygiene

Do not eat, drink and smoke in work areas.

Remove contaminated clothing and protective equipment before entering eating areas.

Do not breathe dust.

Do not get in eyes, on skin, or on clothing.

Wash hands after use.

Preventive skin protection (barrier creams/ointments) is recommended.

7.2 Conditions for safe storage, including any incompatibilities

Flammability hazards

None.

Incompatible substances or mixtures

Incompatible materials: see section 10.

Protect against external exposure, such as

heat, humidity

Consideration of other advice

Keep away from food, drink and animal feedingstuffs.

Store in a dry place. Store in a closed container.

Ventilation requirements

Provision of sufficient ventilation.

Specific designs for storage rooms or vessels

Storage temperature recommended storage temperature: 5 - 20 °C

Packaging compatibilities

Keep only in original container.

7.3 Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

| Occupational exposure limit values (Workplace Exposure Limits) | | | | | | | | | |
|--|--------------------------|--------|------------|-----------|--------------------------|------------|---------------------------|----------|--------------|
| Country | Name of agent | CAS No | Identifier | TWA [ppm] | TWA [mg/m ³] | STEL [ppm] | STEL [mg/m ³] | Notation | Source |
| US | aluminium, soluble salts | - | PEL (CA) | - | 2 | - | - | - | Cal/OSHA PEL |
| US | aluminium, soluble salts | - | REL | - | 2 (10 h) | - | - | Al | NIOSH REL |

Notation

Al calculated as Al (aluminum)

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Notation

| | |
|------|--|
| STEL | short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified) |
| TWA | time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified) |

Human health values

| Relevant DNELs and other threshold levels | | | | |
|---|------------------------|------------------------------------|-------------------|----------------------------|
| Endpoint | Threshold level | Protection goal, route of exposure | Used in | Exposure time |
| DNEL | 13.4 mg/m ³ | human, inhalatory | worker (industry) | chronic - systemic effects |
| DNEL | 3.8 mg/kg bw/day | human, dermal | worker (industry) | chronic - systemic effects |

8.2 Exposure controls

Appropriate engineering controls

General ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection

Wear eye/face protection.

Hand protection

| Protective gloves | | |
|--|--------------------|--|
| Material | Material thickness | Breakthrough times of the glove material |
| NR: natural rubber, latex | ≥ 0,5 mm | >480 minutes (permeation: level 6) |
| CR: chloroprene (chlorobutadiene) rubber | ≥ 0,5 mm | >480 minutes (permeation: level 6) |
| NBR: acrylonitrile-butadiene rubber | ≥ 0,35 mm | >480 minutes (permeation: level 6) |
| IIR: isobutene-isoprene (butyl) rubber | ≥ 0,5 mm | >480 minutes (permeation: level 6) |
| FKM: fluoro-elastomer | ≥ 0,4 mm | >480 minutes (permeation: level 6) |
| PVC: polyvinyl chloride | ≥ 0,5 mm | >480 minutes (permeation: level 6) |

Wear suitable gloves.

Chemical protection gloves are suitable, which are tested according to EN 374.

Check leak-tightness/impermeability prior to use.

In the case of wanting to use the gloves again, clean them before taking off and air them well.

For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

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Body protection

Protective clothing for use against solid particulates.

Respiratory protection

In case of inadequate ventilation wear respiratory protection.
Particulate filter device (EN 143).

Environmental exposure controls

Use appropriate container to avoid environmental contamination.
Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

| | |
|---|---|
| Physical state | solid |
| Color | white - beige |
| Odor | odorless |
| Odor threshold | these information are not available |
| Other safety parameters | |
| pH (value) | 3 - 4 (in aqueous solution: 1 % (w/w)) |
| Melting point/freezing point | decomposition or sublimation occur prior to or during melting |
| Boiling point or initial boiling point and boiling range | not determined |
| Flash point | not applicable |
| Evaporation rate | not determined |
| Flammability (solid, gas) | non-combustible |
| Explosive limits | not determined |
| Explosion limits of dust clouds | not determined |
| Vapor pressure | not determined |
| Density | 2.71 g/cm ³ at 20 °C |
| Vapor density | this information is not available |
| Relative density | information on this property is not available |
| Solubility(ies) | |
| Water solubility | miscible in any proportion |

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Partition coefficient

n-octanol/water (log KOW) not relevant
(inorganic)

Auto-ignition temperature not determined

Decomposition temperature >770 °C

Viscosity not relevant
(solid)

Explosive properties none

Oxidizing properties none

Information for relevant hazard classes according to GHS hazard classes acc. to GHS (physical hazards):
not relevant

9.2 Other information there is no additional information

SECTION 10: Stability and reactivity

10.1 Reactivity

Hygroscopic substance.

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3 Possibility of hazardous reactions

Becomes corrosive to metals on contact with moisture.

10.4 Conditions to avoid

Protect from moisture.

10.5 Incompatible materials

water, acids, bases

10.6 Hazardous decomposition products

Sulfur oxides (SO_x).
Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

If not otherwise specified the classification is based on:

Animal studies; Evidence from any other toxicity tests; Expert judgment (weight of evidence determination).

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Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Acute toxicity

Shall not be classified as acutely toxic (oral).

Shall not be classified as acutely toxic (dermal).

May be harmful if swallowed.

| Exposure route | Endpoint | Value | Species | Method |
|----------------|----------|-----------------------|-------------|--------------------|
| oral | LD50 | >2,000 - <5,000 mg/kg | rat, female | OECD Guideline 401 |
| dermal | LD50 | >5,000 mg/kg | rabbit | OECD Guideline 402 |

Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.

Serious eye damage/eye irritation

Causes serious eye damage.

Respiratory or skin sensitization

Skin sensitization

Shall not be classified as a skin sensitizer.

Respiratory sensitization

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

IARC Monographs

not listed

National Toxicology Program (United States)

not listed

OSHA Carcinogens

Not listed.

Reproductive toxicity

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Specific target organ toxicity - single exposure

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Specific target organ toxicity - repeated exposure

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

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Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

11.2 Other information

There is no additional information.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity (acute)

Based on available data, the classification criteria are not met.

| Endpoint | Exposure time | Value | Species | Method |
|----------|---------------|------------|--------------------------|--------------------|
| EC50 | 48 h | >200 mg/l | daphnia magna | OECD Guideline 202 |
| LC50 | 96 h | >87.5 mg/l | zebra fish (Danio rerio) | OECD Guideline 203 |

Aquatic toxicity (chronic)

| Endpoint | Exposure time | Value | Species | Method |
|----------|---------------|----------|---------------|------------------|
| NOEC | 8 d | 3.8 mg/l | daphnia magna | EPA/600/4-89-001 |
| LOEC | 8 d | 7.5 mg/l | daphnia magna | EPA/600/4-89-001 |

12.2 Persistence and degradability

Biodegradation

The study does not need to be conducted because the substance is inorganic.

Persistence

The study does not need to be conducted because the substance is inorganic.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

12.6 Other adverse effects

This information is not available.

Remarks

Wassergefährdungsklasse, WGK (water hazard class): 1

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SECTION 13: Disposal considerations

13.1 Waste treatment methods

Dispose of contents/container in accordance with local/regional/national/international regulations.

Sewage disposal-relevant information

Do not empty into drains.

Waste treatment of containers/packages

Completely emptied packages can be recycled.
Handle contaminated packages in the same way as the substance itself.

Remarks

Please consider the relevant national or regional provisions.

SECTION 14: Transport information

| | | |
|------|--|--------------|
| 14.1 | UN number | not assigned |
| 14.2 | UN proper shipping name | - |
| 14.3 | Transport hazard class(es) | - |
| 14.4 | Packing group | - |
| 14.5 | Environmental hazards | - |
| 14.6 | Special precautions for user | - |
| 14.7 | Transport in bulk according to Annex II of MARPOL and the IBC Code | - |

14.8 Information for each of the UN Model Regulations

Transport of dangerous goods by road or rail (49 CFR US DOT) Additional information

Not subject to transport regulations.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

National regulations (United States)

Toxic Substance Control Act (TSCA) substance is listed

Superfund Amendment and Reauthorization Act (SARA TITLE III)

The List of Extremely Hazardous Substances and Their Threshold Planning Quantities (EPCRA Section 302, 304)

not listed

Specific Toxic Chemical Listings (EPCRA Section 313)

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not listed

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

List of Hazardous Substances and Reportable Quantities (CERCLA section 102a) (40 CFR 302.4)

| Name of substance | CAS No | Remarks | Statutory code | Final RQ pounds (Kg) |
|--------------------|------------|---------|----------------|----------------------|
| aluminium sulphate | 10043-01-3 | - | 1 | 5000 (2270) |

Legend

1 "1" indicates that the statutory source is section 311(b)(2) of the Clean Water Act

Clean Air Act

not listed

Right to Know Hazardous Substance List

Hazardous Substance List (NJ-RTK)

| Name of substance | CAS No | Remarks | Classifications |
|--------------------|------------|---------|-----------------|
| aluminium sulphate | 10043-01-3 | - | CO. |

Legend

CO Corrosive

California Environmental Protection Agency (Cal/EPA): Proposition 65 - Safe Drinking Water and Toxic Enforcement Act of 1987

not listed

Industry or sector specific available guidance(s)

NPCA-HMIS® III

Hazardous Materials Identification System.
American Coatings Association.

| Category | Rating | Description |
|---------------------|--------|--|
| Chronic | / | none |
| Health | 3 | major injury likely unless prompt action is taken and medical treatment is given |
| Flammability | 0 | material that will not burn under typical fire conditions |
| Physical hazard | 0 | material that is normally stable, even under fire conditions, and will not react with water, polymerize, decompose, condense, or self-react. Non-explosive |
| Personal protection | - | - |

NFPA® 704

National Fire Protection Association: Standard System for the Identification of the Hazards of Materials for Emergency Response (United States).

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| Category | Degree of hazard | Description |
|----------------|------------------|--|
| Flammability | 0 | material that will not burn under typical fire conditions |
| Health | 3 | material that, under emergency conditions, can cause serious or permanent injury |
| Instability | 0 | material that is normally stable, even under fire conditions |
| Special hazard | - | - |

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance by the supplier.

SECTION 16: Other information, including date of preparation or last revision

Date of preparation: 2021-06-14

Abbreviations and acronyms

| Abbr. | Descriptions of used abbreviations |
|-----------------|--|
| 49 CFR US DOT | 49 CFR U.S. Department of Transportation |
| Cal/OSHA PEL | California Division of Occupational Safety and Health (Cal/OSHA): Permissible Exposure Limits (PELs) |
| CAS | Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances) |
| DGR | Dangerous Goods Regulations (see IATA/DGR) |
| DNEL | Derived No-Effect Level |
| EC50 | Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval |
| GHS | "Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations |
| IARC Monographs | IARC Monographs on the Evaluation of Carcinogenic Risks to Humans |
| IATA | International Air Transport Association |
| IATA/DGR | Dangerous Goods Regulations (DGR) for the air transport (IATA) |
| IMDG | International Maritime Dangerous Goods Code |
| LC50 | Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval |
| LD50 | Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval |
| LOEC | Lowest Observed Effect Concentration |
| MARPOL | International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant") |
| NIOSH REL | National Institute for Occupational Safety and Health (NIOSH): Recommended Exposure Limits (RELs) |

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| Abbr. | Descriptions of used abbreviations |
|----------------|---|
| NOEC | No Observed Effect Concentration |
| NPCA-HMIS® III | National Paint and Coatings Association: Hazardous Materials Identification System - HMIS® III, Third Edition |
| OSHA | Occupational Safety and Health Administration (United States) |
| PBT | Persistent, Bioaccumulative and Toxic |
| ppm | Parts per million |
| STEL | Short-term exposure limit |
| TWA | Time-weighted average |
| vPvB | Very Persistent and very Bioaccumulative |

Key literature references and sources for data

OSHA Hazard Communication Standard (HCS), 29 CFR 1910.1200.

Transport of dangerous goods by road or rail (49 CFR US DOT).

International Maritime Dangerous Goods Code (IMDG).

Dangerous Goods Regulations (DGR) for the air transport (IATA).

List of relevant phrases (code and full text as stated in chapter 2 and 3)

| Code | Text |
|------|----------------------------|
| H318 | Causes serious eye damage. |

Responsible for the safety data sheet

Chemical Regulatory Compliance Company Telephone: +1 (630) 410-1660
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USA Website: www.crc-us.com

Disclaimer

This information is based upon the present state of our knowledge.

This SDS has been compiled and is solely intended for this product.