



## **SAFETY DATA SHEET**

### **Aluminium sulfate**

Commission Regulation (EU) 2020/878 of 18 June 2020.

According to Regulation (EC) No 1907/2006, Annex II, as amended.

According to the REACH etc. (Amendment etc.) (EU Exit) Regulations 2020 No. 1577, as amended.

#### **SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**

##### **1.1. Product identifier**

|                                  |                                                                                                                                                                                                                                                         |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product name</b>              | <b>Aluminium sulfate</b>                                                                                                                                                                                                                                |
| <b>Other names</b>               | Sulfuric acid, aluminum salt (3:2), tetradecahydrate<br>Aluminum sulfate 14-hydrate<br>Aluminum sulfate 16-hydrate<br>Aluminum sulfate 18-hydrate                                                                                                       |
| <b>CAS No</b>                    | Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> : 10043-01-3                                                                                                                                                                                            |
| <b>Other CAS No</b>              | Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> •14 H <sub>2</sub> O: 16828-12-9<br>Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> •16 H <sub>2</sub> O: 16828-11-8<br>Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> •18 H <sub>2</sub> O: 7784-31-8 |
| <b>REACH Registration number</b> | 01-2119531538-36-xxxx                                                                                                                                                                                                                                   |

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

|                             |                                                                                                                                                                                          |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Identified uses</b>      | Water treatment chemical, Use of substance in synthesis as a process chemical and as an intermediate., Products such as pH-regulators, flocculants, precipitants, neutralization agents. |
| <b>Uses advised against</b> | Do not use for other purposes than the identified uses.                                                                                                                                  |

##### **1.3. Details of the supplier of the safety data sheet**

|                       |                                                                                                                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Supplier</b>       | <b>Hicri Ercili Deniz Nakliyat Kimyevi Maddeler Sanayi ve Ticaret Anonim Şirketi</b><br>Ömerli Mahallesi, Ömerli 34 sk. Hicri Ercili No:3<br>Bandırma / BALIKESİR / TURKEY<br>Tel. : 0 266 721 06 70 |
| <b>Contact person</b> | Logistics Manager. Marmara Region Manager.                                                                                                                                                           |

##### **1.4. Emergency telephone number**

|                |                      |                         |
|----------------|----------------------|-------------------------|
| HİCRİ ERCİLİ   | : +90 532 782 99 98  | +90 533 938 6701 (7/24) |
| Contact person | : Logistics Manager. | Marmara Region Manager. |

#### **SECTION 2: HAZARDS IDENTIFICATION**

##### **2.1. Classification of the substance or mixture**

###### **Classification (EC 1272/2008)**

|                               |                   |
|-------------------------------|-------------------|
| Physical and Chemical Hazards | Not classified.   |
| Human Health Hazards          | Eye dam. 1 - H318 |
| Environment Hazards           | Not classified.   |

The Full Text for all Hazard Statements are Displayed in Section 16.



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#### 2.2. Label elements

Label In Accordance With (EC) No. 1272/2008

CAS No: 10043-01-3



Signal Word

Danger

Hazard Statements

H318

Causes serious eye damage.

Precautionary Statements

P261

Avoid breathing dust.

P264

Wash skin thoroughly after handling.

P280

Wear protective gloves/protective clothing/eye protection/face protection.

P305+351+338

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

**Inhalation;** Possible risk for irritation of respiratory organs and skin.

**Potential environmental effects;** May lower the pH of water and thus be harmful to aquatic organisms.

### **SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**

#### 3.1. Substances

|                           |                                                                                                                                                                                                                        |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name              | Aluminium sulphate                                                                                                                                                                                                     |
| REACH Registration number | 01-2119531538-36-xxxx                                                                                                                                                                                                  |
| Chemical Formula          | $\text{Al}_2(\text{SO}_4)_3 \cdot x \text{H}_2\text{O}$                                                                                                                                                                |
| Chemical Name             | Aluminium sulphate                                                                                                                                                                                                     |
| Content                   | >99 %                                                                                                                                                                                                                  |
| CAS-No.                   | 10043-01-3                                                                                                                                                                                                             |
| EC No.                    | 233-135-0                                                                                                                                                                                                              |
| Other CAS No              | $\text{Al}_2(\text{SO}_4)_3 \cdot 14 \text{H}_2\text{O}$ : 16828-12-9<br>$\text{Al}_2(\text{SO}_4)_3 \cdot 16 \text{H}_2\text{O}$ : 16828-11-8<br>$\text{Al}_2(\text{SO}_4)_3 \cdot 18 \text{H}_2\text{O}$ : 7784-31-8 |

Composition Comments

- The data shown are in accordance with the latest EC Directives.

### **SECTION 4: FIRST AID MEASURES**

#### 4.1. Description of first aid measures

**Inhalation**

Move the exposed person to fresh air at once. Rinse nose and mouth with water. Get medical attention if any discomfort continues.



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#### **Ingestion**

Rinse mouth with water. Drink 1 or 2 glasses of water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

#### **Skin contact**

Remove affected person from source of contamination. Remove contaminated clothing.  
Wash the skin immediately with soap and water. Get medical attention if irritation persists after washing.

#### **Eye contact**

Important! Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If possible use lukewarm water. Consult a physician. Do not rub the eyes, mechanical irritation. Continue rinsing eyes during transport to hospital.

#### **4.2. Most important symptoms and effects, both acute and delayed**

Corrosive effects, May cause irreversible eye damage.

#### **4.3. Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.

### **SECTION 5: FIREFIGHTING MEASURES**

#### **5.1. Extinguishing media**

##### **Extinguishing media**

Not combustible. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

#### **5.2. Special hazards arising from the substance or mixture**

Heating above the decomposition temperature will release toxic gases (Sulphur oxides (SO<sub>x</sub>)).

#### **5.3. Advice for firefighters**

##### **Special Fire Fighting Procedures**

Move container from fire area if it can be done without risk. Keep run-off water out of sewers and water sources.  
Dike for water control.

##### **Protective equipment for fire-fighters**

Face mask, protective gloves and safety helmet.  
Self contained breathing apparatus and full protective clothing must be worn in case of fire.

### **SECTION 6: ACCIDENTAL RELEASE MEASURES**

#### **6.1. Personal precautions, protective equipment and emergency procedures**

Wear protective clothing as described in Section 8 of this safety data sheet. Do not smoke, use open fire or other sources of ignition.  
Avoid inhalation of dust. Avoid contact with eyes and prolonged skin contact. Provide adequate ventilation.

#### **6.2. Environmental precautions**

Avoid discharge into water courses or onto the ground. Must be disposed of in accordance with local and national regulations.

#### **6.3. Methods and material for containment and cleaning up**

**Small spillage:** Shovel or sweep up. Must be disposed of in accordance with local and national regulations.

**Large spillage:** Try to keep material dry. Remove spill using a vacuum truck. Shovel or sweep up remaining material. Must be disposed of in accordance with local and national regulations.

#### **6.4. Reference to other sections**

For personal protection, see section 8.  
See section 11 for additional information on health hazards.  
For waste disposal, see section 13.



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#### SECTION 7: HANDLING AND STORAGE

##### 7.1. Precautions for safe handling

Read and follow manufacturer's recommendations. Do not eat, drink or smoke when using the product. Avoid inhalation of dust and contact with skin and eyes. Avoid handling which leads to dust formation. Observe good chemical hygiene practices. Mechanical ventilation or local exhaust ventilation is required. The product is hygroscopic. Danger for slipping.

##### 7.2. Conditions for safe storage, including any incompatibilities

Store in tightly closed original container in a dry, cool and well-ventilated place. Keep away from food, drink and animal feeding stuffs. Avoid moisture. Avoid freezing. Avoid high temperatures. Keep away from incompatible materials.

Suitable packaging material: Plastic (PE, PP, PVC), fiberglass-reinforced polyester, epoxy-coated concrete, titanium, acidproof or rubber-coated steel.

##### 7.3. Specific end use(s)

For further information see attached Exposure Scenario.

#### SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

##### 8.1. Control parameters

| Name               | STD | TWA - 8 Hrs |                     | STEL - 15 Min |                     | Notes |
|--------------------|-----|-------------|---------------------|---------------|---------------------|-------|
| Aluminium sulphate | WEL | ---         | 2 mg/m <sup>3</sup> | ---           | 6 mg/m <sup>3</sup> | ---   |

##### Ingredient Comments

WEL = Workplace Exposure Limits

##### Derivation of DNEL(s) / DMEL(s)

DN(M)ELs for workers- Sulfuric acid, aluminum salt (3:2), tetradecahydrate

| Exposure pattern             | Route  | Justification                                                          |
|------------------------------|--------|------------------------------------------------------------------------|
| Long-term - systemic effects | Dermal | 3.8 mg/kg bw/day, Most sensitive endpoint: Neurotoxicity (oral)        |
| Long-term - systemic effects | Oral   | 13.4 mg/m <sup>3</sup> , Most sensitive endpoint: Neurotoxicity (oral) |

DN(M)ELs for workers- Aluminium sulphate

| Exposure pattern         | Route      | Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Acute - systemic effects | Dermal     | Not relevant. Based on the physical and chemical properties, the hazard assessment and use of the substance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Acute - systemic effects | Inhalation | Not relevant. Based on the physical and chemical properties, the hazard assessment and use of the substance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Acute - local effects    | Dermal     | Dermal load is very unlikely, but assuming that it occurs the user will have reacted on the burning/itching skin sensation and will automatically start using gloves. Concentrated solutions of the substance may be corrosive (pH < 2 or less) to skin and eye. At concentrations lower than those that cause corrosion, the substance will have no local effect and systemic toxicity. Dermal exposures should be regulated on the basis of risk to local effects (irritation, corrosion) on the skin. Further tests on this compound are therefore not necessary; this data requirement is not triggered. |



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| Exposure pattern             | Route      | Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Acute - local effects        | Inhalation | Not relevant. Based on the physical and chemical properties, the hazard assessment and use of the substance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Long-term - systemic effects | Dermal     | Dermal load is very unlikely, but assuming that it occurs the user will have reacted on the burning/itching skin sensation and will automatically start using gloves. Concentrated solutions of the substance may be corrosive (pH < 2 or less) to skin and eye. At concentrations lower than those that cause corrosion, the substance will have no local effect and systemic toxicity. Dermal exposures should be regulated on the basis of risk to local effects (irritation, corrosion) on the skin. Further tests on this compound are therefore not necessary; this data requirement is not triggered. |

| Exposure pattern             | Route      | Descriptor                     | DNEL / DMEL            | (Corrected) Dose descriptor *)                     | Most sensitive endpoint |
|------------------------------|------------|--------------------------------|------------------------|----------------------------------------------------|-------------------------|
| Long-term - systemic effects | Inhalation | DNEL (Derived No Effect Level) | 20.2 mg/m <sup>3</sup> | NOAEC: 505.0 mg/m <sup>3</sup> (based on AF of 25) | neurotoxicity           |

#### **Justification**

For the DNEL derivation ECETOC (2010) and ECHA Guidance (2008) is followed. For the intraspecies (worker) the default value of ECETOC - AF 3 is used. Further for interspecies (allometric scaling) AF of 1 and an extra AF of 2.5 for the intraspecies (remaining differences) and for the adequacy / quality of database AF 2 from the ECHA is used. The Inhalation DNEL long term is derived for systemic effects (most critical neurotoxicity) based on one year developmental and chronic neurotoxic oral rat study of aluminium citrate with rats (2010) The NOAEL (neurotoxicity) from this study was found to be 323 mg Al Citrate / kg bw/day [ equivalent with 30 mg Al 3+/kg bw / day]. The NOAEL of Aluminum citrate is recalculated to a NOAEL of 345 mg/kg bw/ day for the aluminium substance, using the aluminium content.

| Exposure pattern          | Route      | Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Long-term - local effects | Dermal     | Dermal load is very unlikely, but assuming that it occurs the user will have reacted on the burning/itching skin sensation and will automatically start using gloves. Concentrated solutions of the substance may be corrosive (pH < 2 or less) to skin and eye. At concentrations lower than those that cause corrosion, the substance will have no local effect and systemic toxicity. Dermal exposures should be regulated on the basis of risk to local effects (irritation, corrosion) on the skin. Further tests on this compound are therefore not necessary; this data requirement is not triggered. |
| Long-term - local effects | Inhalation | Not relevant. Based on the physical and chemical properties, the hazard assessment and use of the substance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

\*) The (corrected) dose descriptor starting points have been automatically calculated by multiplying the values of the fields "D(N)MEL" and "Assessment factor" provided in the Endpoint summary of IUCLID section 7. Toxicological information. It reflects the value after any corrections, e.g. route-to-route extrapolation. See column "Justification" for the rationale behind such modifications and the use of assessment factors.



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#### **DN(M)ELs for the general population- Aluminium sulphate**

| Exposure pattern             | Route      | Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Acute - systemic effects     | Dermal     | Not relevant. Based on the physical and chemical properties, the hazard assessment and use of the substance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Acute - systemic effects     | Inhalation | Not relevant. Based on the physical and chemical properties, the hazard assessment and use of the substance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Acute - systemic effects     | Oral       | Not relevant. Based on the physical and chemical properties, the hazard assessment and use of the substance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Acute - local effects        | Dermal     | Not relevant. Dermal load is very unlikely, but assuming that it occurs the user will have reacted on the burning/itching skin sensation and will automatically start using gloves. Concentrated solutions of the substance may be corrosive (pH < 2 or less) to skin and eye. At concentrations lower than those that cause corrosion, the substance will have no local effect and systemic toxicity. Dermal exposures should be regulated on the basis of risk to local effects (irritation, corrosion) on the skin. Further tests on this compound are therefore not necessary; this data requirement is not triggered. |
| Acute - local effects        | Inhalation | Not relevant. Not relevant. Based on the physical and chemical properties, the hazard assessment and use of the substance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Long-term - systemic effects | Dermal     | Not relevant. Not relevant. Based on the physical and chemical properties, the hazard assessment and use of the substance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Long-term - systemic effects | Inhalation | Not relevant. Not relevant. Based on the physical and chemical properties, the hazard assessment and use of the substance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

| Exposure pattern             | Route | Descriptor                     | DNEL / DMEL      | (Corrected) Dose descriptor *)                 | Most sensitive endpoint |
|------------------------------|-------|--------------------------------|------------------|------------------------------------------------|-------------------------|
| Long-term - systemic effects | Oral  | DNEL (Derived No Effect Level) | 3.4 mg/kg bw/day | NOAEL: 340.0 mg/kg bw/day (based on AF of 100) | neurotoxicity           |

#### **Justification**

For the DNEL derivation ECETOC (2010) and ECHA Guidance (2008) is followed. For the intraspecies (worker) the default value of ECETOC - AF 5 is used. Further for interspecies (allometric scaling) AF of 4 is used. An extra AF of 2.5 for the intraspecies (remaining differences) and for the adequacy / quality of database AF 2 from the ECHA is used. The Inhalation DNEL long term is derived for systemic effects (most critical neurotoxicity) based on one year developmental and chronic neurotoxic oral rat study of aluminium citrate with rats (2010) The NOAEL (neurotoxicity) from this study was found to be 323 mg Al Citrate / kg bw/day [equivalent with 30 mg Al 3+/kg bw / day]. The NOAEL of Aluminum citrate is recalculated to a of NOAEL 345 mg/kg bw/ day for the aluminium substanc, using the aluminium content.

| Exposure pattern          | Route  | Justification                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Long-term - local effects | Dermal | Not relevant. Dermal load is very unlikely, but assuming that it occurs the user will have reacted on the burning/itching skin sensation and will automatically start using gloves. Concentrated solutions of the substance may be corrosive (pH < 2 or less) to skin and eye. At concentrations lower than those that cause corrosion, the substance will have no local effect and systemic toxicity. Dermal exposures |



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| Exposure pattern          | Route      | Justification                                                                                                                                                                                      |
|---------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           |            | should be regulated on the basis of risk to local effects (irritation, corrosion) on the skin. Further tests on this compound are therefore not necessary; this data requirement is not triggered. |
| Long-term - local effects | Inhalation | Not relevant. Not relevant. Based on the physical and chemical properties, the hazard assessment and use of the substance.                                                                         |

\*) The (corrected) dose descriptor starting points have been automatically calculated by multiplying the values of the fields "D(N)MEL" and "Assessment factor" provided in the Endpoint summary of IUCLID section 7. Toxicological information. It reflects the value after any corrections, e.g. route-to-route extrapolation. See column "Justification" for the rationale behind such modifications and the use of assessment factors.

#### **Predicted No Effect Concentration (PNEC) - Aluminium sulphate**

##### **PNEC water**

|            |           |
|------------|-----------|
| freshwater | 0.3 µg/l  |
| marine     | 0.03 µg/l |

##### **PNEC sediment**

The risks for sediment dwelling organisms are negligible because the bioavailability of aluminum in sediment is low. In general, the solubility and mobility of aluminum in sediment is greatest when the sediment is rich in organic matter capable of forming aluminum-organic complexes and when the pH is low.

The PNEC value would be highly depending on environmental conditions as pH and organic matter, and therefore a true PNEC cannot and does not need to be derived.

##### **PNEC soil**

The PNEC is 1 mg/kg dw at a pH of 3.4. At higher pH levels the PNEC value will be higher.

##### **PNEC for sewage treatment plant**

The EC10 is 200 mg/l Al, this gives a PNEC of 20 mg/l Al.

#### **8.2. Exposure controls**

##### **Protective equipment**



##### **Process conditions**

Provide eyewash station.

##### **Engineering measures**

Provide adequate ventilation. Observe Occupational Exposure Limits and minimise the risk of inhalation of vapours.

##### **Respiratory equipment**

In case of inadequate ventilation or risk of inhalation of dust, use half mask with dust filter P2.

##### **Hand protection**

For prolonged or repeated skin contact use suitable protective gloves. The most suitable glove must be chosen in consultation with the gloves supplier, who can inform about the breakthrough time of the glove material.

Glove material: PVC and neoprene gloves.

##### **Eye protection**

If risk of splashing, wear safety goggles or face shield (EN 166).



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#### **Hygiene measures**

DO NOT SMOKE IN WORK AREA! Wash hands at the end of each work shift and before eating, smoking and using the toilet. Promptly remove any clothing that becomes contaminated. Use appropriate skin cream to prevent drying of skin. When using do not eat, drink or smoke.

#### **Skin protection**

Wear apron or protective clothing in case of contact.

#### **Environmental Exposure Controls**

Residues and empty containers should be taken care of as hazardous waste according to local and national provisions.

### **SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

#### **9.1. Information on basic physical and chemical properties**

|                                        |                                     |
|----------------------------------------|-------------------------------------|
| <b>Appearance</b>                      | Solid, granules.                    |
| <b>Colour</b>                          | White.                              |
| <b>Odour</b>                           | No data available.                  |
| <b>Odour threshold</b>                 | No data available.                  |
| <b>Solubility</b>                      | Soluble in water.                   |
| <b>Melting point</b>                   | 80-100 °C                           |
| <b>Initial boiling point and range</b> | >300 °C                             |
| <b>pH Value</b>                        | 3-3,70 (%1)                         |
| <b>Decomposition temperature</b>       | 770 °C                              |
| <b>Flash point</b>                     | Not applicable, inorganic compound. |
| <b>Flammability (solid, gas)</b>       | Does not sustain combustion.        |
| <b>Density</b>                         | 1.65 - 1.7 g/cm <sup>3</sup>        |
| <b>Explosion Limits – Lower/ Upper</b> | No data available.                  |
| <b>Viscosity, kinematic</b>            | No data available.                  |
| <b>Explosive properties</b>            | Not explosive.                      |
| <b>Oxidising properties</b>            | Not oxidizing.                      |
| <b>Particle characteristics</b>        | No data available.                  |

#### **9.2. Other information**

|                     |                    |
|---------------------|--------------------|
| <b>Bulk density</b> | No data available. |
|---------------------|--------------------|

### **SECTION 10: STABILITY AND REACTIVITY**

#### **10.1. Reactivity**

Can corrode base metals in the presence of water.

#### **10.2. Chemical stability**

Stable under normal temperature conditions and recommended use. Stable under the prescribed storage conditions.

#### **10.3. Possibility of hazardous reactions**

Corrodes metals under influence of moisture.

#### **10.4. Conditions to avoid**

Corrosion might appear in contact with moisture. Humidity or contact with water may cause lumpiness.



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#### **10.5. Incompatible materials**

Bases, non-acid proof metals (for example aluminium, copper and iron)  
Avoid contact with unalloyed steel or galvanized surfaces.

#### **10.6. Hazardous decomposition products**

Sulphur oxides (SO<sub>x</sub>).

### **SECTION 11: TOXICOLOGICAL INFORMATION**

#### **11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**

##### **Acute toxicity**

Based on available data the classification criteria are not met.

##### **Aluminium sulphate:**

LD50/Oral/Rat: > 2,000 mg/kg

Not classified as harmful if swallowed.

LC50/Inhalation/Rat: > 5 mg/l

Remarks: No known significant effects or critical hazards., Read-across (Analogy), CAS-No., 39290-78-3

LD50/Dermal/Rabbit: > 5,000 mg/kg

Not classified as harmful to health.

##### **Sulfuric acid, aluminum salt (3:2), tetradecahydrate:**

LD50/Oral/Rat: > 2,000 mg/kg

Remarks: CAS-No., 10043-01-3

Not classified as harmful if swallowed.

LC50/Inhalation/Rat: > 5 mg/l

Remarks: No known significant effects or critical hazards, Read-across (Analogy), CAS-No., 39290-78-3

LD50/Dermal/Rabbit: > 5,000 mg/kg

Not classified as harmful to health.

##### **Skin corrosion/irritation**

Based on available data the classification criteria are not met.

Repeated or prolonged skin contact may cause: Skin irritation dry skin.

##### **Aluminium sulphate:**

Skin: Rabbit/OECD Test Guideline 404: No skin irritation

##### **Sulfuric acid, aluminum salt (3:2), tetradecahydrate:**

Skin: Rabbit/OECD Test Guideline 404: No skin irritation

Remarks: CAS-No. 10043-01-3

##### **Serious eye damage/irritation**

Causes serious eye damage.

##### **Aluminium sulphate:**

Eyes: Rabbit/OECD Test Guideline 405: Severe eye irritation

May cause irreversible eye damage.

##### **Sulfuric acid, aluminum salt (3:2), tetradecahydrate:**

Eyes: Rabbit/OECD Test Guideline 405: Severe eye irritation

Remarks: May cause irreversible eye damage.

##### **Respiratory or skin sensitisation**

Based on available data the classification criteria are not met.

##### **Aluminium sulphate:**

Guinea pig/OECD Test Guideline 406



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Remarks: Read-across (Analogy) CAS-No. 1327-41-9  
Not sensitizing.

#### **Germ cell mutagenicity (In Vitro/ In Vivo)**

Based on available data the classification criteria are not met.

##### **Aluminium sulphate:**

Mutagenicity (Salmonella typhimurium - reverse mutation assay)/AMES test/OECD Test Guideline 471:

Result: negative

Metabolic activation: with and without

In vitro mammalian cells/micronucleus test/OECD Test Guideline 487:

Result: negative

Metabolic activation: with and without

In vitro gene mutation study in mammalian cells/Lymphoma/OECD Test Guideline 476:

Result: negative

Metabolic activation: with and without

##### **Sulfuric acid, aluminum salt (3:2), tetradecahydrate:**

Mutagenicity (Salmonella typhimurium - reverse mutation assay)/AMES test/OECD Test Guideline 471:

Result: negative

Metabolic activation: with and without

In vitro mammalian cells/micronucleus test/OECD Test Guideline 487:

Result: negative

Metabolic activation: with and without

In vitro gene mutation study in mammalian cells/Lymphoma/OECD Test Guideline 476:

Result: negative

Metabolic activation: with and without

#### **Carcinogenicity**

Based on available data the classification criteria are not met.

##### **Aluminium sulphate:**

Oral/Rat/2 years:

Did not show carcinogenic effects in animal experiments.

##### **Sulfuric acid, aluminum salt (3:2), tetradecahydrate:**

Oral/Rat/2 years:

Did not show carcinogenic effects in animal experiments.

#### **Reproductive Toxicity**

Based on available data the classification criteria are not met.

##### **Aluminium sulphate:**

Oral/Rat/female/Reproductive effects/OECD Test Guideline 452:

NOAEL: 3,225 mg/kg

NOAEL F1:

Remarks: bw/day Read-across (Analogy) CAS-No. 31142-56-0

Not believed to be toxic for reproduction.

Oral/Rat/female/Reproductive effects/OECD Test Guideline 452:

NOAEL: 300 mg/kg

NOAEL F1:

Remarks: bw/day Calculated as AI Read-across (Analogy) CAS-No. 31142-56-0

Oral/Rat/male and female/Developmental toxicity test/OECD Test Guideline 422:

NOAEL: 1,000 mg/kg

NOAEL F1: 1,000 mg/kg

Remarks: bw/day Read-across (Analogy) CAS-No. 1327-41-9



## **SAFETY DATA SHEET**

### **Aluminium sulfate**

Commission Regulation (EU) 2020/878 of 18 June 2020.

According to Regulation (EC) No 1907/2006, Annex II, as amended.

According to the REACH etc. (Amendment etc.) (EU Exit) Regulations 2020 No. 1577, as amended.

Not believed to be toxic for reproduction. In animal studies, did not interfere with reproduction.

Oral/male and female/OECD Test Guideline 422:

NOAEL: 90 mg/kg

NOAEL F1: 90 mg/kg

Remarks: bw/day Calculated as AI Read-across (Analogy) CAS-No. 1327-41-9

#### **Sulfuric acid, aluminum salt (3:2), tetradecahydrate:**

Oral/Rat/female/Reproductive effects/OECD Test Guideline 452:

NOAEL: 3,225 mg/kg

NOAEL F1:

Remarks: bw/day Read-across (Analogy) CAS-No. 31142-56-0

Not believed to be toxic for reproduction.

Oral/Rat/female/Reproductive effects/OECD Test Guideline 452:

NOAEL: 300 mg/kg

NOAEL F1:

Remarks: bw/day Calculated as AI Read-across (Analogy) CAS-No. 31142-56-0

Not believed to be toxic for reproduction.

Rat/male and female/Screening test/OECD Test Guideline 422:

NOAEL: 1,000 mg/kg

NOAEL F1: 1,000 mg/kg

Remarks: bw/day Read-across (Analogy) CAS-No. 1327-41-9

No known effect.

Male and female/OECD Test Guideline 422:

NOAEL: 90 mg/kg

NOAEL F1: 90 mg/kg

Remarks: bw/day Calculated as AI Read-across (Analogy) CAS-No. 1327-41-9

#### **Teratogenicity**

##### **Aluminium sulphate:**

Oral/Rat/OECD Test Guideline 452:

NOAEL: 323 mg/kg

Mother: 3,225 mg/kg bw/day Read-across (Analogy) CAS-No. 31142-56-0

Oral/Rat/OECD Test Guideline 452:

NOAEL: 30 mg/kg

Mother: 300 mg/kg bw/day Calculated as AI CAS-No. 31142-56-0 Read-across (Analogy)

##### **Sulfuric acid, aluminum salt (3:2), tetradecahydrate:**

Oral/Rat/OECD Test Guideline 452:

NOAEL: 323 mg/kg

Mother: 3,225 mg/kg bw/day Read-across (Analogy) CAS-No. 31142-56-0

Oral/Rat/OECD Test Guideline 452:

NOAEL: 30 mg/kg

Mother: 300 mg/kg bw/day Calculated as AI CAS-No. 31142-56-0 Read-across (Analogy)

#### **STOT Specific target organ toxicity - single exposure**

Based on available data the classification criteria are not met.

#### **STOT Specific target organ toxicity - repeated exposure**

Based on available data the classification criteria are not met.

#### **Aspiration hazard**

Based on available data the classification criteria are not met.

#### **Human experience**

##### **Inhalation**

Symptoms: Cough and difficulties in breathing.



## **SAFETY DATA SHEET**

### **Aluminium sulfate**

Commission Regulation (EU) 2020/878 of 18 June 2020.

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According to the REACH etc. (Amendment etc.) (EU Exit) Regulations 2020 No. 1577, as amended.

#### **Skin contact**

Symptoms: Effects of repeated or prolonged skin contacts may include: Dry skin, irritation.

#### **Eye contact**

Symptoms: Contact with eyes causes a smarting pain and a flood of tears. Risk of serious damage to eyes.

Remarks: The product may harm the cornea by mechanical action.

#### **Ingestion**

Symptoms: Ingestion may provoke the following symptoms:

Nausea, Vomiting, irritation of mouth, oesophagus and stomach.

#### **11.2. Information on other hazards**

This product does not contain any known or suspected endocrine disruptors.

## **SECTION 12: ECOLOGICAL INFORMATION**

#### **12.1. Toxicity**

This material is not classified as dangerous for the environment. At environmentally relevant pH 5,5 – 8, the solubility of aluminium is low. Aluminium salts dissociate with water resulting in rapid formation and precipitation of aluminium hydroxides. At pH <5.5, the free ion (Al<sup>3+</sup>) becomes the prevalent form, the increased availability at this pH is reflected in higher toxicity. At pH 6.0– 7.5, solubility declines due to the presence of insoluble Al(OH)<sub>3</sub>. At higher pH (pH >8.0), the more soluble Al(OH)<sub>4</sub> – species predominate, which again increases availability. Aluminium salts must not be released to rivers and lakes in an uncontrolled way and pH variations around 5 - 5.5 should be avoided.

##### **Aluminium sulphate:**

LC50/96 h/Danio rerio/semi-static test/OECD Test Guideline 203: > 562 mg/l

NOEC/96 h/Danio rerio/semi-static test/OECD Test Guideline 203: > 562 mg/l

LC50/96 h/Danio rerio/semi-static test/OECD Test Guideline 203: > 0.247 mg/l

Calculated as Al Maximum soluble concentration under the test conditions.

EC50/48 h/Daphnia magna (Water flea)/semi-static test/OECD Test Guideline 202: > 90 mg/l

NOEC/48 h/Daphnia magna (Water flea)/semi-static test/OECD Test Guideline 202: > 90 mg/l

LC50/48 h/Daphnia magna (Water flea)/OECD Test Guideline 202: > 0.176 mg/l

Calculated as Al Maximum soluble concentration under the test conditions.

EC50/72 h/Pseudokirchneriella subcapitata (green algae)/static test/OECD Test Guideline 201: 24 mg/l

EC50/72 h/Pseudokirchneriella subcapitata (green algae)/static test/OECD Test Guideline 201: 3.8 mg/l Calculated as Al

NOEC/72 h/Pseudokirchneriella subcapitata (green algae)/static test/OECD Test Guideline 201: 1.7 mg/l

NOEC/72 h/Pseudokirchneriella subcapitata (green algae)/static test/OECD Test Guideline 201: 0.27 mg/l Calculated as Al

##### **Sulfuric acid, aluminum salt (3:2), tetradecahydrate:**

LC50/96 h/Danio rerio/semi-static test/OECD Test Guideline 203: > 1,000 mg/l

NOEC/Danio rerio/semi-static test/OECD Test Guideline 203: > 1,000 mg/l

LC50/Danio rerio/semi-static test/OECD Test Guideline 203: > 0.247 mg/l

Calculated as Al Maximum soluble concentration under the test conditions.

EC50/48 h/Daphnia magna (Water flea)/semi-static test/OECD Test Guideline 202: > 160 mg/l

NOEC/48 h/Daphnia magna (Water flea)/semi-static test/OECD Test Guideline 202: > 160 mg/l

EC50/48 h/Daphnia magna (Water flea)/semi-static test/OECD Test Guideline 202: > 0.176 mg/l

Calculated as Al Maximum soluble concentration under the test conditions.

EC50/72 h/Pseudokirchneriella subcapitata (green algae)/static test/OECD Test Guideline 201: > 41.5 mg/l

EC50/72 h/Pseudokirchneriella subcapitata (green algae)/static test/OECD Test Guideline 201: 3.8 mg/l Calculated as Al



## **SAFETY DATA SHEET**

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According to the REACH etc. (Amendment etc.) (EU Exit) Regulations 2020 No. 1577, as amended.

NOEC/72 h/Pseudokirchneriella subcapitata (green algae)/static test/OECD Test Guideline 201: 3.0 mg/l

NOEC/72 h/Pseudokirchneriella subcapitata (green algae)/static test/OECD Test Guideline 201: 0.27 mg/l Calculated as Al

#### **12.2. Persistence and degradability**

##### **Biological degradability:**

The methods for determining the biological degradability are not applicable to inorganic substances.

##### **Chemical degradation:**

Remarks: Reaction with water forms aluminium hydroxide precipitates.

#### **12.3. Bioaccumulative potential**

The product is not expected to bioaccumulate.

#### **12.4. Mobility in soil**

##### **Mobility**

The product is soluble in water.

#### **12.5. Results of PBT and vPvB assessment**

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

#### **12.6. Endocrine disrupting properties**

This product does not contain any known or suspected endocrine disruptors.

#### **12.7. Other adverse effects**

May lower the pH of water and thus be harmful to aquatic organisms.

### **SECTION 13: DISPOSAL CONSIDERATIONS**

#### **General information**

When handling waste, consideration should be made to the safety precautions applying to handling of the product.

#### **13.1. Waste treatment methods**

Dispose of waste and residues in accordance with local authority requirements. Dispose of on site landfill area.

### **SECTION 14: TRANSPORT INFORMATION**

#### **General**

The product is not covered by international regulation on the transport of dangerous goods (IMDG, IATA, ADR/RID).

#### **14.1. UN number or ID number**

No information required.

#### **14.2. UN proper shipping name**

No information required.

#### **14.3. Transport hazard class(es)**

No information required.

#### **14.4. Packing group**

No information required.

#### **14.5. Environmental hazards**

**Environmentally Hazardous Substance/Marine Pollutant**

No.

#### **14.6. Special precautions for user**

No information required.



## **SAFETY DATA SHEET**

### **Aluminium sulfate**

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According to Regulation (EC) No 1907/2006, Annex II, as amended.

According to the REACH etc. (Amendment etc.) (EU Exit) Regulations 2020 No. 1577, as amended.

#### **14.7. Maritime transport in bulk according to IMO instrument**

Not relevant.

### **SECTION 15: REGULATORY INFORMATION**

#### **15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

##### **UK Regulatory References**

Chemicals (Hazard Information & Packaging) Regulations.

##### **Statutory Instruments**

The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (S.I 2009 No. 716).  
Control of Substances Hazardous to Health.

##### **Approved Code Of Practice**

Classification and Labelling of Substances and Preparations Dangerous for Supply.

##### **Guidance Notes**

Workplace Exposure Limits EH40. Introduction to Local Exhaust Ventilation HS(G)37.  
CHIP for everyone HSG(108).

##### **EU Legislation**

Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures

Commission Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Commission Regulation (EU) 2020/878 of 18 June 2020

##### **Restrictions (Annex XVII Regulation 1907/2006)**

There are no known restrictions on the use of this product.

##### **Seveso Directive - Control of major accident hazards**

Not relevant.

#### **15.2. Chemical Safety Assessment**

No chemical safety assessment has been carried out.

### **SECTION 16: OTHER INFORMATION**

##### **Abbreviations used in safety data sheet**

ADR: European Agreement on International Carriage of Dangerous Goods by Road.

ADN: European Agreement on the International Carriage of Dangerous Goods by Inland Waterways.

RID: European Agreement on International Carriage of Dangerous Goods by Rail.

IATA: International Air Transport Association.

ICAO-TI: Technical Specification for Safe Transport of Dangerous Goods by Air.

IMDG: International Maritime Dangerous Goods.

TWA: Time weighted average

ATE: Estimated value of acute toxicity

EC No: European Community number

CAS: Chemical Theory Service.

LD50: Substance that causes 50% (half) death in the test animals group (Median Fatal Dose).

LC50: Substance concentration causing 50% (half) death in the test animals group.

EC50: Effective Concentration of the substance causing the maximum of 50%.

PBT: Persistent, Bioaccumulative and Toxic substance.

vPvB: Very Permanent, Very Biofriendly.



## **SAFETY DATA SHEET**

### **Aluminium sulfate**

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According to Regulation (EC) No 1907/2006, Annex II, as amended.

According to the REACH etc. (Amendment etc.) (EU Exit) Regulations 2020 No. 1577, as amended.

SEA: Classification, labeling, packaging regulation

DNEL: Derivative Inactive Level

PNEC: Estimated Unaffected Concentration

#### **Information Sources**

This SDS is written based on the information received from rawmaterial supplier.

European Chemicals Agency (ECHA)

#### **Revision Comments**

SDS has been revised under the current regulations.

#### **Hazard Statements In Full**

H318 Causes serious eye damage.

#### **Issued By**

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#### **Issued Note**

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