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

1.1. Product identifier

Product name	**Aluminium sulfate**
Other names	Sulfuric acid, aluminum salt (3:2), tetradecahydrate Aluminum sulfate 14-hydrate Aluminum sulfate 16-hydrate Aluminum sulfate 18-hydrate
CAS No	Al2(SO4)3: 10043-01-3
Other CAS No	Al2(SO4)3•14 H2O: 16828-12-9 Al2(SO4)3•16 H2O: 16828-11-8 Al2(SO4)3•18 H2O: 7784-31-8
REACH Registration number	01-2119531538-36-xxxx

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

Identified uses	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.
Uses advised against	Do not use for other purposes than the identified uses.

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical and Chemical Hazards	Not classified.
Human health	Eye dam. 1 - H318
Environment	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	Al2(SO4)3·x H2O
Chemical Name	Aluminium sulphate
Content	>99 %
CAS-No.	10043-01-3
EC No.	233-135-0
Other CAS No	Al2(SO4)3•14 H2O: 16828-12-9 Al2(SO4)3•16 H2O: 16828-11-8 Al2(SO4)3•18 H2O: 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.

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.

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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 (SOx)).

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.

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.

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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^3	---	6 mg/m^3	---

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/m³, 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.
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

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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.

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/m³	NOAEC: 505.0 mg/m³ (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 neurotoxicty) 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.*

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.

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Exposure pattern	Route	Justification
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 neurotoxicty) 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 recalculted 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 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.*

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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).

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

Appearance	Solid, granules.
Colour	White.

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Odour	No data available.
Solubility	**S**oluble in water.
Melting point	80-100 °C
Boiling Point	>300 °C
pH Value	3-3,70 (%1)
Decomposition temperature	770 °C
Flash point	Not applicable, inorganic compound.
Flammability (solid, gas)	Does not sustain combustion.
Density	1.65 **-** 1.7 g/cm³
Explosion Limits – Lower/ Upper	No data available.
Viscosity, kinematic	No data available.
Oxidising properties	Not oxidizing

9.2. Other information

Bulk density 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.

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 (SOx).

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

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.

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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
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

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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 Al 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

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 Al 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 Al 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.

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Male and female/OECD Test Guideline 422:
NOAEL: 90 mg/kg
NOAEL F1: 90 mg/kg
Remarks: bw/day Calculated as Al 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 Al 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 Al 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.

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.

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 (Al3+) 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)3. At higher pH (pH >8.0), the more soluble Al(OH)4 – 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

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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
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. 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.

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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
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.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
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, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 with amendments.
Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

15.2. Chemical Safety Assessment
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.

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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.
SEA: Classification, labeling, packaging regulation
DNEL: Derivative Inactive Level
PNEC: Estimated Unaffected Concentration
BHOT: Specific Target Organ Toxicity

Information Sources
This SDS is written based on the information received from rawmaterial supplier.
European Chemicals Agency (ECHA)

Revision Comments
Revised section 15.2.

Hazard Statements In Full
H318 Causes serious eye damage.

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