1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

1.1	**IDENTIFICATION OF THE SUBSTANCE OR PREPARATION**	Ferric Aluminium Sulfate Solution Aluminium Iron (III) Sulfate Liquid conforms to BS EN 887:2016
	Identification on the label / trade name	Ferric Aluminium Sulfate (FAS)
1.2	**USE OF THE SUBSTANCE / PREPARATION**	Used for the treatment of water intended for human consumption
	Uses advised against	Any other use
1.3	**COMPANY/UNDERTAKING IDENTIFICATION**	Clinty Chemicals Ltd 215 Doury Road Ballymena Co. Antrim Northern Ireland BT43 6SS
	E-mail	info@clintychemicals.co.uk
1.4	**EMERGENCY TELEPHONE**	028 2564 1618

2. HAZARDS IDENTIFICATION

2.1 CLASSIFICATION

2.1.1 Classification according to Directive 67/548/EEC or 1999/45 as amended

Classification	Category	Risk Phrases
C Corrosive	-	R34 Causes burns
X_n Harmful	-	R22 Harmful if swallowed

2.1.2 Classification according to Regulation (EC) No 1272/2008 as amended

Classification	Category	Hazard Statement
Physical Hazard Corrosive to metals	Category 1	H290 May be corrosive to metals
Health Hazard Eye Effects	Category 1	H318 Causes serious eye damage
Health Hazard Skin Irritant	Category 2	H315 Causes skin irritation
Health Hazard Acute Toxicity	Category 4	H302 Harmful if swallowed

2.2 LABEL ELEMENTS

2.1.1 Labelling according to Regulation (EC) No 1272/2008 as amended

Contains

Di-iron tris(Sulfate)
Aluminium Sulfate
Sulphuric Acid

Hazard Pictograms

Signal Word

Danger

Hazard Statements

H290 May be corrosive to metals
H302 Harmful if swallowed
H315 Causes skin irritation
H318 Causes serious eye damage

Precautionary Statements

Prevention

P234 Keep only in original container
P264 Wash skin thoroughly after handling
P270 Do not eat, drink or smoke when using this product
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection

Response

P305+351+338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water
P332 + P313 If skin irritation occurs: Get medical advice / attention.
P390 Absorb spillage to prevent material damage

Storage

P406 Store in corrosive resistant container with a resistant inner liner

Disposal

P501 Dispose of contents/container in accordance with local regulation

Hazardous Components

10028-22-5 Diiron tris(Sulfate)
10043-01-3 Aluminium Sulfate
7664-93-9 Sulphuric Acid

Further information The product is classified and labeled in accordance with EC directives or respective national laws

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

3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1 PREPARATION / MIXTURE RELATED INFORMATION

Description Ferric Aluminium Sulfate Solution

Hazardous Ingredients

Chemical Name	EC No / REACH Registration Number	CAS No	Amount (%)	Classification according to Regulation (EC) No 1272/2008 – CLP		Classification according to 67/548/EEC or 1999/45/EC
				Hazard Class / Hazard Category	Hazard Symbol	
Diiron tris(Sulfate) $Fe_2(SO_4)_3nH_2O$	233-072-9 / 01-2119513202-59	10028-22-5	20.1	Acute Tox. Category 4,H302 Eye Dam. Category 1,H318 Skin Irrit. Category 2,H315		X_n R22 X_i R38 R41
Iron (II) Sulfate	231-753-5 / 01-2119513203-57	7720-78-7	0.1 – 1.5	Acute Tox. Category 4,H302 Eye Irrit. Category 2,H319 Skin Irrit. Category 2,H315		X_n R22 X_i R36/38
Manganese Sulfate	232-089-9	7785-87-7	<=0.25	STOT RE Category 2,H373 Aquatic Chronic Category 2,H411		X_n R48/20/22 N R51 R53
Aluminium Sulfate $Al_2(SO_4)_3nH_2O$	233-135-0 / 05-2116762006-50	10043-01-3	11.1	Eye Damage Category 1: H318		Xi Irritant: R41

Chemical Name	EC No / REACH Registration Number	CAS No	Amount (%)	Classification according to Regulation (EC) No 1272/2008 – CLP		Classification according to 67/548/EEC or 1999/45/EC
				Hazard Class / Hazard Category	Hazard Symbol	
Sulphuric Acid	231-639-5	7664-93-9	< 2	Skin Irrit. 2; H315: Eye Irrit. 2; H319		Xi Irritant: R36/38

Composition comments The full text for all R- and H-phrases is displayed in section 16

4. FIRST AID MEASURES

4.1 GENERAL INFORMATION

P308/P313 If exposed or concerned: get medical advice/attention
- No hazards which require special first aid measures

4.2 DESCRIPTION OF FIRST AID MEASURES

IN CASE OF INHALATION

P304 IF INHALED: Move to fresh air
- Call a physician if symptoms develop or persist

IN CASE OF SKIN CONTACT

P361 Remove/Take off immediately all contaminated clothing.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.

IN CASE OF EYE CONTACT

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

- If possible use lukewarm water. Consult a physician. Do not rub the eyes as this can cause mechanical irritation. Continue rinsing eyes during transport to hospital

IN CASE OF INGESTION

P301 + P330 + P331 IF SWALLOWED: rinse mouth with water. Do NOT induce vomiting.
- Drink 1 or 2 glasses of milk
- Call a physician if symptoms develop or persist

4.3	**MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED**	Corrosive effects, Causes burns
4.4	**INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED**	Rinse with plenty of water

5. FIRE FIGHTING MEASURES

5.1	**SUITABLE EXTINGUISHING MEDIA**	Not combustible. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
5.2	**EXTINGUISHING MEDIA WHICH MUST NOT BE USED FOR SAFETY REASONS**	None known
5.3	**SPECIAL EXPOSURE HAZARDS ARISING FROM THE SUBSTANCE OR PREPARATION ITSELF, COMBUSTION PRODUCTS, RESULTING GASES**	Heating above the decomposition temperature (>315 ^{o}C) will release toxic gases - sulphur oxides (SO_x)
5.4	**SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS**	Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS

P280	Wear suitable protective gloves/protective clothing/eye protection/face protection
P308/P313	If exposed or concerned: get medical advice/attention

6.2 ENVIRONMENTAL PRECAUTIONS

Protect drains from potential spills to minimize contamination. Do not wash product into drainage system. Contact the appropriate authorities in all cases where the consequences cannot be quickly and effectively controlled.
When diluted below a mass fraction of 1% hydrolysis and hydroxide formation occurs

6.3 METHODS FOR CLEANING UP

In case of spill, stop the source of the leak or release
Contain and recover spilled material using sand or other suitable inert absorbent material. Sweep up and place in a disposable container. Dilute residues with water and then neutralize with lime or limestone powder to a solid consistency. Shovel or sweep up. Must be disposed of in accordance with local and national regulations

Scrub contaminated area with water, using a stiff broom. Prevent contamination of groundwater or surface water.

It is advised that stocks of suitable absorbent material should be held in quantities sufficient to deal with any spillage which may be reasonably anticipated.

7. HANDLING & STORAGE

7.1 HANDLING

7.1.1 Safe handling: Protective measures

Avoid contact with eyes. If splashing is likely to occur wear a full face visor or chemical goggles as appropriate. If skin contact is likely, wear impervious protective clothing and gloves. High standards of personal hygiene and plant cleanliness must be maintained. Wash hands thoroughly after use, and always wash hands before eating, drinking and smoking and before and after using the toilet. Change heavily contaminated clothing as soon as reasonably practicable and launder before re-use. Wash any contaminated underlying skin with soap and water.

Emergency eye wash fountains and emergency showers should be available in the immediate vicinity

7.1.2 Safe handling: Technical measures

Danger for slipping. The work place and work methods shall be organized in such a way that direct contact with the product is prevented or minimized. For personal protection see section 8.

7.1.3 Safe handling: Measures to protect the environment

The design, construction and maintenance of bulk storage and handling facilities are covered by codes of the practice published by the Health and Safety Executive and the Environment Agency.

7.1.4 Safe handling: Precautions against fire and explosion

Not combustible. No specific precautions

7.2 STORAGE

P102 Keep out of reach of children
P233 Keep container tightly closed
P234 Keep only in original container

7.2.1 Technical measures and storage conditions

Avoid freezing. Keep away from incompatible materials.

7.2.2 Packaging materials

Suitable material: Stainless steel (316 and 440), rubber and most plastic containers and tanks

7.3.3 Requirements for storage rooms and vessels

The design, construction and maintenance of bulk storage and handling facilities are covered by codes of the practice published by the Health and Safety Executive and the Environment Agency.

7.3.4 Materials to avoid

Avoid contact with non-acid proof metals (for example aluminium, copper and iron), hypochlorites, sulphites, chlorites, bases and oxidizing agents

7.3.5 Other data

Storage period 12 months

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS

Occupational Exposure Limits

Ireland

United Kingdom

Component	CAS No	Type	Value	Form
Diiron tris (Sulfate)	10028-22-5	STEL TWA	2 $mg.m^{-3}$ 1 $mg.m^{-3}$	Calculated as Fe
Iron (II) Sulfate	7720-78-7	STEL	2 $mg.m^{-3}$	Calculated as Fe
Manganese Sulfate	7785-87-7	TWA	0.5 $mg.m^{-3}$	Calculated as Mn
Aluminium Sulfate	10043-01-3	TWA	2 $mg.m^{-3}$	Soluble aluminium salts

Derived No-Effect Level (DNEL)

Component	CAS No	Type	Route	Value	Form
Diiron tris (Sulfate)	10028-22-5	Industry	Dermal	2.0 $mg.kg^{-1}$ bw/day Read-across (Analogy), CAS-No., 10025-77-1 0.57 $mg.kg^{-1}$ bw/day as Fe	Long term systemic effects
		Industry	Inhalation	7.2 $mg.m^{-3}$ Read-across (Analogy), CAS-No., 10025-77-1 2.01 $mg.m^{-3}$ as Fe	Long term systemic effects
		Industry	Inhalation	7.2 $mg.m^{-3}$ Read-across (Analogy), CAS-No., 10025-77-1 2.01 $mg.m^{-3}$ as Fe	Acute effects, systemic effects

Component	CAS No	Type	Route	Value	Form
		Industry	Dermal	2.0 $mg.kg^{-1}$ bw/day Read-across (Analogy), CAS-No., 10025-77-1 0.57 $mg.kg^{-1}$ bw/day as Fe	Acute effects, systemic effects
Iron (II) Sulfate	7720-78-7	Industry	Dermal	1.6 $mg.kg^{-1}$ bw/day Read-across (Analogy), CAS-No., 10025-77-1 0.57 $mg.kg^{-1}$ bw/day as Fe	Long term systemic effects
		Industry	Inhalation	5.5 $mg.m^{-3}$ Read-across (Analogy), CAS-No., 10025-77-1 2.01 $mg.m^{-3}$ as Fe	Long term systemic effects
		Industry	Inhalation	5.5 $mg.m^{-3}$ Read-across (Analogy), CAS-No., 10025-77-1 2.01 $mg.m^{-3}$ as Fe	Acute effects, systemic effects
		Industry	Dermal	1.6 $mg.kg^{-1}$ bw/day Read-across (Analogy), CAS-No., 10025-77-1 0.57 $mg.kg^{-1}$ bw/day as Fe	Acute effects, systemic effects
Aluminium Sulfate	10043-01-3	Consumer	Oral	3.4 $mg.kg^{-1}$ bw/day	Long term systemic effects
		Industry	Inhalation	20.2 $mg.m^{-3}$	Long term systemic effects

Predicted No-Effect Concentration (PNEC)

Component	CAS No	Type	Route	Value	Form
Diiron tris (Sulfate)	10028-22-5	Not applicable	Sewage Treatment Plant	500 $mg.l^{-1}$	Calculated as Fe
Iron (II) Sulfate	7720-78-7	Not applicable	Sewage Treatment Plant	500 $mg.l^{-1}$	Calculated as Fe
Aluminium Sulfate	10043-01-3	Not applicable	STP Water Water	20 $mg.l^{-1}$ 0.3 $\mu g.l^{-1}$ 0.03$\mu g.l^{-1}$	- Freshwater Marine water

8.2 EXPOSURE CONTROLS

8.2.1 Occupational exposure controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure

limits have not been established, maintain airborne levels to an acceptable level. Good general ventilation should be sufficient to control airborne levels. Local exhaust is suggested for use, where possible, in enclosed or confined spaces. Ventilation should effectively remove and prevent build-up of any aerosols or mists generated from the handling of the product

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

8.2.1 Instructional measures to prevent exposure

Where there is potential for exposure: provide specific activity training to operators to minimise exposure

8.2.3 Organisational measures to prevent exposure

Regularly inspect, test and maintain all control measures.

8.2.4 Technical measures to prevent exposure

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Clear up spills immediately and dispose of wastes safely. Wash thoroughly after handling

8.3 PERSONAL PROTECTION EQUIPMENT

Respiratory protection	Respiratory protection is not required under normal handling conditions. If aerosols or mist are formed, use half mask with dust filter P2
Hand protection	Compatible chemical resistant gloves, preferably gauntlet type (PVC or neoprene) (EN374) Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be removed and replaced immediately if there is any indication of degradation or chemical breakthrough. Break through time: > 480 min
Eye protection	Tightly fitting safety goggles or face-shield (EN166) Eye wash fountain is recommended
Body protection:	Wear chemical resistant overalls / suit and rubber boots

9. PHYSICAL & CHEMICAL PROPERTIES

Parameter	Units	Value	Comment
Appearance/Physical State		Liquid	Aqueous solution of low volatility
Appearance/Colour		Yellow / Brown	
Odour		Not significant	
pH		1.0	Acidic
Crystallisation point	°C	- 12	
Boiling point	°C	> 100	
Density (at 15°C)	g/cm^3	1.280 – 1.296	
Vapour pressure	kPa	Not applicable	In accordance with column 2 of REACH Annex VII, the study does not need to be conducted
Viscosity at 40°C	mPa.s	Not specified	
Partition coefficient		Not applicable	Inorganic compound
Water solubility		Completely soluble	Miscible
Flash point	°C	Not applicable	In accordance with column 2 of REACH Annex VII, the study does not need to be conducted; inorganic compound.
Auto flammability	°C	Non flammable	Substance is non-flammable
Flammability	%	Non flammable	Substance is non-flammable
Explosiveness		Not applicable	
Oxidising properties		Not oxidising	
Thermal Decomposition	°C	315	

10. STABILITY & REACTIVITY

10.1 REACTIVITY

Corrosive to metals

10.2 CHEMICAL STABILITY

Stable under normal conditions

10.3 CONDITIONS TO AVOID

Avoid temperatures below crystallization range.
Avoid storage at high temperatures

10.4 MATERIALS TO AVOID

Avoid contact with metals (except Stainless Steel 316 and 440), and sulphites

Avoid contact with oxidising agents especially hypochlorites and chlorites

Reacts violently with strong alkaline substances. This product may react with reducing agents. Do not mix with other chemicals

10.5 HAZARDOUS DECOMPOSITION PRODUCTS

When boiled to dryness or heated above 315°C, toxic and corrosive fumes of sulphur dioxide and trioxide are liberated

11. TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

RTECS NUMBER — NO8520000 (Iron (III) Sulfate)
WS56960000 (Aluminium Sulfate)

Overdose of iron compounds may have a corrosive effect on the gastrointestinal mucosa and be followed by necrosis, perforation, and stricture formation. Several hours may elapse before symptoms that can include epigastria pain, diarrhoea, vomiting, nausea, and hematemesis occur. After apparent recovery a person may experience metabolic acidosis, convulsions, and coma hours or days later. Further complications may develop leading to acute liver necrosis that can result in death due to hepatic coma

ACUTE TOXICITY — **Diiron tris(Sulfate)**

ORAL — LD_{50} / Oral / Rat 788 $mg.kg^{-1}$
Read-across (Analogy), CAS-No 7758-94-3
220 $mg.kg^{-1}$ Calculated as Fe

DERMAL — LD_{50} / Dermal / Rat > 3,154 $mg.kg^{-1}$
Read-across (Analogy), CAS-No 7758-94-3
> 881 $mg.kg^{-1}$ Calculated as Fe

INHALATION — No data available, not applicable

ACUTE TOXICITY — **Aluminium Sulfate**

ORAL — LD_{50} / Oral / Rat >2000 $mg.kg^{-1}$
Not classified as harmful if swallowed

DERMAL — LD_{50} / Dermal / Rabbit >5000 $mg.kg^{-1}$
Not classified as harmful to health

INHALATION

LC_{50} / Inhalation / Rat >5 $mg.l^{-1}$
No known significant effects or critical hazards.,
Read-across (Analogy), CAS-No 39290-78-3

IRRITATION AND CORROSION — **Diiron tris(Sulfate)**

EYE IRRITATION

Eyes: May cause burns
Eyes: rabbit/OECD Test Guideline 405: Causes serious eye damage
Remarks: Read-across (Analogy) CAS No 7758-94-3 dry substance

SKIN IRRITATION

Skin: May cause burns
Skin: rabbit/OECD Test Guideline 404: No skin irritation
Moistened solid is expected to be irritant as a consequence of low pH

SKIN SENSITISATION

Not sensitizing
According to experience sensitization is not expected

IRRITATION AND CORROSION — **Aluminium Sulfate**

EYE IRRITATION

Eyes: rabbit/OECD Test Guideline 405: Severe eye irritation. May cause irreversible eye damage

SKIN IRRITATION

Skin: rabbit/OECD Test Guideline 404: No skin irritation.
Repeated or prolonged skin contact may cause:
Skin irritation, dry skin

SKIN SENSITISATION

Aluminium Sulfate:
guinea pig/OECD Test Guideline 406
Read-across (Analogy)
CAS-No 1327-41-9
Not sensitizing

LONG TERM TOXICITY — **Diiron tris(Sulfate)**

REPEATED DOSE TOXICITY

Oral/rat/males:
NOAEL: 277 $mg.kg^{-1}$
Read-across (Analogy)

Oral/rat/females:
NOAEL: 314 $mg.kg^{-1}$
Read-across (Analogy)

CARCINOGENICITY

Oral/rat/2 years:

Information given is based on data obtained from similar substances.
Not believed to be a carcinogen

MUTAGENICITY

No information available

REPRODUCTIVE TOXICITY

/rat/Reproductive effects:
NOAEL: > 500 $mg.kg^{-1}$
NOAEL F1:
Read-across (Analogy)

/rat/Developmental toxicity test: NOAEL: > 1.000 $mg.kg^{-1}$NOAEL F1:
Read-across (Analogy) In animal studies, did not interfere with reproduction

TERATOGENICITY

Oral/rat:
NOAEL: > 1.000 $mg.kg^{-1}$
Did not show teratogenic effects in animal experiments. Information given is based on data obtained from similar substances

HUMAN EXPERIENCE

Inhalation: May cause irritation of the mucous membranes

Skin contact: May cause skin irritation. May cause burns

Eye contact: May cause eye irritation. May cause burns

LONG TERM TOXICITY

Aluminium Sulfate

REPEATED DOSE TOXICITY

Oral/rat/OECD Test Guideline 422:
NOAEL: 562 $mg.kg^{-1}$
bw/day Systemic toxicity Read-across (Analogy)
CAS-No. 1327-41-9

NOAEL: 90 $mg.kg^{-1}$
Remarks: bw/day Calculated as Al

Oral/rat/OECD Test Guideline 422:
NOAEL: 112 $mg.kg^{-1}$
bw/day Local effects Read-across (Analogy) CAS-No. 1327-41-9

NOAEL: 18 $mg.kg^{-1}$
Remarks: bw/day Calculated as Al

CARCINOGENICITY

Oral / Rat / 2 years:

Did not show carcinogenic effects in animal experiments

MUTAGENICITY

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

REPRODUCTIVE TOXICITY

Oral/rat/female/Reproductive effects/OECD Test Guideline 452:
NOAEL: 3.225 $mg.kg^{-1}$
NOAEL F1:
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 $mg.kg^{-1}$
NOAEL F1:
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 $mg.kg^{-1}$
NOAEL F1: 1.000 $mg.kg^{-1}$
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 $mg.kg^{-1}$
NOAEL F1: 90 $mg.kg^{-1}$
bw/day Calculated as Al Read-across (Analogy) CAS-No. 1327-41-9

TERATOGENICITY	Oral/rat/OECD Test Guideline 452: NOAEL: 323 mg.kg^{-1} Mother: 3.225 mg.kg-1 bw/day Read-across (Analogy) CAS-No. 31142-56-0 Oral/rat/OECD Test Guideline 452: NOAEL: 30 mg.kg^{-1} Mother: 300 mg.kg-1 bw/day Calculated as Al CAS-No. 31142-56-0 Read-across (Analogy)
TARGET ORGAN	The substance is not classified. STOT - repeated exposure. The substance is not classified. STOT - single exposure.

12. ECOLOGICAL INFORMATION

12.1 BASIS FOR ASSESSMENT

The data is based on the toxicological properties of individual components of the product

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

12.2 MOBILITY

Water solubility: Completely soluble (20 °C)

12.3 PERSISTENCE / DEGRADABILITY

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

Iron (III) Sulfate: When diluted below a mass fraction of 1% hydrolysis and hydroxide formation occurs.

12.4 BIOACCUMULATION

The product is not expected to bioaccumulate.

Partition coefficient: n-octanol/water: Not applicable, inorganic compound, In accordance with column 2 of REACH Annex VII, the study does not need to be conducted.

12.5 ECOTOXICITY

Diiron tris(Sulfate):

LC50/96 h/Oncorhynchus mykiss (rainbow trout): > 100 mg.l^{-1}
NOEC/90 d/Oncorhynchus kisutch (Coho salmon): > 1 mg.l^{-1}
EC50/48 h/Daphnia: 82.8 mg.l^{-1}

NOEC/21 d/Daphnia magna (Water flea): > 1 $mg.l^{-1}$

Iron (III) Sulfate: The compound is considered to have no long term effects in aquatic systems due to the rapid formation of insoluble hydroxides.

Aluminium Sulfate

LC50/96 h/Danio rerio/semi-static test/OECD Test Guideline 203: > 562 $mg.l^{-1}$
NOEC/96 h/Danio rerio/semi-static test/OECD Test Guideline 203: > 562 $mg.l^{-1}$
LC50/96 h/Danio rerio/semi-static test/OECD Test Guideline 203: > 0,247 $mg.l^{-1}$
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 $mg.l^{-1}$
NOEC/48 h/Daphnia magna (Water flea)/semi-static test/OECD Test Guideline 202: > 90 $mg.l^{-1}$
LC50/48 h/Daphnia magna (Water flea)/OECD Test Guideline 202: > 0,176 $mg.l^{-1}$
Calculated as Al Maximum soluble concentration under the test conditions.

EC50/72 h/Pseudokirchneriella subcapitata (green algae)/static test/OECD Test Guideline 201: 24 $mg.l^{-1}$
EC50/72 h/Pseudokirchneriella subcapitata (green algae)/static test/OECD Test Guideline 201: 3.8 $mg.l^{-1}$ Calculated as Al
NOEC/72 h/Pseudokirchneriella subcapitata (green algae)/static test/OECD Test Guideline 201: 1.7 $mg.l^{-1}$
NOEC/72 h/Pseudokirchneriella subcapitata (green algae)/static test/OECD Test Guideline 201: 0.27 $mg.l^{-1}$ Calculated as Al

12.6 OTHER ADVERSE EFFECTS

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

13. DISPOSAL CONSIDERATIONS

13.1 APPROPRIATE DISPOSAL

Classified as hazardous waste.
Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Must be disposed of in accordance with local and national regulations.
Thoroughly cleaned packaging material may be recycled.

13.2 CONTAMINATED PACKAGING

Packages that cannot be cleaned must be disposed of the same way as the unused product. Must be disposed of in accordance with local and national regulations.

14. TRANSPORT INFORMATION

UN No 3264

14.1 LAND TRANSPORT (ADR/RID)

UN Proper Shipping Name (PSN) Corrosive liquid, acidic, inorganic, NOS (Iron (III) Sulfate)

Class	8
Packing Group	I
Risk Code	80
Labels	8

14.2 SEA TRANSPORT (IMDG-Code)

UN Proper Shipping Name (PSN)	Corrosive liquid, acidic, inorganic, NOS (Iron (III) Sulfate)
Class	8
Packing Group	I
Labels	8
Environmentally Hazardous	Not a Marine Pollutant

14.3 AIR TRANSPORT (ICAO-IATA/DGR)

UN Proper Shipping Name (PSN)	Corrosive liquid, acidic, inorganic, NOS (Iron (III) Sulfate)
Class	8
Packing Group	I
Labels	8

15. REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

Other regulations	No restrictions identified other than those already covered in regulations

15.2 EU REGULATIONS CHEMICAL SAFETY ASSESSMENT

Use for the treatment of water intended for human consumption

16. OTHER INFORMATION

16.1 RELEVANT R- AND H- PHRASES IN SECTION 3 (NUMBER AND FULL TEXT):

R22	Harmful if swallowed
R36/38	Irritating to eyes and skin
R38	Irritating to skin
R41	Risk of serious damage to eyes
R48/20/22	Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed
R51	Toxic to aquatic organisms
R53	May cause long-term adverse effects in the aquatic environment
H302	Harmful if swallowed

H315	Causes skin irritation
H318	Causes serious eye damage
H319	Causes serious eye irritation
H373	May cause damage to organs through prolonged or repeated exposure
H411	Toxic to aquatic life with long lasting effects