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

1.1 Product identifier

Commercial Product Name
KEMIRA PAX-XL7A

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

Use of the Substance/Mixture

Water treatment chemical.
ES 2., Industrial use, Formulation and distribution
ES 3., Industrial use, Use of substance in synthesis as a process chemical and as an intermediate.

ES 4., Industrial use, Professional use, Spraying formulations.
Exposure scenario available on request.
ES 5., Industrial use, Professional use, Non-spraying formulations.
Exposure scenario available on request.
ES 6., Industrial use, Professional use, Water treatment chemical, Products such as ph-regulators, flocculants, pre-cipitants, neutralization agents
ES 7., Industrial use, Professional use, Laboratory chemicals

Recommended restrictions on use

There are no uses advised against.

1.3 Details of the supplier of the safety data sheet

Kemira Oyj
P.O. Box 33000101 HELSINKI FINLAND
Telephone+358108611, Telefax. +358108621124
ProductSafety.FI.Helsinki@kemira.com

1.4 Emergency telephone number

Carechem 24 International: +44 (0) 1235 239 670

Centro de Informação Antivenenos (Portugal): +351 808250143 (24 h.)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EU) 1272/2008(CLP)

Serious eye damage; Category 1; Causes serious eye damage.
Corrosive to metals; Category 1; May be corrosive to metals.
Classification according to EU Directives 67/548/EEC or 1999/45/EC
Irritant; Risk of serious damage to eyes.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal word : Danger

Hazard statements	:	H318	Causes serious eye damage.
		H290	May be corrosive to metals.
Precautionary statements	:	P264	Wash hands thoroughly after handling.
		Prevention:	
		P261	Avoid breathing spray.
		P280	Wear protective gloves/ eye protection/ face protection.
		Response:	
		P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
		P310	Immediately call a POISON CENTER or doctor/ physician.
		Storage:	
		P406	Store in corrosive resistant container with a resistant inner liner.

Hazardous components which must be listed on the label:
39290-78-3 Aluminium chloride hydroxide sulfate

2.3 Other hazards

Advice; Small amounts of hydrogen chloride may be released at temperatures above the boiling point.
Potential environmental effects; May lower the pH of water and thus be harmful to aquatic organisms.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Chemical nature of the mixture: Aqueous solution

CAS/EU number/REACH Registration Number	Chemical name of the substance	Concentration	Classification according to Regulation (EU) 1272/2008(CLP)	Classification according to EU Directives 67/548/EEC or 1999/45/EC
39290-78-3 254-400-7 01-2119531540-51	Aluminium chloride hydroxide sulfate	14 - 18 %	Eye Dam. Category 1,H318 Met. Corr. Category 1,H290	Xi ,R41

Further information

For the full text of the R-phrases mentioned in this Section, see Section 16.

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Show this safety data sheet to the doctor in attendance.

Inhalation

Move to fresh air.

Skin contact

Rinse with plenty of water. If symptoms persist, call a physician.

Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 10 minutes. If possible use lukewarm water. Seek medical advice.

Ingestion

Clean mouth with water and drink afterwards plenty of water. If symptoms persist, call a physician.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : corrosive effects, May cause irreversible eye damage.

4.3 Indication of immediate medical attention and special treatment needed, if necessary

Treatment : Rinse with plenty of water.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Extinguishing media	:	Not combustible. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	No special requirements.

5.2 Special hazards arising from the substance or mixture

Small amounts of hydrogen chloride may be released at temperatures above the boiling point. Thermal decomposition products: hydrogen chloride (HCl) sulphur oxides (SOx)

5.3 Special protective actions for fire-fighters

Exposure to decomposition products may be a hazard to health. In the event of fire, wear self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

For personal protection see section 8.

6.2 Environmental precautions

Restrict the spread of the spillage by using inert absorbent material (sand, gravel). Cover the drains. Must be disposed of in accordance with local and national regulations.

6.3 Methods and materials for containment and cleaning up

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.
Remove spill using a vacuum truck. Dilute residues with water and then neutralize with lime or limestone powder to a solid consistency. Shovel or sweep up remaining material. Must be disposed of in accordance with local and national regulations.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

For personal protection see section 8. The work place and work methods shall be organized in such a way that direct contact with the product is prevented or minimized.
Small amounts of hydrogen chloride may be released at temperatures above the boiling point.
Avoid exceeding of the given occupational exposure limits (see section 8).

7.2 Conditions for safe storage, including any incompatibilities

For quality reasons:

Keep at temperatures below 30 °C.
Keep at temperatures above 0 °C. Handling operations become difficult due to increased viscosity.

Materials for packaging
Suitable material: plastic (PE, PP, PVC), polyester with fibreglass reinforcement, rubber-coated steel, titanium

Materials to avoid:
chlorites, hypochlorites, sulphites, galvanized surfaces, Iron

Storage stability:

Storage period 8 Months

7.3 Specific end uses

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Exposure Limit Values

8.1.1 Limit values in other countries

Finland:
Aluminium chloride hydroxide sulfate
TWA = 1 mg/m³, Calculated as Al

Sweden:
Aluminium chloride hydroxide sulfate
NGV = 1 mg/m³, Calculated as Al

Germany:
Aluminium chloride hydroxide sulfate
MAK = 4 mg/m³, inhalable fraction, Calculated as Al
MAK = 1,5 mg/m³, respirable fraction, Calculated as Al
MAK = 0,2 mg/m³, Calculated as Al

Belgium:
Aluminium chloride hydroxide sulfate
TWA = 2 mg/m³, Calculated as Al

Switzerland:
Aluminium chloride hydroxide sulfate

TWA = 2 mg/m³, inhalable fraction

Denmark:
Aluminium chloride hydroxide sulfate
TWA = 1 mg/m³, Calculated as Al

Estonia:
Aluminium chloride hydroxide sulfate
TWA = 2 mg/m³

Spain:
Aluminium chloride hydroxide sulfate
TWA = 2 mg/m³, Calculated as Al

France:
Aluminium chloride hydroxide sulfate
VME = 2 mg/m³, Calculated as Al

Great Britain:
Aluminium chloride hydroxide sulfate
TWA = 1 mg/m³

Greece:
Aluminium chloride hydroxide sulfate
TWA = 2 mg/m³

Ireland:
Aluminium chloride hydroxide sulfate
TWA = 2 mg/m³, Calculated as Al

Lithuania:
Aluminium chloride hydroxide sulfate
TWA = 2 mg/m³

Netherlands:
Aluminium chloride hydroxide sulfate
TWA = 2 mg/m³

Norway:
Aluminium chloride hydroxide sulfate
TWA = 2 mg/m³, Calculated as Al

Portugal:
Aluminium chloride hydroxide sulfate
TWA = 2 mg/m³, Calculated as Al

DNEL

Aluminium chloride hydroxide sulfate	:	End Use: Workers Exposure routes: oral

Potential health effects: Long-term exposure - systemic effects
Value: 0,5 mg/kg bw/day
Calculated as Al

End Use: Workers
Exposure routes: Inhalation
Potential health effects: Long-term exposure - systemic effects
Value: 1,8 mg/m³
Calculated as Al

End Use: Consumers
Exposure routes: oral
Potential health effects: Long-term exposure - systemic effects
Value: 0,3 mg/kg bw/day
Calculated as Al

End Use: Consumers
Exposure routes: Inhalation
Potential health effects: Long-term exposure - systemic effects
Value: 1,1 mg/m³
Calculated as Al

PNEC
Aluminium chloride hydroxide sulfate : Sewage treatment plant
The PNEC value would be highly depending on conditions as pH and organic matter, and therefore a true PNEC cannot and does not need to be derived.

Oral
Bioaccumulative potential, Secondary poisoning, not significant, Derivation of the PNEC, Not relevant

Soil
study scientifically unjustified

Water
Not relevant,The compound is considered to have no long term effects in aquatic systems due to the rapid formation of insoluble hydroxides.

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

Air
Not relevant

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice.

Eye wash bottle or emergency eye-wash fountain must be found in the work place.

8.2.2 Individual protection measures, such as personal protective equipment

Hand protection

Glove material: PVC and neoprene gloves

Protective gloves complying with EN 374.

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.

Eye protection

Eye wash bottle with pure water
Tightly fitting safety goggles.

Skin and body protection

Wear protective clothing if necessary. Use rubber boots.

Respiratory protection

Respiratory protection is not required under normal handling conditions. If aerosols or mist are formed, eg. when cleaning containers with a high pressure washer, use half mask with dust filter P2.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

General Information (appearance, odour)

Physical state	liquid,
Colour	yellowish, clear
Odour	not significant

Important health safety and environmental information

pH	ca. 2,85 - 3,45
Crystallisation point/range	-15 °C
Boiling point/boiling range	105 - 115 °C

Flash point	not applicable, inorganic compound In accordance with column 2 of REACH Annex VII, the study does not need to be conducted.
Flammability (solid, gas)	The product is not flammable.
Explosive properties:	
Density	1,18 - 1,22 g/cm³ (25 °C)
Solubility(ies):	
Water solubility	(20 °C) completely soluble
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.
Thermal decomposition	> 200 °C
Viscosity:	
Viscosity, dynamic	< 15 mPa.s (25 °C)
Oxidising	not oxidizing

9.2 Other data

10. STABILITY AND REACTIVITY

10.1 Reactivity

Bases cause exothermic reactions.
May be corrosive to metals.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : Contact with certain metals may form hydrogen gas, which in turn may form explosive mixtures of gases with air.

10.4 Conditions to avoid

Conditions to avoid : Avoid freezing.

10.5 Incompatible materials

Materials to avoid : chlorites
hypochlorites

sulphites
galvanized surfaces
Iron

10.6 Hazardous decomposition products

Hazardous decomposition products	:	Thermal decomposition products: hydrogen chloride (HCl) sulphur oxides (SOx)
Thermal decomposition	:	>200 °C

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Aluminium chloride hydroxide sulfate:
LD50/Oral/rat: 2.360 mg/kg
LC50/Inhalation/4 h/rat: > 5 mg/l
LD50/Dermal/rat/male and female: > 2.000 mg/kg

Irritation and corrosion

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

Eyes:
May cause irreversible eye damage.

Aluminium chloride hydroxide sulfate:

Skin: rabbit/OECD Test Guideline 404: No irritating effects.

Eyes: rabbit/72 h/OECD Test Guideline 405: No eye irritation

Sensitisation

Aluminium chloride hydroxide sulfate**:**
guinea pig/OECD Test Guideline 406
Remarks: Read-across (Analogy) CAS-No. 12042-91-0 Not sensitizing.

Long term toxicity

Aluminium chloride hydroxide sulfate:
Repeated dose toxicity:
Oral/rat/OECD Test Guideline 422:
NOAEL: 327 mg/kg
Remarks: bw/day Systemic toxicity Read-across (Analogy) CAS-No. 1327-41-9

NOAEL: 90 mg/kg
Remarks: bw/day Calculated as Al

Oral/rat/OECD Test Guideline 422:
NOAEL: 65 mg/kg
Remarks: bw/day Local effects Read-across (Analogy) CAS-No. 1327-41-9

NOAEL: 18 mg/kg
Remarks: bw/day Calculated as Al

Dermal:
Remarks: study scientifically unjustified

Inhalation/rat/OECD Test Guideline 413:
Remarks: Subchronic toxicity Read-across (Analogy) CAS-No. 12042-91-0

Remarks: Calculated as Al

Carcinogenicity

Not believed to be a carcinogen.

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
Remarks: Read-across (Analogy) 1327-41-9

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

Result: negative
Metabolic activation: with and without
Remarks: Read-across (Analogy) 1327-41-9

Reproductive toxicity
Oral/rat/female/Reproductive effects/OECD Test Guideline 452:
NOAEL: 3.225 mg/kg
NOAEL F1:
Remarks: Read-across (Analogy) CAS-No. 31142-56-0
No known effect.

Oral/rat/male and female/Screening test/OECD Test Guideline 422:
NOAEL: 1.000 mg/kg
NOAEL F1:
Remarks: Read-across (Analogy) 1327-41-9
No known effect.

Not believed to be toxic for reproduction.

Teratogenicity
Oral/rat/OECD Test Guideline 452:
NOAEL: 1.075 mg/kg
Read-across (Analogy) Did not show mutagenic or teratogenic effects in animal experiments. CAS-No. 31142-56-0

12. ECOLOGICAL INFORMATION

12.1 Ecotoxicity effects

Aquatic 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 chloride hydroxide sulfate:
LC50/96 h/Danio rerio/semi-static test/OECD Test Guideline 203: > 1.000 mg/l
Remarks: Read-across (Analogy), CAS-No., 1327-41-9

NOEC/Danio rerio/semi-static test/OECD Test Guideline 203: > 1.000 mg/l
Remarks: Read-across (Analogy), CAS-No., 1327-41-9
LC50/Danio rerio/semi-static test/OECD Test Guideline 203: > 0,156 mg/l
Calculated as Al Maximum soluble concentration under the test conditions.
EC50/48 h/Daphnia magna (Water flea)/OECD Test Guideline 202: 98 mg/l
Remarks: Read-across (Analogy), CAS-No., 1327-41-9
NOEC/Daphnia magna (Water flea)/OECD Test Guideline 202: 24 mg/l
Remarks: Read-across (Analogy), CAS-No., 1327-41-9
EC50/72 h/Pseudokirchneriella subcapitata (green algae)/static test/OECD Test Guideline 201: 14 mg/l
EC50: 3,4 mg/l
Calculated as Al
NOEC/72 h/Pseudokirchneriella subcapitata (green algae)/static test/OECD Test Guideline 201: 1 mg/l
NOEC: 0,24 mg/l
Calculated as Al

Toxicity to other organisms

no data available

12.2 Persistence and degradability

Biological degradability:

The methods for determining biodegradability are not applicable to inorganic substances.

Biological degradability:
Aluminium chloride hydroxide sulfate:

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

12.3 Bioaccumulative potential

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.

Aluminium chloride hydroxide sulfate:

The product is not expected to bioaccumulate.
Partition coefficient: n-octanol/water: not applicable, inorganic compound

12.4.Mobility in soil

Mobility

Water solubility: completely soluble (20 °C)

12.5. Results of PBT and vPvB assessment

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

12.6 Other adverse effects

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

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product	Classified as hazardous waste.Must be disposed of in accordance with local and national regulations. Thoroughly cleaned packaging material may be recycled.
Contaminated packaging	Must be disposed of in accordance with local and national regulations.

14. TRANSPORT INFORMATION

14.1 UN number	3264
Land transport	
ADR /RID:	
Description of the goods:	
14.2UN proper shipping name	Corrosive liquid, acidic, inorganic n.o.s. (Aluminium chloride hydroxide sulfate)
14.3 Class	8
14.4 Packaging group:	III
Risk code	80
ADR/RID-Labels:	8
Sea transport	
IMDG:	
Description of the goods:	
14.2UN proper shipping name	UN3264, CORROSIVE LIQUID, ACIDIC, INORGANIC N.O.S. (ALUMINIUM CHLORIDE HYDROXIDE SULFATE)
14.3 Class:	8
14.4 Packaging group:	III
IMDG-Labels:	8
14.5 Environmentally Hazardous:	

Air transport
ICAO/IATA:
Description of the goods

14.2UN proper shipping name	UN3264, Corrosive liquid, acidic, inorganic n.o.s. (Aluminium chloride hydroxide sulfate)
14.3 Class:	8
14.4 Packaging group:	III
ICAO-Labels:	8

14.6 Special precautions for user

The product is classified as dangerous goods, as it is slightly corrosive to metals.

15. REGULATORY INFORMATION

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

Notification status

:
:
:
:
:
:
:
:
:

15.2 Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for the main component.

16. OTHER INFORMATION

Full text of H-Statements referred to under section 3.

H318	Causes serious eye damage.
H290	May be corrosive to metals.

Text of R-phrases mentioned in Section 3

R41	Risk of serious damage to eyes.

Training advice

Read the safety data sheet before using the product.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge,

information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Sources of key data used to compile the Safety Data Sheet

Regulations, databases, literature, own tests.

Additions, Deletions, Revisions

Relevant changes have been marked with vertical lines.

1. Short title of Exposure Scenario: ES 2., Formulation and distribution, Aqueous solution

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	**SU 10:** Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process category	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) **PROC8a:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities **PROC9:** Transfer of substance or preparation into small containers (dedicated filling line, including weighing) **PROC14:** Production of preparations or articles by tabletting, compression, extrusion, pelletisation **PROC15:** Use as laboratory reagent **PROC19:** Hand-mixing with intimate contact and only PPE available
Environmental release category	:	**ERC2:** Formulation of preparations

2.Contributing scenario controlling environmental exposure for: ERC2: Formulation of preparations

Product characteristics

Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Technical conditions and measures / Organizational measures

Remarks	:	Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non-hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

2.1Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15, PROC19: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation), Use in batch and other process (synthesis) where opportunity for exposure arises, Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact), Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, Transfer of substance or preparation into small containers (dedicated filling line, including weighing), Production of preparations or articles by tabletting, compression, extrusion, pelletisation, Use as laboratory reagent, Hand-mixing with intimate contact and only PPE available

Product characteristics

Concentration of the Substance in Mixture/Article		Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	:	Aqueous solution
Vapour pressure	:	< 0,1 hPa

Amount used

Remarks	:	Varies between ml and m^3

Frequency and duration of use

Remarks	:	Covers daily exposures up to 8 hours (unless stated differently).

Other operational conditions affecting workers exposure

Remarks	:	Assumes use at not more than 20°C above ambient temperature., Assumes a good basic standard of occupational hygiene is implemented., Ensure operatives are trained to

minimise exposures.

Technical conditions and measures

Process categories, 1, 2, 3, Handle substance within a closed system., Clear transfer lines prior to de-coupling.

Organisational measures to prevent /limit releases, dispersion and exposure

Process categories, 1, 2, 3, 4, 8a, 8b, 14, 15, No specific measures identified.
Clear spills immediately., Clean equipment and the work area every day.
Process categories, 19, Industrial use
5-25%:, Avoid carrying out operation for more than 1 hour.
1-5%:, Avoid carrying out operation for more than 4 hours.
<1%:, No specific measures identified.
Process categories, 19, Professional use
5-25%:, Avoid carrying out operation for more than 15 minutes.
or
Wear respiratory protection.
1-5%:, Avoid carrying out operation for more than 1 hour.
<1%:, Avoid carrying out operation for more than 4 hours.

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection and gloves., Wear suitable gloves tested to 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.

Process category, 19, Professional use
5-25%:, Wear a respirator conforming to EN140 with Type A/P2 filter or better.

3. Exposure estimation and reference to its source

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (Concentration/DNEL):
PROC19	ECETOC TRA	Industrial use, 5-25%:, TRA duration factor 15 min - 1 h	Inhalation exposure	1,35 mg/m³	0,75
PROC19	ECETOC TRA	Industrial use, 1-5%:, TRA duration factor 1 - 4 h	Inhalation exposure	1,35 mg/m³	0,75
PROC19	ECETOC TRA	Industrial use, <1%:, TRA duration factor > 4 h	Inhalation exposure	1,12 mg/m³	0,62
PROC19	ECETOC TRA	Professional use, 5-25%:, < 15 min	Inhalation exposure	1,69 mg/m³	0,94
PROC19	ECETOC TRA	Professional use, 5-25%:, Half mask	Inhalation exposure	1,69 mg/m³	0,94
PROC19	ECETOC TRA	Professional use, 1-5%:, TRA duration factor 15 min - 1 h	Inhalation exposure	1,12 mg/m³	0,62
PROC19	ECETOC TRA	Professional use, <1%:, TRA duration factor 1 - 4 h	Inhalation exposure	1,69 mg/m³	0,94

PROC19: Hand-mixing with intimate contact and only PPE available
PROC19: Hand-mixing with intimate contact and only PPE available
PROC19: Hand-mixing with intimate contact and only PPE available
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PROC19: Hand-mixing with intimate contact and only PPE available

When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Worker exposure for this scenario has been assessed using ECETOC TRA V2.0.

1. Short title of Exposure Scenario: ES 3.,Use of substance in synthesis as a process chemical and as an intermediate.
,Aqueous solution

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	**SU6b, SU8, SU9, SU14:** Manufacture of pulp, paper and paper products, Manufacture of bulk, large scale chemicals (including petroleum products), Manufacture of fine chemicals, Manufacture of basic metals, including alloys
Process category	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC8a:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities **PROC9:** Transfer of substance or preparation into small containers (dedicated filling line, including weighing) **PROC15:** Use as laboratory reagent
Environmental release category	:	**ERC1, ERC2, ERC4, ERC5, ERC6a, ERC8a:** Manufacture of substances, Formulation of preparations, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in inclusion into or onto a matrix, Industrial use resulting in manufacture of another substance (use of intermediates), Wide dispersive indoor use of processing aids in open systems

2.Contributing scenario controlling environmental exposure for: ERC1, ERC2, ERC4, ERC5, ERC6a, ERC8a: Manufacture of substances, Formulation of preparations, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in inclusion into or onto a matrix, Industrial use resulting in manufacture of another substance (use of intermediates), Wide dispersive indoor use of processing aids in open systems

Product characteristics

Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Technical conditions and measures / Organizational measures

Remarks	:	Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non-hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

2.1Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation), Use in batch and other process (synthesis) where opportunity for exposure arises, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, Transfer of substance or preparation into small containers (dedicated filling line, including weighing), Use as laboratory reagent , PC20, PC21, PC26, PC19: Products such as ph-regulators, flocculants, precipitants, neutralization agents, Laboratory chemicals, Paper and board dye, finishing and impregnation products: including bleaches and other processing aids, Intermediate

Product characteristics

Concentration of the Substance in Mixture/Article		Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	:	Aqueous solution
Vapour pressure	:	< 0,1 hPa

Amount used

Remarks	:	Varies between ml and m^3

Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

Other operational conditions affecting workers exposure

Remarks : Assumes use at not more than 20°C above ambient temperature., Assumes a good basic standard of occupational hygiene is implemented., Ensure operatives are trained to minimise exposures.

Technical conditions and measures

Process categories, 1, 2, 3, Handle substance within a closed system., Clear transfer lines prior to de-coupling.

Organisational measures to prevent /limit releases, dispersion and exposure

Process categories, 1, 2, 3, 4, 8b, 15, No specific measures identified.
Clear spills immediately.

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection and gloves., Wear suitable gloves tested to 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.

3. Exposure estimation and reference to its source

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (Concentration/DNEL):
	ECETOC TRA	No specific measures identified.			< 1

When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Worker exposure for this scenario has been assessed using ECETOC TRA V2.0.

1. Short title of Exposure Scenario: ES 6., Flocculant or coagulant in water and waste water treatment., Aqueous solution

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	**SU2, SU5, SU6b, SU 10, SU23:** Mining, (including offshore industries), Manufacture of textiles, leather, fur, Manufacture of pulp, paper and paper products, Formulation [mixing] of preparations and/ or re-packaging (excluding alloys), Electricity, steam, gas water supply and sewage treatment
Process category	:	**PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) **PROC8a:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities **PROC9:** Transfer of substance or preparation into small containers (dedicated filling line, including weighing) **PROC19:** Hand-mixing with intimate contact and only PPE available
Environmental release category	:	**ERC2, ERC4, ERC6b, ERC8a, ERC8b, ERC8d:** Formulation of preparations, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use of reactive processing aids, Wide dispersive indoor use of processing aids in open systems, Wide dispersive indoor use of reactive substances in open systems, Wide dispersive outdoor use of processing aids in open systems

2.Contributing scenario controlling environmental exposure for: ERC2, ERC4, ERC6b, ERC8a, ERC8b, ERC8d: Formulation of preparations, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use of reactive processing aids, Wide dispersive indoor use of processing aids in open systems, Wide dispersive indoor use of reactive substances in open systems, Wide dispersive outdoor use of processing aids in open systems

Product characteristics

Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Technical conditions and measures / Organizational measures

Remarks	:	Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non-hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

2.1Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC19: Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation), Use in batch and other process (synthesis) where opportunity for exposure arises, Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact), Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, Transfer of substance or preparation into small containers (dedicated filling line, including weighing), Hand-mixing with intimate contact and only PPE available , PC20, PC21, PC37: Products such as ph-regulators, flocculants, precipitants, neutralization agents, Laboratory chemicals, Water treatment chemicals

Product characteristics

Concentration of the Substance in Mixture/Article		Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	:	Aqueous solution
Vapour pressure	:	< 0,1 hPa

Amount used

Remarks	:	Varies between ml and m^3

Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently).

Other operational conditions affecting workers exposure

Remarks : Assumes use at not more than 20°C above ambient temperature.

Technical conditions and measures

Process categories, 2, 3, Handle substance within a closed system.

Organisational measures to prevent /limit releases, dispersion and exposure

Process categories, 2, 3, 4, 5, 8a, 8b, 9, No specific measures identified., Clean equipment and the work area every day., Clear spills immediately.
Process categories, 19, Industrial use
5-25%:, Avoid carrying out operation for more than 1 hour.
1-5%:, Avoid carrying out operation for more than 4 hours.
<1%:, No specific measures identified.
Process categories, 19, Professional use
5-25%:, Avoid carrying out operation for more than 15 minutes.
1-5%:, Avoid carrying out operation for more than 1 hour.
<1%:, Avoid carrying out operation for more than 4 hours.

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection and gloves., Wear suitable gloves tested to 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.

Process category, 19
5-25%:, Wear a respirator conforming to EN140 with Type A filter or better.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice : Assumes a good basic standard of occupational hygiene is implemented., Ensure operatives are trained to minimise exposures.

3. Exposure estimation and reference to its source

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (Concentration/DNEL):
PROC19	ECETOC TRA	Industrial use, 5-25%:, TRA duration factor 15 min - 1 h	Inhalation exposure	1,35 mg/m³	0,75
PROC19	ECETOC TRA	Industrial use, 1-5%:, TRA duration factor 1 - 4 h	Inhalation exposure	1,35 mg/m³	0,75
PROC19	ECETOC TRA	Industrial use, <1%:, TRA duration factor > 4 h	Inhalation exposure	1,12 mg/m³	0,62
PROC19	ECETOC TRA	Professional use, 5-25%:, < 15 min	Inhalation exposure	1,69 mg/m³	0,94
PROC19	ECETOC TRA	Professional use, 5-25%:, Half mask	Inhalation exposure	1,69 mg/m³	0,94
PROC19	ECETOC TRA	Professional use, 1-5%:, TRA duration factor 15 min - 1 h	Inhalation exposure	1,12 mg/m³	0,62
PROC19	ECETOC TRA	Professional use, <1%:, TRA duration factor 1 - 4 h	Inhalation exposure	1,69 mg/m³	0,94

PROC19: Hand-mixing with intimate contact and only PPE available
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PROC19: Hand-mixing with intimate contact and only PPE available

When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Worker exposure for this scenario has been assessed using ECETOC TRA V2.0.

1. Short title of Exposure Scenario: ES 7., Laboratory chemicals, Industrial use, Professional use, Aqueous solution

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	**SU9:** Manufacture of fine chemicals
Process category	:	**PROC15:** Use as laboratory reagent
Environmental release category	:	**ERC4:** Industrial use of processing aids in processes and products, not becoming part of articles

2.Contributing scenario controlling environmental exposure for: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Product characteristics

Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Technical conditions and measures / Organizational measures

Remarks	:	Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non-hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

2.1Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent , PC21: Laboratory chemicals

Product characteristics

Concentration of the Substance in		Covers the percentage of the substance in the product up to

Mixture/Article		100 % (unless stated differently).
Physical Form (at time of use)	:	Aqueous solution
Vapour pressure	:	< 0,1 hPa

Amount used

Remarks	:	Varies between ml and m^3

Frequency and duration of use

Remarks	:	Covers daily exposures up to 8 hours (unless stated differently).

Other operational conditions affecting workers exposure

Remarks	:	Assumes use at not more than 20°C above ambient temperature., Assumes a good basic standard of occupational hygiene is implemented., Ensure operatives are trained to minimise exposures.

Organisational measures to prevent /limit releases, dispersion and exposure

Process categories, 15, No specific measures identified.
Clear spills immediately., Clean equipment and the work area every day.

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection and gloves., Wear suitable gloves tested to 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.

3. Exposure estimation and reference to its source

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (Concentration/DNEL):
	ECETOC TRA	No specific measures identified.			< 1

When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Worker exposure for this scenario has been assessed using ECETOC TRA V2.0.