SAFETY DATA SHEET
(in accordance with Regulation (EU) 2020/878)

Flocculant

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

1.1 Product identifier.

Product Name:	Flocculant
Chemical Name:	sulfato de aluminio
CAS No:	10043-01-3
EC No:	233-135-0
Registration No:	01-2119531538-36-XXXX

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

Flocculant

Uses advised against:
Uses other than those recommended.
Exposure scenarios covering uses can be found in the Annex.

1.3 Details of the supplier of the safety data sheet.

Company:	**FLUIDRA COMERCIAL ESPAÑA**
Address:	Av. Alcalde Barnils, 69
City:	08174 Sant Cugat del Vallès
Province:	Barcelona (España)
Telephone:	telf: 902 42 32 22
Fax:	+34 93 713 41 11
E-mail:	fds@inquide.com
Web:	www.ctxprofessional.com

1.4 Emergency telephone number: (Available 24 hours)
Anti poisoning centre:
ITALY (Rome): 06/305 43 43
ITALY (Milan): 02/66 10 10 29
SPAIN: +34 91 562 04 20
FRANCE (Paris): 01 40 05 48 48 FRANCE (Tolousse): 05 61 77 74 47 FRANCE (Marseille): 04 91 75 25 25
PORTUGAL: 808 250 143
BELGIQUE (Brussel): (+34) 070 245 245
CAV accreditati: Roma +39 06 68 59 3726; Foggia +39 800 18 34 59; Napoli +39 081 54 53 333; Roma +39 06 49 97 80 00; Roma +39 06 30 54 343; Firenze +39 055 79 47 819; Pavia +39 0382 24 444; Milano +39 02 66 10 10 29; Bergamo +39 800 88 33 00; Verona +39 800 01 18 58.

SECTION 2: HAZARDS IDENTIFICATION.

2.1 Classification of the substance or mixture.
In accordance with Regulation (EU) No 1272/2008:
Eye Dam. 1 : Causes serious eye damage.

2.2 Label elements.
Labelling in accordance with Regulation (EU) No 1272/2008:
Pictograms:

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Signal Word:
Danger
Hazard statements:
H318 Causes serious eye damage.

Precautionary statements:
P101 If medical advice is needed, have product container or label at hand.
P102 Keep out of reach of children.
P103 Read carefully and follow all instructions.
P280 Wear protective gloves/protective clothing/eye protection.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or a doctor.

Contains:
Aluminium sulfate

2.3 Other hazards.

The substance is not PBT
The substance is not vPvB
Substance does not have endocrine disrupting properties.

In normal use conditions and in its original form, the product itself does not involve any other risk for health and the environment.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS.

3.1 Substances.

Identifiers	Name	Concentrate	(*)Classification - Regulation (EC) No 1272/2008	
			Classification	Specifics concentration limits and Acute toxicity estimate
CAS No: 10043-01-3 EC No: 233-135-0	Aluminium sulfate	3 - 100 %	Eye Dam. 1, H318	-

3.2 Mixtures.
Not Applicable.

SECTION 4: FIRST AID MEASURES.

4.1 Description of first aid measures.
In case of doubt or when symptoms of feeling unwell persist, get medical attention. Never administer anything orally to persons who are unconscious.

Inhalation.
Take the victim into open air; keep them warm and calm. If breathing is irregular or stops, perform artificial respiration.

Eye contact.
Wash eyes with plenty of clean and cool water for at least 10 minutes while pulling eyelids up, and seek medical assistance. Dont let the person to rub the affected eye.

Skin contact.
Remove contaminated clothing. Wash skin vigorously with water and soap or a suitable skin cleaner. NEVER use solvents or thinners.

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Ingestion.
If accidentally ingested, seek immediate medical attention. Keep calm. NEVER induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed.
Corrosive Product, contact with eyes or skin can cause burns; ingestion or inhalation can cause internal damage, if this occurs immediate medical assistance is required.
Contact with eyes may cause irreversible damage.

4.3 Indication of any immediate medical attention and special treatment needed.
Request immediate medical attention. Never administer anything orally to persons who are unconscious. Do not induce vomiting. If the person vomits, clear the respiratory tract. Cover the affected area with a dry sterile bandage. Protect the affected area from pressure or friction.

SECTION 5: FIREFIGHTING MEASURES.

The product is NOT classified as flammable, in case of fire the following measures should be taken:

5.1 Extinguishing media.
Suitable extinguishing media:
Extinguisher powder or CO2. In case of more serious fires, also alcohol-resistant foam and water spray.

Unsuitable extinguishing media:
Do not use a direct stream of water to extinguish. In the presence of electrical voltage, you cannot use water or foam as extinguishing media.

5.2 Special hazards arising from the substance or mixture.
Special risks.
Exposure to combustion or decomposition products can be harmful to your health.

5.3 Advice for firefighters.
Use water to cool tanks, cisterns, or containers close to the heat source or fire. Take wind direction into account. Prevent the products used to fight the fire from going into drains, sewers, or waterways.

Fire protection equipment.
According to the size of the fire, it may be necessary to use protective suits against the heat, individual breathing equipment, gloves, protective goggles or facemasks, and boots.

SECTION 6: ACCIDENTAL RELEASE MEASURES.

6.1 Personal precautions, protective equipment and emergency procedures.
For exposure control and individual protection measures, see section 8.

6.2 Environmental precautions.
Product not classified as hazardous for the environment, avoid spillage as much as possible.

6.3 Methods and material for containment and cleaning up.
Contain and collect spillage with inert absorbent material (earth, sand, vermiculite, Kieselguhr...) and clean the area immediately with a suitable decontaminant.
Deposit waste in closed and suitable containers for disposal, in compliance with local and national regulations (see section 13).

6.4 Reference to other sections.
For exposure control and individual protection measures, see section 8.
For later elimination of waste, follow the recommendations under section 13.

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SECTION 7: HANDLING AND STORAGE.

7.1 Precautions for safe handling.
For personal protection, see section 8.
In the application area, smoking, eating, and drinking must be prohibited.
Follow legislation on occupational health and safety.
Never use pressure to empty the containers. They are not pressure-resistant containers. Keep the product in containers made of a material identical to the original.

7.2 Conditions for safe storage, including any incompatibilities.
Store according to local legislation. Observe indications on the label. Store the containers between 5 and 25 º C, in a dry and well-ventilated place, far from sources of heat and direct solar light. Keep far away from ignition points. Keep away from oxidising agents and from highly acidic or alkaline materials. Do not smoke. Prevent the entry of non-authorised persons. Once the containers are open, they must be carefully closed and placed vertically to prevent spills.

The product is not affected by Directive 2012/18/EU (SEVESO III).

7.3 Specific end use(s).
None in particular.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION.

8.1 Control parameters.

The product does NOT contain substances with Professional Exposure Environmental Limit Values.The product does NOT contain substances with Biological Limit Values.
Concentration levels DNEL/DMEL:

Name	DNEL/DMEL	Type	Value
Aluminium sulfate CAS No: 10043-01-3 EC No: 233-135-0	DNEL (Workers)	Dermal, Chronic, Local effects	10 (mg/kg)
	DNEL (Consumers)	Oral, Chronic, Systemic effects	5 (mg/kg)
	DNEL (Workers)	Dermal, Chronic, Systemic effects	1,8 (mg/m3)

DNEL: Derived No Effect Level, level of exposure to the substance below which adverse effects are not anticipated.
DMEL: Derived Minimal Effect Level, exposure level corresponding to a low risk, that risk should be considered a tolerable minimum.
Concentration levels PNEC:

Name	Details	Value
Aluminium sulfate CAS No: 10043-01-3 EC No: 233-135-0	Water (freshwater)	34,6 (mg/kg)
	Sediment (marine water)	3,46 (mg/kg)
	Soil	33,1 (mg/kg)

PNEC: Predicted No Effect Concentration, concentration of the substance below which adverse effects are not expected in the environmental compartment.
CAS: 10043-01-3
TLV TWA - 2 mg/m3 (Al)
8.2 Exposure controls.

Measures of a technical nature:
Provide adequate ventilation, which can be achieved by using good local exhaust-ventilation and a good general exhaust system.

Concentration:	**100 %**
Uses:	**Flocculant**

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Breathing protection:	
PPE:	Particle filter mask
Characteristics:	«CE» marking, category III. Made of filtering material, it covers nose, mouth and chin.
CEN standards:	EN 149
Maintenance:	Check for any tears, defects, etc. before use. Since it is disposable individual protection equipment, it should be replaced after use.
Observations:	Does not protect worker unless properly adjusted. Follow the manufacturer's instructions regarding suitable use of the equipment.
Filter Type needed:	P2
Hand protection:	
PPE:	Protective gloves.
Characteristics:	«CE» marking, category II.
CEN standards:	EN 374-1, En 374-2, EN 374-3, EN 420
Maintenance:	Keep in a dry place, away from any sources of heat, and avoid exposure to sunlight as much as possible. Do not make any changes to the gloves that may alter their resistance, or apply paints, solvents or adhesives.
Observations:	Gloves should be of the appropriate size and fit the user's hand well, not being too loose or too tight. Always use with clean, dry hands.

Material:	PVC (polyvinyl chloride)	Breakthrough time (min.):	> 480	Material thickness (mm):	0,35

Eye protection:	
PPE:	Face shield.
Characteristics:	«CE» marking, category II. Face and eye protector against splashing liquid.
CEN standards:	EN 165, EN 166, EN 167, EN 168
Maintenance:	Visibility through lenses should be ideal. Therefore, these parts should be cleaned daily. Protectors should be disinfected periodically following the manufacturer's instructions. Make sure that mobile parts move smoothly.
Observations:	Face shields should offer a field of vision with a dimension in the central line of, at least, 150 mm vertically once attached to the frame.
Skin protection:	
PPE:	Protective clothing.
Characteristics:	«CE» marking, category II. Protective clothing should not be too tight or loose in order not to obstruct the user's movements.
CEN standards:	EN 340
Maintenance:	In order to guarantee uniform protection, follow the washing and maintenance instructions provided by the manufacturer.
Observations:	The protective clothing should offer a level of comfort in line with the level of protection provided in terms of the hazard against which it protects, bearing in mind environmental conditions, the user's level of activity and the expected time of use.
PPE:	Work footwear.
Characteristics:	«CE» marking, category II.
CEN standards:	EN ISO 13287, EN 20347
Maintenance:	This product adapts to the first user's foot shape. That is why, as well as for hygienic reasons, it should not be used by other people.
Observations:	Work footwear for professional use includes protection elements aimed at protecting users against any injury resulting from an accident

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES.

9.1 Information on basic physical and chemical properties.
Physical state: Solid
Colour: White cream
Odour: Odourless
Odour threshold: Not applicable/Not available due to the nature/properties of the product
Melting point: Not applicable/Not available due to the nature/properties of the product

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Freezing point: Not applicable/Not available due to the nature/properties of the product
Boiling point or initial boiling point and boiling range: Not applicable/Not available due to the nature/properties of the product
Flammability: Not applicable/Not available due to the nature/properties of the product
Lower explosion limit: Not applicable/Not available due to the nature/properties of the product
Upper explosion limit: Not applicable/Not available due to the nature/properties of the product
Flash point: Not applicable/Not available due to the nature/properties of the product
Auto-ignition temperature: Not applicable/Not available due to the nature/properties of the product
Decomposition temperature: Not applicable/Not available due to the nature/properties of the product
pH: 2 - 4 (1%)
Kinematic viscosity: Not applicable/Not available due to the nature/properties of the product
Solubility: Not applicable/Not available due to the nature/properties of the product
Hydrosolubility: 900 g/l (20 ºC)
Liposolubility: Not applicable/Not available due to the nature/properties of the product
Partition coefficient n-octanol/water (log value): Not applicable/Not available due to the nature/properties of the product
Vapour pressure: Not applicable/Not available due to the nature/properties of the product
Absolute density: Not applicable/Not available due to the nature/properties of the product
Relative density: 1 - 1,1
Relative vapour density: Not applicable/Not available due to the nature/properties of the product
Particle characteristics: Not applicable/Not available due to the nature/properties of the product

9.2 Other information
Viscosity: Not applicable/Not available due to the nature/properties of the product
Explosive properties: Not applicable/Not available due to the nature/properties of the product
Oxidizing properties: No
Dropping point: Not applicable/Not available due to the nature/properties of the product
Blink: Not applicable/Not available due to the nature/properties of the product

SECTION 10: STABILITY AND REACTIVITY.

10.1 Reactivity.
The product does not present hazards by their reactivity.

10.2 Chemical stability.
Unstable in contact with:
- Bases.

10.3 Possibility of hazardous reactions.
Neutralization can occur on contact with bases.

10.4 Conditions to avoid.
- Avoid contact with bases.

10.5 Incompatible materials.
Avoid the following materials:
- Bases.

10.6 Hazardous decomposition products.
Depending on conditions of use, can be generated the following products:
- Corrosive vapors or gases.

SECTION 11: TOXICOLOGICAL INFORMATION.

11.1 Information on hazard classes as defined in Regulation (EC) Nº 1272/2008.
Splatters in the eyes can cause irritation and reversible damage.

Toxicological information.

Name	Acute toxicity

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	Type	Test	Kind	Value
Aluminium sulfate CAS No: 10043-01-3 EC No: 233-135-0	Oral	LD50 [1] OCDE 401	Rat	>2000 mg/kg [1]
	Dermal	LD50 [1] OCDE 402	Rabbit	>5000 mg/kg [1]
	Inhalation			

a) acute toxicity;
Not conclusive data for classification.

b) skin corrosion/irritation;
Not conclusive data for classification.

c) serious eye damage/irritation;
Product classified:
Serious eye damage, Category 1: Causes serious eye damage.

d) respiratory or skin sensitisation;
Not conclusive data for classification.

e) germ cell mutagenicity;
Not conclusive data for classification.

f) carcinogenicity;
Not conclusive data for classification.

g) reproductive toxicity;
Not conclusive data for classification.

h) STOT-single exposure;
Not conclusive data for classification.

i) STOT-repeated exposure;
Not conclusive data for classification.

j) aspiration hazard;
Not conclusive data for classification.

11.2 Information on other hazards.
Endocrine disrupting properties
This product does not contain components with endocrine-disrupting properties with effects on human health.
Other information
There is no information available on other adverse health effects.

SECTION 12: ECOLOGICAL INFORMATION.

12.1 Toxicity.

Name	Ecotoxicity			
	Type	Test	Kind	Value
Aluminium sulfate	Fish	LC50	Fish	> 1000 mg/l (96 h)
	Aquatic invertebrates	LC50	Daphnia	> 160 mg/l (48h)
	Aquatic plants			

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CAS No: 10043-01-3 EC No: 233-135-0		

12.2 Persistence and degradability.
No information is available regarding the biodegradability
No information is available on the degradability
No information is available about persistence and degradability of the product.

12.3 Bioaccumulative potential.
No information is available regarding the bioaccumulation.

12.4 Mobility in soil.
No information is available about the mobility in soil.
The product must not be allowed to go into sewers or waterways.
Prevent penetration into the ground.

12.5 Results of PBT and vPvB assessment.
No information is available about the results of PBT and vPvB assessment of the product.

12.6 Endocrine disrupting properties.
This product doesn't contain components with environmental endocrine disrupting properties.

12.7 Other adverse effects.
No information is available about other adverse effects for the environment.

SECTION 13: DISPOSAL CONSIDERATIONS.

13.1 Waste treatment methods.
Do not dump into sewers or waterways. Waste and empty containers must be handled and eliminated according to current, local/national legislation.
Follow the provisions of Directive 2008/98/EC regarding waste management.

SECTION 14: TRANSPORT INFORMATION.

Transportation is not dangerous. In case of road accident causing the product's spillage, proceed in accordance with point 6.

14.1 UN number or ID number.
Transportation is not dangerous.

14.2 UN proper shipping name.
Description:
ADR/RID: Not classified as hazardous for transport.
IMDG: Not classified as hazardous for transport.
ICAO/IATA: Not classified as hazardous for transport.

14.3 Transport hazard class(es).
Transportation is not dangerous.

14.4 Packing group.
Transportation is not dangerous.

14.5 Environmental hazards.
Transportation is not dangerous.
Transport by ship, FEm – Emergency sheets (F – Fire, S - Spills): Not applicable.

14.6 Special precautions for user.
Transportation is not dangerous.

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14.7 Maritime transport in bulk according to IMO instruments.
Transportation is not dangerous.

SECTION 15: REGULATORY INFORMATION.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture.
The product is not affected by the Regulation (EC) No 1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer.

Product classification according to Annex I of Directive 2012/18/EU (SEVESO III): N/A
The product is not affected by Regulation (EU) No 528/2012 concerning the making available on the market and use of biocidal products.
The product is not affected by the procedure established Regulation (EU) No 649/2012, concerning the export and import of dangerous chemicals.

Kind of pollutant to water (Germany): nwg: Non-hazardous to water. (Autoclassified according to the AwSV Regulations)

15.2 Chemical safety assessment.
The supplier has carried out a Chemical Safety Assessment for the substance/mixture.
Available Product Exposure Scenario.

SECTION 16: OTHER INFORMATION.

Classification codes:

Eye Dam. 1 : Serious eye damage, Category 1

Changes regarding to the previous version:

- Modification of specific hazards (SECTION 2.3).
- Modification in the firefighting measures (SECTION 5.2).
- Modifications in the accidental release measures (SECTION 6.1).
- Modification in the values of the physical and chemical properties (SECTION 9).
- Change in the hazard classification (SECTION 11.1).
- Modification of the classification ADR/IMDG/ICAO/IATA/RID (SECTION 14).

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Physical hazards	On basis of test data
Health hazards	Calculation method
Environmental hazards	Calculation method

It is advisable to carry out basic training with regard to health and safety at work in order to handle this product correctly.

Available Product Exposure Scenario.

Abbreviations and acronyms used:
AwSV: Facility Regulations for handling substances that are hazardous for the water.
CEN: European Committee for Standardization.
DMEL: Derived Minimal Effect Level, exposure level corresponding to a low risk, that risk should be considered a tolerable minimum.

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DNEL: Derived No Effect Level, level of exposure to the substance below which adverse effects are not anticipated.
EC50: Half maximal effective concentration.
PPE: Personal protection equipment.
LC50: Lethal concentration, 50%.
LD50: Lethal dose, 50%.
PNEC: Predicted No Effect Concentration, concentration of the substance below which adverse effects are not expected in the environmental compartment.
WGK: Water hazard classes.

Key literature references and sources for data:
http://eur-lex.europa.eu/homepage.html
http://echa.europa.eu/
Regulation (EU) 2020/878.
Regulation (EC) No 1907/2006.
Regulation (EU) No 1272/2008.

The information given in this Safety Data Sheet has been drafted in accordance with COMMISSION REGULATION (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemical substances and mixtures (REACH).

The information in this Safety Data Sheet on the Preparation is based on current knowledge and on current EC and national laws, as far as the working conditions of the users is beyond our knowledge and control. The product must not be used for purposes other than those that are specified without first having written instructions on how to handle. It is always the responsibility of the user to take the appropriate measures in order to comply with the requirements established by current legislation. The information contained in this Safety Sheet only states a description of the safety requirements for the preparation, and it must not be considered as a guarantee of its properties.

-End of safety data sheet.-

Annex I – Exposure scenarios

ES1 - Manufacture of Aluminium salts - solid - high dust; Aluminium content = max. 25%	
Section 1	Exposure Scenario Title
Title	Manufacture of Aluminium salts - solid - high dust; Aluminium content = max. 25%
Use Descriptor	Sector of Use: SU8, SU9
	Process Categories: PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a closed batch process (synthesis or formulation) PROC4: Use in a batch and other process (synthesis) where opportunity for exposure arises PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC15: Use as a laboratory reagent
	Environmental Release Categories: ERC1: Manufacture of substances
Processes, tasks, activities covered	Manufacture of the substance. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities
Exposure criteria	DNEL, inhalation long term: 1.8 mg/m^3
Section 2	Operational conditions and risk management measures
Section 2.1	Control of worker exposure
Product characteristics	
Physical form of product	Solid, high dustiness [OC6]
Concentration of substance in product	Covers percentage substance in the product up to 25% [G12].
Amounts used	Varies between milliliters (sampling) and cubic meters (material transfers) [OC13]
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20oC above ambient [G15] Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [EI19]
Contributing Scenarios	Risk Management Measures

Below pH2 and above pH11 the substance has corrosive properties: Use suitable eye protection [PPE26] Avoid skin contact: Wear suitable gloves tested to EN374 [PPE15]	
PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107]	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}
PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108]	Industrial workers: No specific measures identified [EI18]. Professional workers: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}
PROC3: General exposures [CS1]. Use in contained batch processes [CS37]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	Industrial workers: No specific measures identified [EI18]. Professional workers: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82] Recommendations: {Ensure the system is closed} {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clear spills immediately [C&H13]}.
PROC4: General exposures (open systems) [CS16]. Batch process [CS55] (open systems) [CS108]; Drum/batch transfers [CS8]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	Industrial workers: 5-25%: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Professional workers: 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66].

	Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] Or: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29] 1-5%: Avoid carrying out operation for more than 15 minutes [OC10] <1% : Avoid carrying out operation for more than 1 hour [OC11] Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC8b: General exposures, open systems [CS16]. Dedicated facility [CS81] Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	Industrial workers: 5-25%: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66] Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Use bulk or semi-bulk handling systems [E43]. Discharge sacks via suitable vented charge chute [E44]. Professional workers: 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. ; Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] Use bulk or semi-bulk handling systems [E43]. Discharge sacks via suitable vented charge chute [E44]. Or: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11] Recommendations:

	{Drain down and flush system prior to equipment break-in or maintenance [E55]} {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC15: General exposures [CS1]. Laboratory activities [CS36]. Small scale [CS61].	Carry out in a vented booth or extracted enclosure (80% efficiency) [E57]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
Section 2.2	Control of environmental exposure
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.	
Section 3	Exposure Estimation
3.1. Health	
Predicted exposures are not expected to exceed the applicable exposure limits (given in section8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]	
3.2. Environment	
N.A.	
Section 4	Guidance to check compliance with the Exposure Scenario
4.1. Health	
The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]	
4.2. Environment	
N.A.	
Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional)
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Use of PPE	Skin protection: Gloves: -Observe breakthrough time of the gloves used Respiratory protection: Respirators: -Wear a disposable mask only once -Clean non-disposable masks after each use and store in a clean box in a clean area -Wear respirators ≤ 2 hrs/day

ES1 - Manufacture of Aluminium salts - solid - low dust; Aluminium content= max. 25%	
Section 1	Exposure Scenario Title

Title	Manufacture of Aluminium salts - solid - low dust; Aluminium content = max. 25%
Use Descriptor	Sector of Use: Industrial (SU8, SU9)
	Process Categories: PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a closed batch process (synthesis or formulation) PROC4: Use in a batch and other process (synthesis) where opportunity for exposure arises PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC15: Use as a laboratory reagent
	Environmental Release Categories: ERC1: Manufacture of substances
Processes, tasks, activities covered	Manufacture of the substance. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities
Exposure criteria	DNEL, inhalation long term: 1.8 mg/m³
Section 2	Operational conditions and risk management measures
Section 2.1	Control of worker exposure
Product characteristics	
Physical form of product	Solid, low dustiness [OC1]
Concentration of substance in product	Covers percentage substance in the product up to 25% [G12].
Amounts used	Varies between milliliters (sampling) and cubic meters (material transfers) [OC13]
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [EI19]
Contributing Scenarios	Risk Management Measures
Below pH2 and above pH11 the substance has corrosive properties: Use suitable eye protection [PPE26] Avoid skin contact: Wear suitable gloves tested to EN374 [PPE15]	
PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107]	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.

PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108]	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.
PROC3: General exposures [CS1]. Use in contained batch processes [CS37]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clear spills immediately [C&H13]}.
PROC4: General exposures (open systems) [CS16]. Batch process [CS55] (open systems) [CS108]; Drum/batch transfers [CS8]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed}; {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clear spills immediately [C&H13]}.
PROC8b: General exposures, open systems [CS16]. Dedicated facility [CS81] Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]} {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC1 5: General exposures [CS1]. Laboratory activities [CS36]. Small scale [CS61].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
Section 2.2	Control of environmental exposure
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.	
Section 3	Exposure Estimation
3.1. Health	
Predicted exposures are not expected to exceed the applicable exposure limits (given in section8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]	
3.2. Environment	

N.A.	
Section 4	Guidance to check compliance with the Exposure Scenario
4.1. Health	
The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]	
4.2. Environment	
N.A.	
Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional)
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Use of PPE	Skin protection: Gloves: -Observe breakthrough time of the gloves used Respiratory protection: Respirators: -Wear a disposable mask only once -Clean non-disposable masks after each use and store in a clean box in a clean area -Wear respirators ≤ 2 hrs/day

ES2 - Formulation and Distribution of Aluminium salts - solid, high dustiness; max. Aluminium content= 25%	
Section 1	Exposure Scenario Title
Title	Formulation and Distribution of Aluminium salts; max. Aluminium content = 25%
Use Descriptor	Sector of Use: SU10
	Process Categories: PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a 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, pelletization PROC15: Use as a laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available
	Environmental Release Categories:

	ERC2: Formulation of preparations
Processes, tasks, activities covered	Adding Al. salts (Al. content = max. 25%) to liquid and solid formulations; includes distribution and associated laboratory activities. Distribution: loading and (re)packing of the substances.
GES exposure criteria	DNEL, inhalation long term: 1.8 mg/m3
Section 2	Control of worker exposure
Section 2.1	Control of worker exposure
Product characteristics	
Physical form of product	Solid, high dustiness [OC6]
Concentration of substance in product	Covers percentage substance in the product up to 25% [G12].
Amounts used	Varies between milliliters (sampling) and cubic meters (material transfers) [OC13]
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19]
Contributing Scenarios	Risk Management Measures
Below pH2 and above pH11 the substance has corrosive properties: Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant gloves (tested to EN374) in combination with specific activity training [PPE17]	
PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107]	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.
PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108]	Industrial workers: No specific measures identified [EI18]. Professional workers: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82].

	Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}
PROC3: General exposures [CS1]. Use in contained batch processes [CS37]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	Industrial workers: No specific measures identified [EI18]. Professional workers: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82] Recommendations: {Ensure the system is closed} {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clear spills immediately [C&H13]}.
PROC4: General exposures (open systems) [CS16]. Batch process [CS55] (open systems) [CS108]; Drum/batch transfers [CS8]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	Industrial workers: 5-25%: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Professional workers: 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] Or: Avoid carrying out operation for more than 4 hours [OC12] plus. Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29} 1-5%: Avoid carrying out operation for more than 15 minutes [OC10] <1% : Avoid carrying out operation for more than 1 hour [OC11] Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC5: General exposures (open systems) [CS16]. Mixing operations (open systems) [CS30]. Material transfers [CS3].	Industrial workers: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Professional workers: 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency)

Batch process [CS55]. Cleaning [CS47].	[E82]. Avoid carrying out operation for more than 1 hour [OC11] OR: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11] Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC8a: General exposures (open systems) [CS16]; Non-dedicated facility [CS82]; Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] OR: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. ; Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 4 hours [OC12] Recommendations: Use bulk or semi-bulk handling systems [E43].; Discharge sacks via suitable vented charge chute [E44].{Drain down and flush system prior to equipment break-in or maintenance [E55]}.; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]} .{Clear spills immediately [C&H13]}
PROC8b: General exposures, open systems [CS16]. Dedicated facility [CS81] Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	Industrial workers: 5-25%: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66] Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Use bulk or semi-bulk handling systems [E43]. Discharge sacks via suitable vented charge chute [E44]. Professional workers: 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. ; Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] Use bulk or semi-bulk handling systems [E43]. Discharge sacks via suitable vented charge chute [E44].

	Or: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11] Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]} {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC9: General exposures [CS1]. Dedicated facility [CS81] Drum and small package filling [CS6]. Equipment cleaning and maintenance [CS39].	Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 4 hours [OC12]{ Recommendations: Use bulk or semi-bulk handling systems [E43].; Discharge sacks via suitable vented charge chute [E44].Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC14 General exposures (open systems) [CS16] Production or preparation or articles by tabletting, compression, extrusion or pelletization [CS100]	Industrial: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Or: Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] Or: Avoid carrying out operation for more than 1 hour [OC11] 1-5%: Avoid carrying out operation for more than 4 hours [OC12 <1%: No specific measures identified [EI18]. Professional: 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. ; Provide extract ventilation to material transfer points and other openings (80% efficiency). [E82]. Avoid carrying out operation for more than 1 hour [OC11] Or: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. ; Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11] Recommendations:

	{Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC15: General exposures [CS1]. Laboratory activities [CS36]. Small scale [CS61].	Carry out in a vented booth or extracted enclosure (80% efficiency) [E57]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC19 General exposures [CS1]. Mixing operations (open systems) [CS30]. Manual [CS34].	Industrial workers: 5-25%: Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29] <5%: Avoid carrying out operation for more than 1 hour [OC11] <1%: Avoid carrying out operation for more than 4 hours [OC12 Professional workers:: 5-25%: Avoid carrying out operation for more than 4 hours [OC12] Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] <5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11]{ Recommendations: {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]} {Stay upwind/keep distance from source [EI22]}
PROC19 General exposures [CS1]. Mixing operations (open systems) [CS30]. Manual [CS34].	Industrial workers: 5-25%: Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29] <5%: Avoid carrying out operation for more than 1 hour [OC11] <1%: Avoid carrying out operation for more than 4 hours [OC12 Professional workers:: 5-25%: Avoid carrying out operation for more than 4 hours [OC12] Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] <5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11]{ Recommendations: {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]} {Stay upwind/keep distance from source [EI22]}

Section 2.2	Control of environmental exposure
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.	
Section 3	Exposure Estimation
3.1. Health	
Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]	
3.2. Environment N.A.	
Section 4	Guidance to check compliance with the Exposure Scenario
4.1. Health	
The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]	
4.2. Environment	
N.A.	
Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional)
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Use of PPE	Skin protection: Gloves: -Observe breakthrough time of the gloves used Respiratory protection: Respirators: -Wear a disposable mask only once -Clean non-disposable masks after eah use and store in a clean box in a clean area -Wear respirators ≤ 2 hrs/day

ES2 - Formulation and Distribution of Aluminium salts - solid, low dust; Max. Aluminium content = 25%	
Section 1	Exposure Scenario Title
Title	Formulation and Distribution of Aluminium salts (solid, low dust); Max. Aluminium content = 25%
Use Descriptors	Sector of Use: SU10
	Process Categories: PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a 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, pelletization PROC15: Use as a laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available
	Environmental Release Categories: ERC2: Formulation of preparations
Processes, tasks, activities covered	Adding Alu salts (solid, low dust) to liquid and solid formulations; includes distribution and associated laboratory activities (max Alu content = 25%). Distribution: loading and (re)packing of the substances. Max. Alu content = 25%
GES exposure criteria	DNEL, inhalation long term: 1.8 mg/m3
Section 2	Operational conditions and risk management measures
Section 2.1	Control of worker exposure
Product characteristics	
Physical form of product	Solid, low dustiness [OC1]
Concentration of substance in product	Covers percentage substance in the product up to 25% [G12].
Amounts used	Varies between milliliters (sampling) and cubic meters (material transfers) [OC13]
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19]
Contributing Scenarios	Risk Management Measures
Below pH2 and above pH11 the substance has corrosive properties: Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant gloves (tested to EN374) in combination with specific activity training [PPE17]	
PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107]	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.

PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108]	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}.
PROC3: General exposures [CS1]. Use in contained batch processes [CS37]. ; With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} ; {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clear spills immediately [C&H13]}.
PROC4: General exposures (open systems) [CS16]. Batch process [CS55] (open systems) [CS108]; Drum/batch transfers [CS8]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. ; {Clear spills immediately [C&H13]}.
PROC5: General exposures (open systems) [CS16]. Mixing operations (open systems) [CS30]. Material transfers [CS3]. ; Batch process [CS55]. ; Cleaning [CS47].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]} {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC8a: General exposures (open systems) [CS16]; Non-dedicated facility [CS82]; Material transfers [CS3]. ; Equipment cleaning and maintenance [CS39]. ; Bulk transfers [CS14].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}
PROC8b: General exposures, open systems [CS16]. Dedicated facility [CS81] Material transfers [CS3]. Equipment cleaning and maintenance [CS39]	No specific measures identified [EI18]. {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.

Bulk transfers [CS14].	
PROC9: General exposures [CS1]. Dedicated facility [CS81] Drum and small package filling [CS6]. Equipment cleaning and maintenance [CS39].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]} .{Clean equipment and the work area every day [C&H3]}.{Clear spills immediately [C&H13]}.
PROC14: General exposures (open systems) [CS16] Production or preparation or articles by tabletting, compression, extrusion or pelletization [CS100]	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC15: General exposures [CS1]. Laboratory activities [CS36]. Small scale [CS61].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC19: General exposures [CS1]. Mixing operations (open systems) [CS30]. Manual [CS34].	No specific measures identified [EI18]. Recommendations: {Clean equipment and the work area every day [C&H3]}. ; {Clear spills immediately [C&H13]}
Section 2.2	Control of environmental exposure
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.	
Section 3	Exposure Estimation
3.1. Health	
Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]	
3.2. Environment	
N.A.	
Section 4	Guidance to check compliance with the Exposure Scenario.
4.1. Health	
The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]	
4.2. Environment	
N.A.	
Section 5	Additional good practice advice beyond the REACH Chemical Safety

	Assessment - (Section Optional)
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Use of PPE	Skin protection: Gloves: - Observe breakthrough time of the gloves used Respiratory protection: Respirators: - Wear a disposable mask only once - Clean non-disposable masks after each use and store in a clean box in a clean area - Wear respirators ≤ 2 hrs/day

ES3 - Use of Aluminium salts (solid, high dustiness) in synthesis as a process chemical and as an intermediate; Aluminium content = max. 25%	
Section 1	Exposure Scenario Title
Title	Use of Aluminium salts (solid, high dustiness) in synthesis as a process chemical and as an intermediate; Aluminium content = max. 25%
Use Descriptor	Sector of Use: SU6b, SU8, SU9, SU14
	Process Categories: PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a closed batch process (synthesis or formulation) PROC4: Use in a 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 a laboratory reagent
	Environmental Release Categories: ERC1: Manufacture of substances ERC2: Formulation of preparations ERC4: Industrial use ERC5: Industrial use resulting in inclusion into or onto a matrix ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC8a: Wide dispersive indoor use of processing aids in open systems
Processes, tasks, activities covered	Use of Aluminium salts (solid, high dustiness) in synthesis as a process chemical and as an intermediate. Includes material transfers and associated laboratory activities. Max. Aluminium content = 25%

Exposure criteria	DNEL, inhalation long term: 1.8 mg/m³
Section 2	Operational conditions and risk management measures
Section 2.1	Control of worker exposure
Product characteristics	
Physical form of product	Solid, high dustiness [OC6]
Concentration of substance in product	Covers percentage substance in the product up to 25% [G12].
Amounts used	Varies between milliliters (sampling) and cubic meters (material transfers) [OC13]
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20oC above ambient [G15] Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [EI19]
Contributing Scenarios	Risk Management Measures
Below pH2 and above pH11 the substance has corrosive properties: Use suitable eye protection [PPE26] Avoid skin contact: wear chemically resistant gloves (tested to EN374) in combination with specific activity training [PPE17]	
PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107]	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}
PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108]	Industrial workers: No specific measures identified [EI18]. Professional workers: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}
PROC3: General exposures [CS1]. Use in contained batch processes [CS37]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	Industrial workers: No specific measures identified [EI18]. Professional workers: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]

	Recommendations: {Ensure the system is closed} {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clear spills immediately [C&H13]}.
PROC4: General exposures (open systems) [CS16]. Batch process [CS55] (open systems) [CS108]; Drum/batch transfers [CS8]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	Industrial workers: 5-25%: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Professional workers: 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] Or: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29] 1-5%: Avoid carrying out operation for more than 15 minutes [OC10] <1% : Avoid carrying out operation for more than 1 hour [OC11] Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC8a: General exposures (open systems) [CS16]; Non-dedicated facility [CS82]; Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour[OC11] OR: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. ; Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 4 hours [OC12] Recommendations: Use bulk or semi-bulk handling systems [E43].; Discharge sacks via suitable vented charge chute [E44].{Drain down and flush system prior to equipment break-in or maintenance [E55]}.; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]} .{Clear spills immediately [C&H13]}.
PROC8b: General exposures, open systems [CS16]. Dedicated facility [CS81]	Industrial workers: 5-25%: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66] Provide extract ventilation to material transfer points and other openings (90% efficiency)

Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	[E82]. Use bulk or semi-bulk handling systems [E43]. Discharge sacks via suitable vented charge chute [E44]. Professional workers: 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. ; Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] Use bulk or semi-bulk handling systems [E43]. Discharge sacks via suitable vented charge chute [E44]. Or: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11] Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]} {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC9: General exposures [CS1]. Dedicated facility [CS81] Drum and small package filling [CS6]. Equipment cleaning and maintenance [CS39].	Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 4 hours [OC12]{ Recommendations: Use bulk or semi-bulk handling systems [E43].; Discharge sacks via suitable vented charge chute [E44].Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC15: General exposures [CS1]. Laboratory activities [CS36]. Small scale [CS61].	Carry out in a vented booth or extracted enclosure (80% efficiency) [E57]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
Section 2.2	Control of environmental exposure
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.	
Section 3	Exposure Estimation
3.1. Health	
Predicted exposures are not expected to exceed the applicable exposure limits (given in section8 of the SDS) when the operational	

conditions/risk management measures given in section 2 are implemented [G29]	
3.2. Environment	
N.A.	
Section 4	Guidance to check compliance with the Exposure Scenario
4.1. Health	
The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]	
4.2. Environment	
N.A.	
Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional)
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Use of PPE	Skin protection: Gloves: -Observe breakthrough time of the gloves used Respiratory protection: Respirators: -Wear a disposable mask only once -Clean non-disposable masks after each use and store in a clean box in a clean area -Wear respirators ≤ 2 hrs/day

ES3 - Use of Aluminium salts (solid, low dustiness) in synthesis as a process chemical and as an intermediate; Aluminium content = max. 25%	
Section 1	Exposure Scenario Title
Title	Use of Aluminium salts (solid, low dustiness) in synthesis as a process chemical and as an intermediate; Aluminium content = max. 25%
Use Descriptor	Sector of Use: SU6b, SU8, SU9, SU14
	Process Categories: PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a closed batch process (synthesis or formulation) PROC4: Use in a 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 a laboratory reagent
	Environmental Release Categories: ERC1: Manufacture of substances

	ERC2: Formulation of preparations ERC4: Industrial use ERC5: Industrial use resulting in inclusion into or onto a matrix ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC8a: Wide dispersive indoor use of processing aids in open systems
Processes, tasks, activities covered	Use of Aluminium salts (solid, low dustiness) in synthesis as a process chemical and as an intermediate. Includes material transfers and associated laboratory activities. Max. Aluminium content = 25%
Exposure criteria	DNEL, inhalation long term: 1.8 mg/m³
Section 2	Operational conditions and risk management measures
Section 2.1	Control of worker exposure
Product characteristics	
Physical form of product	Solid, low dustiness [OC6]
Concentration of substance in product	Covers percentage substance in the product up to 25% [G12].
Amounts used	Varies between milliliters (sampling) and cubic meters (material transfers) [OC13]
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20oC above ambient [G15] Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [EI19]
Contributing Scenarios	Risk Management Measures
Below pH2 and above pH11 the substance has corrosive properties: Use suitable eye protection [PPE26] Avoid skin contact: wear chemically resistant gloves (tested to EN374) in combination with specific activity training [PPE17]	
PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107]	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}
PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108]	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}.
PROC3:	No specific measures identified [EI18].

General exposures [CS1]. Use in contained batch processes [CS37]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	Recommendations: {Ensure the system is closed} ; {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clear spills immediately [C&H13]}.
PROC4: General exposures (open systems) [CS16]. Batch process [CS55] (open systems) [CS108]; Drum/batch transfers [CS8]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. ; {Clear spills immediately [C&H13]}.
PROC8a: General exposures (open systems) [CS16]; Non-dedicated facility [CS82]; Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC8b: General exposures, open systems [CS16]. Dedicated facility [CS81] Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	No specific measures identified [EI18]. {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC9: General exposures [CS1]. Dedicated facility [CS81] Drum and small package filling [CS6]. Equipment cleaning and maintenance [CS39].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]} .{Clean equipment and the work area every day [C&H3]}.{Clear spills immediately [C&H13]}.
PROC15: General exposures [CS1]. Laboratory activities [CS36]. Small scale [CS61].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
Section 2.2	Control of environmental exposure
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.	
Section 3	Exposure Estimation
3.1. Health	
Predicted exposures are not expected to exceed the applicable exposure limits (given in section8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]	
3.2. Environment	
N.A.	
Section 4	Guidance to check compliance with the Exposure Scenario
4.1. Health	
The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]	
4.2. Environment	
N.A.	
Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional)
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Use of PPE	Skin protection: Gloves: -Observe breakthrough time of the gloves used Respiratory protection: Respirators: -Wear a disposable mask only once -Clean non-disposable masks after each use and store in a clean box in a clean area -Wear respirators ≤ 2 hrs/day

ES4 - Industrial and Professional use of Aluminium salts in spraying formulations - solid, high dustiness; max. Aluminium content = 25%	
Section 1	Exposure Scenario Title
Title	Industrial and Professional use of Aluminium salts in spraying formulations - solid, high dustiness; max. Aluminium content = 25%
Use Descriptor	Sector of Use: SU5, SU6b, SU7
	Process Categories: PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a closed batch process (synthesis or formulation) PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC7: Industrial spraying 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) PROC11: Non industrial spraying PROC19: Hand-mixing with intimate contact and only PPE available
	Environmental Release Categories: ERC3: Formulation in materials ERC4: Industrial use ERC5: Industrial use resulting in inclusion into or onto a matrix ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC6b: Industrial use of reactive processing aids ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release ERC11a: Wide dispersive indoor use of long-life articles and materials with low release
Processes, tasks, activities covered	Industrial and Professional use of Aluminium salts in spraying formulations - solid -high dustiness. Includes equipment cleaning and maintenance.
Exposure criteria	DNEL, inhalation long term: 1.8 mg/m^3
Section 2	Operational conditions and risk management measures
Section 2.1	Control of worker exposure
Product characteristics	
Physical form of product	Solid, high dustiness [OC6]
Concentration of substance in product	Covers percentage substance in the product up to 25% [G12].
Amounts used	Varies between milliliters (sampling) and cubic meters (material transfers) [OC13]
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20oC above ambient [G15] Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [EI19]
Contributing Scenarios	Risk Management Measures
Below pH2 and above pH11 the substance has corrosive properties: Use suitable eye protection [PPE26] Avoid skin contact: wear chemically resistant gloves (tested to EN374) in combination with specific activity training [PPE17]	
PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54].	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}

Process sampling [CS2] (closed systems) [CS107]	
PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108]	Industrial workers: No specific measures identified [EI18]. Professional workers: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}
PROC3: General exposures [CS1]. Use in contained batch processes [CS37]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	Industrial workers: No specific measures identified [EI18]. Professional workers: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82] Recommendations: {Ensure the system is closed} {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clear spills immediately [C&H13]}.
PROC5: General exposures (open systems) [CS16]. Mixing operations (open systems) [CS30]. Material transfers [CS3]. Batch process [CS55]. Cleaning [CS47].	Industrial workers: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Professional workers: 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour[OC11] OR: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Avoid carrying out operation for more than 15 minutes[OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11] Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC7: General exposures	5-25%: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66].

[CS1]. Spraying [CS10].	Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29] OR: Avoid carrying out operation for more than 1 hour [OC11] 1-5%: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Avoid carrying out operation for more than 4 hours [OC12] <1%: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Recommendations: {Clean equipment and the work area every day [C&H3]}. ; {Clear spills immediately [C&H13]}.
PROC8a: General exposures (open systems) [CS16]; Non-dedicated facility [CS82]; Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] OR: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. ; Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 4 hours [OC12] Recommendations: Use bulk or semi-bulk handling systems [E43].; Discharge sacks via suitable vented charge chute [E44].{Drain down and flush system prior to equipment break-in or maintenance [E55]}.; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]} .{Clear spills immediately [C&H13]}.
PROC8b: General exposures, open systems [CS16]. Dedicated facility [CS81] Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	Industrial workers: 5- 25%: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66] Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Use bulk or semi-bulk handling systems [E43]. Discharge sacks via suitable vented charge chute [E44]. Professional workers: 5-

	25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. ; Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] Use bulk or semi-bulk handling systems [E43]. Discharge sacks via suitable vented charge chute [E44]. Or: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11] Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]} {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC9: General exposures [CS1]. Dedicated facility [CS81] Drum and small package filling [CS6]. Equipment cleaning and maintenance [CS39].	Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 4 hours [OC12]{ Recommendations: Use bulk or semi-bulk handling systems [E43].; Discharge sacks via suitable vented charge chute [E44].Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC11: General exposures [CS1]. Spraying [CS10].	5-25%: Minimize exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (80% efficiency) [E60]. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 [E70]. Avoid carrying out operation for more than 4 hours [OC12] Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Minimize exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (80% efficiency) [E60]. ; Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 [E70]. Avoid carrying out operation for more than 1 hour [OC11] Recommendations; {Clean equipment and the work area every day [C&H3]}. ; {Clear spills immediately [C&H13]}.
PROC19 General exposures [CS1]. Mixing operations (open systems) [CS30]. ;	Industrial workers: 5-25%: Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29] <5%:

Manual [CS34].	Avoid carrying out operation for more than 1 hour [OC11] <1%: Avoid carrying out operation for more than 4 hours [OC12 Professional workers:: 5-25%: Avoid carrying out operation for more than 4 hours [OC12] Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] <5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11]{ Recommendations: {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]} {Stay upwind/keep distance from source [EI22]}
Section 2.2	Control of environmental exposure
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.	
Section 3	Exposure Estimation
3.1. Health	
Predicted exposures are not expected to exceed the applicable exposure limits (given in section8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]	
3.2. Environment	
N.A.	
Section 4	Guidance to check compliance with the Exposure Scenario
4.1. Health	
The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]	
4.2. Environment	
N.A.	
Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional)
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Use of PPE	<u>Skin protection:</u> Gloves: -Observe breakthrough time of the gloves used <u>Respiratory protection:</u> Respirators: -Wear a disposable mask only once

	-Clean non-disposable masks after each use and store in a clean box in a clean area -Wear respirators ≤ 2 hrs/day

ES4 - Use of Aluminium salts (solid, low dustiness) in synthesis as a process chemical and as an intermediate; Aluminium content = max. 25%	
Section 1	Exposure Scenario Title
Title	Industrial and Professional use of Aluminium salts - solid, low dust -in spraying formulations; Aluminium content: max. 25%
Use Descriptor	Sector of Use: SU5, SU6b, SU7
	Process Categories: PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a closed batch process (synthesis or formulation) PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC7: Industrial spraying 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) PROC11: Non industrial spraying
	Environmental Release Categories: ERC3: Formulation in materials ERC4: Industrial use ERC5: Industrial use resulting in inclusion into or onto a matrix ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC6b: Industrial use of reactive processing aids ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release ERC11a: Wide dispersive indoor use of long-life articles and materials with low release
Processes, tasks, activities covered	Industrial and Professional use of Aluminium salts - solid, low dust - in spraying formulations
Exposure criteria	DNEL, inhalation long term: 1.8 mg/m³
Section 2	Operational conditions and risk management measures
Section 2.1	Control of worker exposure
Product characteristics	
Physical form of product	Solid, low dustiness [OC6]

Concentration of substance in product	Covers percentage substance in the product up to 25% [G12].
Amounts used	Varies between milliliters (sampling) and cubic meters (material transfers) [OC13]
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20oC above ambient [G15] Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [EI19]
Contributing Scenarios	Risk Management Measures
Below pH2 and above pH11 the substance has corrosive properties: Use suitable eye protection [PPE26] Avoid skin contact: wear chemically resistant gloves (tested to EN374) in combination with specific activity training [PPE17]	
PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107]	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}
PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108]	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}.
PROC3: General exposures [CS1]. Use in contained batch processes [CS37]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} ; {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clear spills immediately [C&H13]}.
PROC5: General exposures (open systems) [CS16]. Mixing operations (open systems) [CS30]. Material transfers [CS3].; Batch process [CS55]. ; Cleaning [CS47].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. ; {Clear spills immediately [C&H13]}.
PROC8a: General exposures (open systems) [CS16]; Non-dedicated facility [CS82];	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Use drum pumps

Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	[E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC8b: General exposures, open systems [CS16]. Dedicated facility [CS81] Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	No specific measures identified [EI18]. {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC9: General exposures [CS1]. Dedicated facility [CS81] Drum and small package filling [CS6]. Equipment cleaning and maintenance [CS39].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]} .{Clean equipment and the work area every day [C&H3]}.{Clear spills immediately [C&H13]}.
PROC11: General exposures [CS1]. Spraying [CS10].	No specific measures identified [EI18]. Recommendations: {Clean equipment and the work area every day [C&H3]}. ; {Clear spills immediately [C&H13]}.
PROC19: General exposures [CS1]. Mixing operations (open systems) [CS30]. Manual [CS34].	No specific measures identified [EI18]. Recommendations: {Clean equipment and the work area every day [C&H3]}. ; {Clear spills immediately [C&H13]}
Section 2.2	Control of environmental exposure
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.	
Section 3	Exposure Estimation
3.1. Health	
Predicted exposures are not expected to exceed the applicable exposure limits (given in section8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]	
3.2. Environment	
N.A.	
Section 4	Guidance to check compliance with the Exposure Scenario
4.1. Health	
The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]	
4.2. Environment	
N.A.	

Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional)
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Use of PPE	Skin protection: Gloves: -Observe breakthrough time of the gloves used Respiratory protection: Respirators: -Wear a disposable mask only once -Clean non-disposable masks after each use and store in a clean box in a clean area -Wear respirators ≤ 2 hrs/day

ES5 - Industrial and Professional use of Aluminium salts in non-spraying formulations - solid, high dustiness; max. Aluminium content = 25%	
Section 1	Exposure Scenario Title
Title	Industrial and Professional use of Aluminium salts in non-spraying formulations - solid, high dustiness; max. Aluminium content = 25%
Use Descriptor	Sector of Use: SU1, SU5, SU6b, SU7, SU13, SU19
	Process Categories: PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a 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) PROC6: Calendering operations 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) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletization PROC15: Use as a laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available
	Environmental Release Categories: ERC2: Formulation of preparations ERC3: Formulation in materials ERC4: Industrial use ERC5: Industrial use resulting in inclusion into or onto a matrix ERC6a: Industrial use resulting in manufacture of another substance (use of

	intermediates) ERC6b: Industrial use of reactive processing aids ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release ERC11a: Wide dispersive indoor use of long-life articles and materials with low release
Processes, tasks, activities covered	Industrial and Professional use of Aluminium salts in non-spraying formulations - solid -high dustiness. Includes equipment cleaning and maintenance.
Exposure criteria	DNEL, inhalation long term: 1.8 mg/m³
Section 2	Operational conditions and risk management measures
Section 2.1	Control of worker exposure
Product characteristics	
Physical form of product	Solid, high dustiness [OC6]
Concentration of substance in product	Covers percentage substance in the product up to 25% [G12].
Amounts used	Varies between milliliters (sampling) and cubic meters (material transfers) [OC13]
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20oC above ambient [G15] Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [EI19]
Contributing Scenarios	Risk Management Measures
Below pH2 and above pH11 the substance has corrosive properties: Use suitable eye protection [PPE26] Avoid skin contact: wear chemically resistant gloves (tested to EN374) in combination with specific activity training [PPE17]	
PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107]	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}
PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108]	Industrial workers: No specific measures identified [EI18]. Professional workers: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Recommendations:

	{Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}
PROC3: General exposures [CS1]. Use in contained batch processes [CS37]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	Industrial workers: No specific measures identified [EI18]. Professional workers: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82] Recommendations: {Ensure the system is closed} {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clear spills immediately [C&H13]}.
PROC4: General exposures (open systems) [CS16]. Batch process [CS55] (open systems) [CS108]; Drum/batch transfers [CS8]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	Industrial workers: 5-25%: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Professional workers: 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] Or: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29] 1-5%: Avoid carrying out operation for more than 15 minutes [OC10] <1% : Avoid carrying out operation for more than 1 hour [OC11] Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC5: General exposures (open systems) [CS16]. Mixing operations (open systems) [CS30]. Material transfers [CS3]. Batch process [CS55]. Cleaning [CS47].	Industrial workers: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Professional workers: 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] OR: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to

	EN140 with Type A/P2 filter or better [PPE29] 1-5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11] Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC6: General exposures (open systems) [CS16] Mixing operations (open systems) [CS30]. Material transfers [CS3]. Batch process [CS55]. ; Cleaning [CS47]	Industrial worker: 5-25%: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (90% efficiency) [[E82]. Or: Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Avoid carrying out operation for more than 1 hour [OC11] <1%: Avoid carrying out operation for more than 4 hours [OC12] Professional worker: 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency)[[E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [[E82]. Plus: Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] <1%: Avoid carrying out operation for more than 1 hour [OC11] Recommendations: {Clean equipment and the work area every day [C&H3]} {Clear spills immediately [C&H13]}.
PROC8a: General exposures (open systems) [CS16]; Non-dedicated facility [CS82]; Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] OR: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. ; Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 4 hours [OC12] Recommendations:

	Use bulk or semi-bulk handling systems [E43].; Discharge sacks via suitable vented charge chute [E44].{Drain down and flush system prior to equipment break-in or maintenance [E55]}.; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]} .{Clear spills immediately [C&H13]}.
PROC8b: General exposures, open systems [CS16]. Dedicated facility [CS81] Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	Industrial workers: 5-25%: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66] Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Use bulk or semi-bulk handling systems [E43]. Discharge sacks via suitable vented charge chute [E44]. Professional workers: 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. ; Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] Use bulk or semi-bulk handling systems [E43]. Discharge sacks via suitable vented charge chute [E44]. Or: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11] Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]} {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC9: General exposures [CS1]. Dedicated facility [CS81] Drum and small package filling [CS6]. Equipment cleaning and maintenance [CS39].	Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 4 hours [OC12]{ Recommendations: Use bulk or semi-bulk handling systems [E43].; Discharge sacks via suitable vented charge chute [E44].Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC10: General exposures (open systems) [CS16] Rolling, Brushing [CS51]. ; Equipment cleaning and maintenance [CS39]	5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Or: Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%:

	Avoid carrying out operation for more than 4 hours [OC12] <1%: No specific measures identified [EI18]. Recommendations: {Use long handled tools where possible [E50]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. {Avoid splashing [C&H15]}.
PROC13 General exposures, open systems [CS16] Dipping, immersion and pouring [CS4]	Minimize exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (80% efficiency) [E60]. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 [E70]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC14 General exposures (open systems) [CS16] Production or preparation or articles by tabletting, compression, extrusion or pelletization [CS100]	Industrial: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Or: Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] Or: Avoid carrying out operation for more than 1 hour [OC11] 1-5%: Avoid carrying out operation for more than 4 hours [OC12 <1%: No specific measures identified [EI18]. Professional: 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. ; Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] Or: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. ; Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11] Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC15:	Carry out in a vented booth or extracted enclosure (80% efficiency) [E57].

General exposures [CS1]. Laboratory activities [CS36]. Small scale [CS61].	Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC19 General exposures [CS1]. Mixing operations (open systems) [CS30]. ; Manual [CS34].	Industrial workers: 5-25%: Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29] <5%: Avoid carrying out operation for more than 1 hour [OC11] <1%: Avoid carrying out operation for more than 4 hours [OC12 Professional workers:: 5-25%: Avoid carrying out operation for more than 4 hours [OC12] Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] <5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11]{ Recommendations: {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]} {Stay upwind/keep distance from source [EI22]}
Section 2.2	Control of environmental exposure
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.	
Section 3	Exposure Estimation
3.1. Health	
Predicted exposures are not expected to exceed the applicable exposure limits (given in section8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]	
3.2. Environment	
N.A.	
Section 4	Guidance to check compliance with the Exposure Scenario
4.1. Health	
The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]	
4.2. Environment	
N.A.	
Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional)
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure	

scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Use of PPE	Skin protection: Gloves: -Observe breakthrough time of the gloves used Respiratory protection: Respirators: -Wear a disposable mask only once -Clean non-disposable masks after each use and store in a clean box in a clean area -Wear respirators ≤ 2 hrs/day

ES5 - Industrial and Professional use of Aluminium salts - solid, low dust -in non-spraying formulations; Aluminium content: max. 25%	
Section 1	Exposure Scenario Title
Title	Industrial and Professional use of Aluminium salts - solid, low dust -in non-spraying formulations; Aluminium content: max. 25%
Use Descriptor	Sector of Use: SU1, SU5, SU6b, SU7, SU13, SU19
	Process Categories: PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a 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) PROC6: Calendering operations 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) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletization PROC15: Use as a laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available
	Environmental Release Categories: ERC2: Formulation of preparations ERC3: Formulation in materials ERC4: Industrial use ERC5: Industrial use resulting in inclusion into or onto a matrix ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC6b: Industrial use of reactive processing aids ERC8a: Wide dispersive indoor use of processing aids in open systems

	ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release ERC11a: Wide dispersive indoor use of long-life articles and materials with low release
Processes, tasks, activities covered	Industrial and Professional use of Aluminium salts - solid, low dust - in non-spraying formulations
Exposure criteria	DNEL, inhalation long term: 1.8 mg/m³
Section 2	Operational conditions and risk management measures
Section 2.1	Control of worker exposure
Product characteristics	
Physical form of product	Solid, low dustiness [OC1]
Concentration of substance in product	Covers percentage substance in the product up to 25% [G12].
Amounts used	Varies between milliliters (sampling) and cubic meters (material transfers) [OC13]
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20oC above ambient [G15] Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [EI19]
Contributing Scenarios	Risk Management Measures
Below pH2 and above pH11 the substance has corrosive properties: Use suitable eye protection [PPE26] Avoid skin contact: wear chemically resistant gloves (tested to EN374) in combination with specific activity training [PPE17]	
PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107]	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}
PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108]	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}.
PROC3: General exposures [CS1]. Use in contained batch processes [CS37]. With sample collection [CS56].	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} ; {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clear spills immediately [C&H13]}.

Equipment cleaning and maintenance [CS39].	
PROC4: General exposures (open systems) [CS16]. Batch process [CS55] (open systems) [CS108]; Drum/batch transfers [CS8]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. ; {Clear spills immediately [C&H13]}.
PROC5: General exposures (open systems) [CS16]. Mixing operations (open systems) [CS30]. Material transfers [CS3].; Batch process [CS55]. ; Cleaning [CS47].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. ; {Clear spills immediately [C&H13]}.
PROC8a: General exposures (open systems) [CS16]; Non-dedicated facility [CS82]; Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC8b: General exposures, open systems [CS16]. Dedicated facility [CS81] Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	No specific measures identified [EI18]. {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC9: General exposures [CS1]. Dedicated facility [CS81] Drum and small package filling [CS6]. Equipment cleaning and maintenance [CS39].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]} .{Clean equipment and the work area every day [C&H3]}.{Clear spills immediately [C&H13]}.
PROC10: General exposures [CS1]. Spraying [CS10].	No specific measures identified [EI18]. Recommendations: {Use long handled tools where possible [E50]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. {Avoid splashing

	[C&H15]}.
PROC13: General exposures, open systems [CS16] Dipping, immersion and pouring [CS4]	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clean equipment and the work area every day [C&H3]} {Clear spills immediately [C&H13]}.
PROC14: General exposures (open systems) [CS16] Production or preparation or articles by tabletting, compression, extrusion or pelletization [CS100]	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC15: General exposures [CS1]. Laboratory activities [CS36]. Small scale [CS61].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC19: General exposures [CS1]. Mixing operations (open systems) [CS30]. Manual [CS34].	No specific measures identified [EI18]. Recommendations: {Clean equipment and the work area every day [C&H3]}. ; {Clear spills immediately [C&H13]}
Section 2.2	Control of environmental exposure
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.	
Section 3	Exposure Estimation
3.1. Health	
Predicted exposures are not expected to exceed the applicable exposure limits (given in section8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]	
3.2. Environment	
N.A.	
Section 4	Guidance to check compliance with the Exposure Scenario
4.1. Health	
The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]	
4.2. Environment	
N.A.	
Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional)
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure	

scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Use of PPE	Skin protection: Gloves: -Observe breakthrough time of the gloves used Respiratory protection: Respirators: -Wear a disposable mask only once -Clean non-disposable masks after each use and store in a clean box in a clean area -Wear respirators ≤ 2 hrs/day

ES6 - Industrial and Professional use of Aluminium salts as flocculants or coagulant in water and waste water treatment; solid - high dustiness; Aluminium content = max. 25%	
Section 1	Exposure Scenario Title
Title	Industrial and Professional use of Aluminium as flocculants or coagulant in water and waste water treatment; solid, high dustiness; max. Aluminium content = 25%
Use Descriptor	Sector of Use: SU2, SU5, SU6b, SU10, SU23
	Process Categories: PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a 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 Categories: ERC2: Formulation of preparations ERC4: Industrial use ERC6b: Industrial use of reactive processing aids ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems
Processes, tasks, activities covered	Industrial and Professional use of Aluminium salts as flocculants or coagulant in water and waste water treatment.
Exposure criteria	DNEL, inhalation long term: 1.8 mg/m³
Section 2	Operational conditions and risk management measures
Section 2.1	Control of worker exposure
Product characteristics	

Physical form of product	Solid, high dustiness [OC6]
Concentration of substance in product	Covers percentage substance in the product up to 25% [G12].
Amounts used	Varies between milliliters (sampling) and cubic meters (material transfers) [OC13]
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20oC above ambient [G15] Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [EI19]
Contributing Scenarios	Risk Management Measures
Below pH2 and above pH11 the substance has corrosive properties: Use suitable eye protection [PPE26] Avoid skin contact: wear chemically resistant gloves (tested to EN374) in combination with specific activity training [PPE17]	
PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108]	Industrial workers: No specific measures identified [EI18]. Professional workers: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}
PROC3: General exposures [CS1]. Use in contained batch processes [CS37]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	Industrial workers: No specific measures identified [EI18]. Professional workers: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82] Recommendations: {Ensure the system is closed} {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clear spills immediately [C&H13]}.
PROC4: General exposures (open systems) [CS16]. Batch process [CS55] (open systems) [CS108]; Drum/batch transfers [CS8]. With sample collection [CS56]. Equipment cleaning and	Industrial workers: 5-25%: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Professional workers: 5-25%:

maintenance [CS39].	Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] Or: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29] 1-5%: Avoid carrying out operation for more than 15 minutes [OC10] <1% : Avoid carrying out operation for more than 1 hour [OC11] Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC5: General exposures (open systems) [CS16]. Mixing operations (open systems) [CS30]. Material transfers [CS3]. Batch process [CS55]. Cleaning [CS47].	Industrial workers: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Professional workers: 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] OR: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11] Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC8a: General exposures (open systems) [CS16]; Non-dedicated facility [CS82]; Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] OR: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. ; Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82].

	Avoid carrying out operation for more than 4 hours [OC12] Recommendations: Use bulk or semi-bulk handling systems [E43].; Discharge sacks via suitable vented charge chute [E44].{Drain down and flush system prior to equipment break-in or maintenance [E55]}.; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]} .{Clear spills immediately [C&H13]}.
PROC8b: General exposures, open systems [CS16]. Dedicated facility [CS81] Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	Industrial workers: 5-25%: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66] Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Use bulk or semi-bulk handling systems [E43]. Discharge sacks via suitable vented charge chute [E44]. Professional workers: 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. ; Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] Use bulk or semi-bulk handling systems [E43]. Discharge sacks via suitable vented charge chute [E44]. Or: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11] Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]} {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC9: General exposures [CS1]. Dedicated facility [CS81] Drum and small package filling [CS6]. Equipment cleaning and maintenance [CS39].	Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 4 hours [OC12]{ Recommendations: Use bulk or semi-bulk handling systems [E43].; Discharge sacks via suitable vented charge chute [E44].Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC10: General exposures (open systems) [CS16] Rolling,	5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency)

Brushing [CS51]. ; Equipment cleaning and maintenance [CS39]	[E82]. Or: Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Avoid carrying out operation for more than 4 hours [OC12] <1%: No specific measures identified [EI18]. Recommendations: {Use long handled tools where possible [E50]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. {Avoid splashing [C&H15]}.
PROC19 General exposures [CS1]. Mixing operations (open systems) [CS30]. ; Manual [CS34].	Industrial workers: 5-25%: Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29] <5%: Avoid carrying out operation for more than 1 hour [OC11] <1%: Avoid carrying out operation for more than 4 hours [OC12 Professional workers:: 5-25%: Avoid carrying out operation for more than 4 hours [OC12] Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] <5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11]{ Recommendations: {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]} {Stay upwind/keep distance from source [EI22]}
Section 2.2	Control of environmental exposure
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.	
Section 3	Exposure Estimation
3.1. Health	
Predicted exposures are not expected to exceed the applicable exposure limits (given in section8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]	
3.2. Environment	
N.A.	
Section 4	Guidance to check compliance with the Exposure Scenario
4.1. Health	
The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]	

4.2. Environment	
N.A.	
Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional)
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Use of PPE	Skin protection: Gloves: -Observe breakthrough time of the gloves used Respiratory protection: Respirators: -Wear a disposable mask only once -Clean non-disposable masks after each use and store in a clean box in a clean area -Wear respirators ≤ 2 hrs/day

ES6 - Industrial and Professional use of Aluminium salts as flocculant or coagulant in water and waste water treatment - solid-low dust; Aluminium content = max. 25%	
Section 1	Exposure Scenario Title
Title	Industrial and Professional use of Aluminium salts as flocculant or coagulant in water and waste water treatment - solid-low dust; Aluminium content = max. 25%
Use Descriptor	Sector of Use: SU2, SU5, SU6b, SU10, SU23
	Process Categories: PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a 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 Categories: ERC2: Formulation of preparations ERC4: Industrial use ERC6b: Industrial use of reactive processing aids ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

Processes, tasks, activities covered	Industrial and Professional use of Aluminium salts as flocculant or coagulant in water and waste water treatment. Aluminium content = max. 25%
Exposure criteria	DNEL, inhalation long term: 1.8 mg/m³
Section 2	Operational conditions and risk management measures
Section 2.1	Control of worker exposure
Product characteristics	
Physical form of product	Solid, low dustiness [OC1]
Concentration of substance in product	Covers percentage substance in the product up to 25% [G12].
Amounts used	Varies between milliliters (sampling) and cubic meters (material transfers) [OC13]
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20oC above ambient [G15] Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [EI19]
Contributing Scenarios	Risk Management Measures
Below pH2 and above pH11 the substance has corrosive properties: Use suitable eye protection [PPE26] Avoid skin contact: wear chemically resistant gloves (tested to EN374) in combination with specific activity training [PPE17]	
PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108]	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}.
PROC3: General exposures [CS1]. Use in contained batch processes [CS37]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} ; {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clear spills immediately [C&H13]}.
PROC4: General exposures (open systems) [CS16]. Batch process [CS55] (open systems) [CS108]; Drum/batch transfers [CS8]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. ; {Clear spills immediately [C&H13]}.
PROC5:	No specific measures identified [EI18].

General exposures (open systems) [CS16]. Mixing operations (open systems) [CS30]. Material transfers [CS3].; Batch process [CS55]. ; Cleaning [CS47].	Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. ; {Clear spills immediately [C&H13]}.
PROC8a: General exposures (open systems) [CS16]; Non-dedicated facility [CS82]; Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC8b: General exposures, open systems [CS16]. Dedicated facility [CS81] Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	No specific measures identified [EI18]. {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC9: General exposures [CS1]. Dedicated facility [CS81] Drum and small package filling [CS6]. Equipment cleaning and maintenance [CS39].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]} .{Clean equipment and the work area every day [C&H3]}.{Clear spills immediately [C&H13]}.
PROC19: General exposures [CS1]. Mixing operations (open systems) [CS30]. Manual [CS34].	No specific measures identified [EI18]. Recommendations: {Clean equipment and the work area every day [C&H3]}. ; {Clear spills immediately [C&H13]}
Section 2.2	Control of environmental exposure
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.	
Section 3	Exposure Estimation
3.1. Health	
Predicted exposures are not expected to exceed the applicable exposure limits (given in section8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]	

3.2. Environment	
N.A.	
Section 4	Guidance to check compliance with the Exposure Scenario
4.1. Health	
The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]	
4.2. Environment	
N.A.	
Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional)
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Use of PPE	Skin protection: Gloves: -Observe breakthrough time of the gloves used Respiratory protection: Respirators: -Wear a disposable mask only once -Clean non-disposable masks after each use and store in a clean box in a clean area -Wear respirators ≤ 2 hrs/day

ES7 - Use of Aluminium salts - solid, high dust - in industrial and professional laboratory settings; max Aluminium content = 25%	
Section 1	Exposure Scenario Title
Title	Use of Aluminium salts - solid, high dust - in industrial and professional laboratory settings; max Aluminium content = 25%
Use Descriptor	Sector of Use: SU9
	Process Categories: PROC15: Use as a laboratory reagent
	Environmental Release Categories: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
Processes, tasks, activities covered	Use of aluminium salts (solid, high dustiness) in small scale laboratory settings. Max. aluminium content = 25%
Exposure criteria	DNEL, inhalation long term: 1.8 mg/m³
Section 2	Operational conditions and risk management measures
Section 2.1	Control of worker exposure
Product characteristics	
Physical form of product	Solid, high dustiness [OC6]
Concentration of substance in product	Covers percentage substance in the product up to 25% [G12].
Amounts used	Varies between milliliters (sampling) and cubic meters (material transfers) [OC13]
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]

Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20oC above ambient [G15] Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [EI19]
Contributing Scenarios	Risk Management Measures
Below pH2 and above pH11 the substance has corrosive properties: Use suitable eye protection [PPE26] Avoid skin contact: wear chemically resistant gloves (tested to EN374) in combination with specific activity training [PPE17]	
PROC15: General exposures [CS1]. Laboratory activities [CS36]. Small scale [CS61].	Carry out in a vented booth or extracted enclosure (80% efficiency) [E57]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
Section 2.2	Control of environmental exposure
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.	
Section 3	Exposure Estimation
3.1. Health	
Predicted exposures are not expected to exceed the applicable exposure limits (given in section8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]	
3.2. Environment	
N.A.	
Section 4	Guidance to check compliance with the Exposure Scenario
4.1. Health	
The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]	
4.2. Environment	
N.A.	
Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional)
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Use of PPE	Skin protection: Gloves: -Observe breakthrough time of the gloves used Respiratory protection: Respirators: -Wear a disposable mask only once

	-Clean non-disposable masks after each use and store in a clean box in a clean area -Wear respirators ≤ 2 hrs/day

ES7 - Use of Aluminium salts - solid, low dust - in industrial and professional laboratory settings; max Aluminium content = 25%	
Section 1	Exposure Scenario Title
Title	Use of Aluminium salts - solid, low dust - in industrial and professional laboratory settings; max Aluminium content = 25%
Use Descriptor	Sector of Use: SU9
	Process Categories: PROC15: Use as a laboratory reagent
	Environmental Release Categories: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
Processes, tasks, activities covered	Use of aluminium salts (solid, low dustiness) in small scale laboratory settings. Max. aluminium content = 25%
Exposure criteria	DNEL, inhalation long term: 1.8 mg/m³
Section 2	Operational conditions and risk management measures
Section 2.1	Control of worker exposure
Product characteristics	
Physical form of product	Solid, low dustiness [OC1]
Concentration of substance in product	Covers percentage substance in the product up to 25% [G12].
Amounts used	Varies between milliliters (sampling) and cubic meters (material transfers) [OC13]
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Human factors not influenced by risk management	Not applicable
Other Operational Conditions affecting worker exposure	Assumes use at not > 20oC above ambient [G15] Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [EI19]
Contributing Scenarios	Risk Management Measures
Below pH2 and above pH11 the substance has corrosive properties: Use suitable eye protection [PPE26] Avoid skin contact: wear chemically resistant gloves (tested to EN374) in combination with specific activity training [PPE17]	
PROC15: General exposures [CS1]. Laboratory activities [CS36]. Small scale [CS61].	No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
Section 2.2	Control of environmental exposure
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.	
Section 3	Exposure Estimation
3.1. Health	
Predicted exposures are not expected to exceed the applicable exposure limits (given in section8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]	
3.2. Environment	
N.A.	
Section 4	Guidance to check compliance with the Exposure Scenario
4.1. Health	
The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]	
4.2. Environment	
N.A.	
Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional)
Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure	
Use of PPE	Skin protection: Gloves: -Observe breakthrough time of the gloves used Respiratory protection: Respirators: -Wear a disposable mask only once -Clean non-disposable masks after each use and store in a clean box in a clean area -Wear respirators ≤ 2 hrs/day