

1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY				
1.1 Product identifier				
Trade name:	FLOMAR C-1, C-2, FLOMAR 10B40%			
Other names:	PAC			
Chemical name:	ALLUMINIUM CHLORIDE	ALLUMINIUM CHLORIDE, BASIC		
EC number:	215-477-2			
CAS number:	1327-41-9			
REACH registration n:	01-2119531563-43-XXXX			
1.2 Relevant identified uses of to	he substance or mixture and uses	advised against		
Uses: (see corresponding ES as attachement to this SDS)	Formulation and Distribution Use in synthesis and as Intermed Use in spraying Formulations	Formulation and Distribution Use in synthesis and as Intermediate Use in spraying Formulations Use in non-spraying Formulations		
Uses advised against:	None known			
1.3 Details of the supplier of the	safety data sheet			
Manufacturer/Importer/Supplier:	Marchi Industriale Spa – Via Tre Tel +39 055475547, fax +39 055			
Person responsible for the Safety Data Sheet (with e-mail address)	laboratorio@marchi-industriale.it			
1.4 Emergency telephone numb	er (h24)			
Az. Osp. Univ. Foggia Fo Az. Osp. "A. Cardarelli" Na CAV Policlinico "Umberto I" Ro CAV Policlinico "A. Gemelli" Ro Az. Osp. "Careggi" U.O. Flo		06 68593726 800183459 081-7472870 06-49978000 06-3054343 055-7947819 0382-24444 02-66101029 800883300		
2. HAZARDS IDENTIFICATION				
2.1 Classification of the substan				
Classification in accordance with F		Tip Domest 1		
'	H318: Causes serious eye damage H290: May be corrosive to metals	Eye Damage 1 Met. Corr. 1		
2.1.3 Additional information				
2.2 Label elements				
Labelling in accordance with Regu	lation 1272/2008 (CLP)			
Hazard pictogram(s):				
Signal word	Danger			
Hazard statement(s):	3 	Causes serious eye damage. May be corrosive to metals.		



Precautionary statement(s):	P264: Wa P280: We P305+P3: lenses, if P310: Imr	61: Avoid breathing dust/fume/gas/mist/vapours/spray. 64: Wash skin thoroughly after handling. 60: Wear protective gloves/protective clothing/eye protection/face protection. 65+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact ses, if present and easy to do. Continue rinsing. 60: Immediately call a doctor/physician. 60: Store in corrosive resistant/container with a resistant inner liner			
2.3 Other hazards					
PBT/vPvB criteria:		According to Annex XIII of Regulation (EC) No 1907/2006, no PBT and vPvB assessment has been conducted since the substance is inorganic.			
Other hazards:	None	None known.			
3. COMPOSITION/INFORMA	TION ON INC	GREDIENTS			
Substances					
According to the REACH Regu	lation the pro	duct is a mono-c	onstituent.		
Chemical name	CAS no.	EC no.	IUPAC name	Purity	
Aluminum chloride	1327-41-9	215-477-2	Aluminum chloride, basic	>25% <50% (aqueous solution)	
4. FIRST-AID MEASURES				1	
4.1 Description of first aid m	easures				
Eye contact:	the u	Immediately wash eyes with plenty of running water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Remove contact lenses, if present and easy to do. Seek medical advice if irritation develops and persists.			
Skin contact:	Wasl remo	Wash affected skin area with plenty of water and soap for at least 15 minutes thoroughly while removing contaminated clothing and shoes. Seek medical advice if irritation develops and persists.			
Ingestion:	plent	Seek medical advice if the victim feels unwell. Wash out mouth with plenty of water and give plenty of water to drink. Do not induce vomiting. Never give anything by mouth to an unconscious person.			
Inhalation:	Remodrow is diffusion appeare in	Remove the victim from exposure into fresh air immediately if adverse effects (e.g. dizziness, drowsiness or respiratory irritation) occur. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid. Also seek medical advice if cough or other symptoms appear. Do not use mouth-to-mouth respiration. Seek medical advice immediately when vapors are intensively inhaled.			
4.2 Most important sympton					
Symptoms		osive to the eyes			
Risks		es severe eye da be corrosive to m			
	ate medical all contamina	attention and sp	ecial treatment needed	ver. Move out of dangerous area	
5. FIRE-FIGHTING MEASURE	S				
5.1 Extinguishing media	T				
Suitable:		All media			
Not suitable:	ot suitable: No unsuitable extinguishing media known				
5.2 Special hazards arising for Product is nonflammable and of Move away from container and The product reacts with most in Hydrogen chloride is readily displayed and the statement of the state	loes not supp cool with wa netals produc ssociated in v	oort combustion. ter from a protect ing explosive hyd vater into hydrate	ed position. Irogen gas and hydrogen chl d protons and chloride ion	loride.	

Spillages or uncontrolled discharges into watercourses must be IMMEDIATELY alerted to the Environmental Agency or other

Absorb with inert, damp, non-combustible material, then flush area with water. Collect spillage in containers, seal securely and deliver

appropriate regulatory body.

for disposal according to local regulations.



6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

For personal protection see section 8.

Use personal protective equipment.

Ensure adequate ventilation

6.2 Environmental precautions

Spillages or uncontrolled discharges into watercourses must be IMMEDIATELY alerted to the Environmental Agency or other appropriate regulatory body.

Absorb with inert, damp, non-combustible material, then flush area with water. Collect spillage in containers, seal securely and deliver for disposal according to local regulations

6.3 Methods and material for containment and cleaning up

Neutralize large spillages with lime or soda ash. Rinse remnant with plenty of water.

Refer to section 13 for disposal of spilled material.

6.4 Reference to other sections

See section 8 for personal protective equipment and section 13 for waste disposal

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Technical measures/ Precautions:	For personal protection see section 8.
	The usual precautions for handling chemicals should be observed. Avoid any direct contact
	with the material and formation of aerosol.
	Do not breathe gas/fumes/ vapor/spray and avoid contact with skin and eyes.
	Smoking, eating and drinking should be prohibited in the application area.
	Product is nonflammable and does not support combustion.
General occupation hygiene:	Do not to eat, drink and smoke in work areas. Wash hands after use. Remove contaminated
	clothing and protective equipment before entering eating areas.

7.2 Conditions for safe storage, including any incompatibilities

1.2 Conditions for safe storage, including any incompatibilities		
Technical measures/ Storage conditions:	No smoking. Keep in a well-ventilated place. Do not store together with alkalies and oxidants. Keep container tightly closed. Store in plastic tanks Eye wash facilities and emergency shower must be available when handling this product For safety, store below: 35 °C	
Incompatible products:	Use only metal containers with acid resistand innerlayers, product may be corrosive to metals.	
7.3 Specific end use		

It is recommended to refer to the identified uses and exposure scenarios

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Regulated occupational exposure limit values:

Components	Value	Control	Form of exposure
		parameters	
Aluminum	TWA	2 mg/m³	Powder inhalation
chloride			



Recommended occupational and	Exposure model	DNEL		
consumer exposure limit values (following from the performed CSA):		Long term (8 h) workers		
	Inhalation	16,4 mg/m³		
	Dermal	4,6 mg/kg bw day		
		Long term general population		
	Ihalation	4 mg/m³		
	Dermal	2,32 mg/kg bw/day		
	Oral	2,3 mg/kg bw/day		
	Marine water	PNEC		
	Fresh water	0,03 μg/L		
8.2 Exposure controls	1 Testi water	0,3 μg/L	_	
Appropriate engineering controls:	Effective exhaust ve	ntilation system	_	
	Ensure that eyewash	n stations and safety showers are close to the workstation location.		
Environmental exposure controls:	Dispose of rinse wat	er in accordance with local and national regulations.		
Individual protection measures, s	uch as personal prote	ective equipment		
Respiratory protection:		lation to material transfer points and other openings.		
	Automate activity wh	d booth provided with laminar airflow. here possible. Wear acid vapour mask		
Hand protection:	Wear suitable gloves	Automate activity where possible. Wear acid vapour mask Wear suitable gloves tested to EN374 (e.g. PVC or rubber gloves)		
Eye protection:	Use safety eyewear designed to protect against splash of liquids. Tightly fitting safety goggles.			
Skin and body protection:	Protective suit, apron and boots. Choose body protection according to the amount and concentration of substance at the work place			
Hygiene measures:		the with good industrial hygiene and safety practice.		
	When using do not eat or drink. When using do not smoke.			
		breaks and at the end of workday.		
	Plan first aid action before beginning work with this product.			
General advice Air	Do not flush into surface water or sanitary sewer system. Do not flush into surface water or sanitary sewer system. Hose down gases, fumes and/or dust			
Soil	with water.			
Water 9. PHYSICAL AND CHEMICAL PRO	Avoid subsoil penetration. Do not let product enter drains.			
9.1 Information on basic physical		ties		
Appearance:	Colourless to light ye		_	
Odour:		snow, nquiu	_	
pH (5% in water) 20°C	insignificant		_	
Melting/Freezing temperature:	2 ÷ 5			
Boiling temperature:	ca – 11°C			
Flash-point:		ca 115°C		
Flammability:	Not relevant as the substance is an inorganic solid. Non flammable (based on molecular structure)			
Explosive properties:	Not explosive			
Oxidizing properties:	·			
• • •	Not oxidising			
Vapour pressure:	21 mBar			
Relative density (D4 (20)):	Ca 1400 kg/m³ (20 °C)			
Solubility in water:	Completely miscible at ca. 20 °C			
Partition coefficient n-octanol/water:	Not relevant as the substance is inorganic, but considered to be low (based on high water solubility)			



Viscosity:	Damic: ca. 50 cP at ca. 20 °C

9.2 Other information

None known

10. STABILITY AND REACTIVITY

10.1 Reactivity

Stable under recommended storage and handling conditions (see section 7, handling and storage).

10.2 Chemical stability

Reaction with strong oxidising agents. Reaction with alkaline substances (bases).

10.3 Possibility of hazardous reactions

The product reacts with metals with evolution of highly flammable hydrogen. The acid reacts violent with alkalies with evolution of heat.

10.4 Conditions to avoid

Any use involving aerosol formation or vapor release in excess of 10 ppm where workers are exposed without respiratory protection Any use carrying a risk of splashes to eyes / skin where workers are exposed without eye/skin protection

10.5 Incompatible materials

Metals

10.6 Hazardous decomposition products

Hydrogen chloride / Chlorine / Hydrogen.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

ACUTE TOXICITY		
Acute oral toxicity:	Rat Oral LD50 >2000 mg/kg (Hofmann 1988)	
Acute dermal toxicity:	Rat Oral LD50 >2000 mg/kg	
Acute inhalation toxicity:	Toxic signs in rat during exposure to PAC gas or aerosol were essentially identical. aerosol LC50 (rat – 4 hours exposure): 5 mg/L	
LOCAL EFFECTS		
Skin irritation:	Corrosive. Studies with results indicating corrosivity to the skin	
Eye irritation:	Corrosive based on skin corrosivity data	
Skin sensitization:	Not sensitizing (OECD 406)	
OTHER		
Repeated dose toxicity	Oral: rat NOAEL 1000 mg/kg bw/day. Dermal: No data available from repeated dose dermal studies with hydrogen chloride. Inhalation: Sub-chronic inhalation NOAEC is 15,3 mg/m³ for rats/mice	
Aspiration toxicity	Corrosive to the respiratory tract.	
Mutagenicity:	Not mutagenic, not clastogenic	
Carcinogenicity:	No data available	

12. ECOLOGICAL INFORMATION

12.1 Toxicity

It is accepted that the aquatic toxicity of acids results if sufficient acid is present to produce a very low pH (i. e. pH 3-5). Given that the environmental exposure assessment shows insignificant perturbation of aquatic pH levels from the formulation of the product and its proposed use, it is considered that there is no long-term risk to aquatic organisms and therefore chronic fish effects data are not required.

Fish (short-term):	96-h LC ₅₀ : 1,39 mg/l (pH 4,2-8,2 - static)	
Fish (long-term):	28 days LC ₅₀ : 0,019 mg/l (pH 5,8-5,9) (aluminium sulphate)	
Daphnia magna (short-term):	48-h EC ₅₀ : 0,214-1,26 mg/l (pH 5,1-8,0 - static)	
Daphnia magna (long-term):	No data available	
Algae:	96-h EC ₁₀ : 0,084 mg/l (pH 5 - static)	



in accordance v	vith Regulation (EC) 1907/2006 (REACH), Annex II	
Inhibition of microbial activity:	2-h EC ₁₀ : >200 mg/l (static)	
12.2 Persistence and degradab	ility	
Biodegradation:	As the active substance is an inorganic compound, which is not biologically degradable, the ready biodegradability, inherent biodegradability and biodegradation in seawater are scientifically impossible to perform.	
Hydrolysis:	Due to its intrinsic properties, it is scientifically impossible to perform a hydrolysis test.	
12.3 Bioaccumulative potential		
Bioconcentration factor (BCF):	No bioaccumulation expected.	
12.4 Mobility in soil		
Adsorption coefficient:	Terrestrial compartment is not expected to be relevant. If emitted to soil, adsorption to soil particles will be negligible. Depending on the buffer capacity of the soil, H ⁺ will be neutralized in the soil pore water by natural organic or inorganic matter or the pH may decrease.	
12.5 Results of PBT and vPvB a PAC does not fulfil all criteria to b	assessment pe classified as a PBT or vPvB substance	
13. DISPOSAL CONSIDERATIO		
Waste from residues:	Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Hazardous waste Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic released.	
Container:	Empty remaining contents. Contaminated packaging According to local regulations	
14. TRANSPORT INFORMATION		
14.1. UN number 3264 14.2. UN proper shipping name ALUMINIUM CHLORIDE SOLUTI 14.3. Transport hazard class(es Class: 8 Label: 8 Kemler Number: 80 Tunnel restriction code: E Limited quantities: 5 L EmS: F-A, S-B 14.4. Packing group III 14.5. Environmental hazards	ION (i)	
Product is not environmentally had Marine polluting agent: Not	zardous	

Marine polluting agent : Not 14.6. Special precautions for user

No data available.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

It is not intended to carry bulk

15. REGULATORY INFORMATION	
15.1 Safety, health and environmental regulation/legislation specific for the substance or mixture:	
15.2 Chemical safety assessment:	Chemical Safety Assessments have been carried out for these substances.
16. OTHER INFORMATION	



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

Version:	2.1
Creation date:	December, 2 nd 2019
Release info:	This version replaces all previous documents
Created/Revised by:	SILC FERTILIZZANTI SRL – Via delle Acque, 43 – 48124 Ravenna



ANNEX

Exposure scenario 1: Manufacture of the substance

Aqueous solution:

ES1 - Manufacture of Aluminium salts – Aqueous solution – max Aluminium content = 25%		
Section 1	Exposure Scenario Title	
Title	Manufacture of Aluminium salts - aqueous solution; 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:	
Droposoo tooko astiidisa savaad	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	Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]	
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 Use suitable eye protection [PPE26] Avoid skin contact: Wear suitable gloves teste		
PROC1:	No specific measures identified [EI18].	
General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling	Recommendations:	
[CS2] (closed systems) [CS107]	{Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.	
PROC2:	No specific measures identified [El18].	
General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems)	Recommendations:	



[CS108]	{Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.
[52.00]	{Clear spills immediately [C&H13]}.
PROC3:	No specific measures identified [EI18].
General exposures [CS1]. Use in contained batch	
processes [CS37].	Recommendations:
With sample collection [CS56].	{Ensure the system is closed}
Equipment cleaning and maintenance [CS39].	{Drain down and flush system prior to equipment break-in or maintenance
	[E55]}.{Clear spills immediately [C&H13]}.
PROC4:	No specific measures identified [El18].
General exposures (open systems) [CS16]. Batch	
process [CS55] (open systems) [CS108];	Recommendations:
Drum/batch transfers [CS8]. With sample	{Drain down and flush system prior to equipment break-in or maintenance
collection [CS56].;	[E55]]; {Use drum pumps [E53]}. {Clean equipment and the work area every
Equipment cleaning and maintenance [CS39].	day [C&H3]}.
	{Clear spills immediately [C&H13]}.
PROC8b:	No specific measures identified [EI18].
General exposures, open systems [CS16].	
Dedicated facility [CS81]	Recommendations:
Material transfers [CS3].	{Drain down and flush system prior to equipment break-in or maintenance
Equipment cleaning and maintenance [CS39].	[E55]].{Use drum pumps [E53]}. {Clean equipment and the work area every
Bulk transfers [CS14].	day [C&H3]}
	{Clear spills immediately [C&H13]}.
PROC15:	No specific measures identified [EI18].
General exposures [CS1]. Laboratory activities	No specific measures identified [E110].
[CS36].	Recommendations:
Small scale [CS61].	
Small scale [C561].	{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 3	Exposure Estimation
3.1. Health	Exposure Estimation
	the applicable expecture limits (given in sections of the SDS) when the energtional
	the applicable exposure limits (given in section8 of the SDS) when the operational
conditions/risk management measures given in se	ection 2 are implemented [G29]
N.A.	
	0.11
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 -
Note: The measures reported in this section h	ave not been taken into account in the exposure estimates related to the
-	t 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

Solid, high dustiness:

Section 1	Exposure Scenario Title
Title	Manufacture of Aluminium salts - solid - high dust; Aluminium content =
Lloo Dogarintor	max. 25% Sector of Use: SU8, SU9
Use Descriptor	
	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:
D	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
	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, 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	Not applicable
management	
Other Operational Conditions affecting worker	Assumes use at not > 20oC above ambient [G15]
exposure	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 ha	s corrosive properties:
Use suitable eye protection [PPE26]	A CONSTANTANTANTANTANTANTANTANTANTANTANTANTANT
Avoid skin contact: Wear suitable gloves test	
PROC1: General exposures (closed systems) [CS15].	No specific measures identified [EI18].
Continuous process [CS54]. Process sampling	Recommendations:
	I NOOUTHINGHUUUNA.



PROC2:	Industrial workers:
General exposures [CS1]. Continuous process	No specific measures identified [EI18].
[CS54]. Process sampling [CS2] (open	
systems) [CS108]	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:	Industrial workers:
General exposures [CS1]. Use in contained	No specific measures identified [EI18].
batch processes [CS37].	No specific measures identified [E110].
With sample collection [CS56].	Professional workers:
Equipment cleaning and maintenance [CS39].	Ensure material transfers are under containment or extract ventilation (80%
Equipment cleaning and maintenance [6555].	efficiency) [E66].
	Provide extract ventilation to material transfer points and other openings (80%
	efficiency) [E82]
	7/1 - 1
	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:	Industrial workers:
General exposures (open systems) [CS16].	5-25%:
Batch process [CS55] (open systems) [CS108];	Ensure material transfers are under containment or extract ventilation (90%
Drum/batch transfers [CS8]. With sample	efficiency) [E66].
collection [CS56].	Provide extract ventilation to material transfer points and other openings (90%
Equipment cleaning and maintenance [CS39].	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:	Industrial workers:
General exposures, open systems [CS16].	5-25%:
Dedicated facility [CS81]	Ensure material transfers are under containment or extract ventilation (90%
Material transfers [CS3].	efficiency) [E66]
Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	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:	Carry out in a vented booth or extracted enclosure (80% efficiency) [E57].
General exposures [CS1]. Laboratory activities	
[CS36].	Recommendations:
Small scale [CS61].	{Drain down and flush system prior to equipment break-in or maintenance [E55]}.
	(Clean equipment and the work area every day [C&H3]).
Section 2	{Clear spills immediately [C&H13]}. Exposure Estimation
Section 3	Exposure Estimation
3.1. Health	I the applicable expecting limits (given in costing of the CDC) when the appretional
conditions/risk management measures given in s	the applicable exposure limits (given in section8 of the SDS) when the operational section 2 are implemented [G29]
3.2. Environment	Socion 2 are implemented [029]
N.A.	
Section 4	Guidance to check compliance with the Exposure Scenario
4.1. Health	Canada to chock compliance that the Exposure contains
	estimate workplace exposures unless otherwise indicated [G21]
4.2. Environment	
N.A.	
Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment -



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

Solid, low dustiness:

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	Assumes use at not > 20oC above ambient [G15];
exposure	Assumes a good basic standard of occupational hygiene is implemented [G1].
	Ensure operatives are trained to minimize exposures [EI19]



	Risk Management Measures
Below pH2 and above pH11 the substance ha	as corrosive properties:
Use suitable eye protection [PPE26]	
Avoid skin contact: Wear suitable gloves tes	ted to EN374 [PPE15]
PROC1:	No specific measures identified [EI18].
General exposures (closed systems) [CS15].	
Continuous process [CS54]. Process sampling	Recommendations:
[CS2] (closed systems) [CS107]	{Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.
PROC2:	No specific measures identified [EI18].
General exposures [CS1]. Continuous process	
[CS54]. Process sampling [CS2] (open	Recommendations:
systems) [CS108]	{Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.
PROC3:	No specific measures identified [EI18].
General exposures [CS1]. Use in contained	
batch processes [CS37].	Recommendations:
With sample collection [CS56].	{Ensure the system is closed}
Equipment cleaning and maintenance [CS39].	{Drain down and flush system prior to equipment break-in or maintenance
	[E55]].{Clear spills immediately [C&H13]}.
PROC4:	No specific measures identified [EI18].
General exposures (open systems) [CS16].	
Batch process [CS55] (open systems) [CS108];	Recommendations:
Drum/batch transfers [CS8]. With sample	{Ensure the system is closed};
collection [CS56].	{Drain down and flush system prior to equipment break-in or maintenance
Equipment cleaning and maintenance [CS39].	[E55]].{Clear spills immediately [C&H13]}.
PROC8b:	No specific measures identified [EI18].
General exposures, open systems [CS16].	
Dedicated facility [CS81]	Recommendations:
Material transfers [CS3].	{Drain down and flush system prior to equipment break-in or maintenance [E55]}
Equipment cleaning and maintenance [CS39].	{Use drum pumps [E53]}. {Clean equipment and the work area every day
Bulk transfers [CS14].	[C&H3]}. {Clear spills immediately [C&H13]}.
PROC15:	No specific measures identified [EI18].
General exposures [CS1]. Laboratory activities	
[CS36].	Recommendations:
Small scale [CS61].	{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 3	Exposure Estimation
0.4.11141-	
3.1. Health	A the applicable expecting limits (given in easting) of the CDC) when the experience
conditions/risk management measures given in	the applicable exposure limits (given in section8 of the SDS) when the operational section 2 are implemented (G20)
3.2. Environment	section 2 are implemented [023]
N.A.	
	compliance with the Exposure Scenario
4.1. Health	Demphanio mai ale Exposare decilario
	o estimate workplace exposures unless otherwise indicated [G21]
4.2 Environment	
4.2. Environment	
N.A.	Additional good practice advice boyand the DEACH Chamical Cafety
	Additional good practice advice beyond the REACH Chemical Safety Assessment -



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

Exposure Scenario 2: Formulation and Distribution

Aqueous solution:

Section 1	Exposure Scenario Title
Title	Formulation and Distribution of Aluminium salts (aqueous solutions); Max
	Aluminium content = 25%
Use Descriptors	Sector of Use: Industrial (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:
Dragonous tooks activities severed	ERC2: Formulation of preparations
Processes, tasks, activities covered	Adding Alu salts to liquid and solid formulations; includes distribution and associated laboratory activities (aqueous solutions, max Alu content = 25%).
	Distribution: loading and (re)packing of the substances.
GES exposure criteria	DNEL, inhalation long term: 1.8 mg/m3
CLO OAPODATO OTROTIA	51122, missission long tolli. 1.0 mg/mb
Section 2	Operational conditions and risk management measures



Section 2.1	Control of worker exposure
Product characteristics	
Physical form of product	Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less;
	Liquid, vapour pressure < 10 Pa [OC14].
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	Not applicable
management	The state of the s
Other Operational Conditions affecting worker	Assumes use at not > 20°C above ambient [G15];
exposure	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 ha	s corrosive properties:
Use suitable eye protection [PPE26].	
Avoid skin contact: wear suitable gloves test	ed to EN374 [PPE15]
PROC1:	No specific measures identified [EI18].
General exposures (closed systems) [CS15].	
Continuous process [CS54]. Process sampling	Recommendations:
[CS2] (closed systems) [CS107]	{Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.
PROC2:	No specific measures identified [EI18].
General exposures [CS1]. Continuous process	
[CS54]. Process sampling [CS2] (open	Recommendations:
systems) [CS108]	{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].	Recommendations:
With sample collection [CS56].	{Ensure the system is closed}
Equipment cleaning and maintenance [CS39].	{Drain down and flush system prior to equipment break-in or maintenance
	[E55]}.{Clear spills immediately [C&H13]}.
PROC4:	No specific measures identified [EI18].
General exposures (open systems) [CS16].	
Batch process [CS55] (open systems) [CS108];	Recommendations:
Drum/batch transfers [CS8]. With sample	{Drain down and flush system prior to equipment break-in or maintenance [E55]};
collection [CS56].;	{Use drum pumps [E53]}. {Clean equipment and the work area every day
Equipment cleaning and maintenance [CS39].	[C&H3]}.
DD005	{Clear spills immediately [C&H13]}.
PROC5:	No specific measures identified [EI18].
General exposures (open systems) [CS16].	Do common detions:
Mixing operations (open systems) [CS30].	Recommendations:
Material transfers [CS3].	(Drain down and flush system prior to equipment break-in or maintenance [E55]);
Batch process [CS55]. Cleaning [CS47].	{Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC8a:	No specific measures identified [EI18].
General exposures (open systems) [CS16];	TWO Specific measures identified [E110].
Non-dedicated facility [CS82];	Recommendations:
Material transfers [CS3].	{Drain down and flush system prior to equipment break-in or maintenance [E55]}.
Equipment cleaning and maintenance [CS39].	{Use drum pumps [E53]}. {Clean equipment and the work area every day
Bulk transfers [CS14].	[C&H3]].{Clear spills immediately [C&H13]}.



PROC8b:	No specific measures identified [EI18].
General exposures, open systems [CS16].	
Dedicated facility [CS81] Material transfers	Recommendations:
[CS3]. Equipment cleaning and maintenance [CS39].	{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
Bulk transfers [CS14].	[C&H3]]. {Clear spills immediately [C&H13]}.
	[Odi 15]f. {Glear Spins infinediately [Odi 115]f.
PROC9:	No specific measures identified [EI18].
General exposures [CS1].	No specific measures identified [E110].
Dedicated facility [CS81]	Recommendations:
Drum and small package filling [CS6].	{Drain down and flush system prior to equipment break-in or maintenance [E55]}.
Equipment cleaning and maintenance [CS39].	{Clean equipment and the work area every day [C&H3]} {Clear spills immediately [C&H13]}.
PROC14:	No specific measures identified [EI18].
General exposures (open systems) [CS16]	Recommendations:
Production or preparation or articles by	{Drain down and flush system prior to equipment break-in or maintenance
tabletting, compression, extrusion or	[E55]} {Clean equipment and the work area every day [C&H3]}. {Clear spills
pelletisation [CS100]	immediately [C&H13]}.
PROOF	No and if an analysis of FF1401
PROC15: General exposures [CS1]. Laboratory activities	No specific measures identified [EI18].
[CS36].	Recommendations:
Small scale [CS61].	{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:	Industrial workers:
General exposures [CS1]. Mixing operations	5-25%:
(open systems) [CS30]. Manual [CS34].	Avoid carrying out operation for more than 1 hour [OC11] <5%:
ivianuai [C334].	Avoid carrying out operation for more than 4 hours [OC12]
	17. The dearlying out operation for more than 1 hours [88.12]
	No specific measures identified [El18]
	Professional workers:
	5-25%:
	Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] Or:
	Avoid carrying out operation for more than 15 minutes [OC10]{ <5%:
	Avoid carrying out operation for more than 1 hour [OC11] <1%:
	Avoid carrying out operation for more than 4 hours [OC12]
	Recommendations:
	{Clean equipment and the work area every day [C&H3]}
	{Clear spills immediately [C&H13]}
	{Stay upwind/keep distance from source [El22]}.
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 -	
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	

Solid, high dustiness:

	luminium 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 Alu salts (Alu 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	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 > 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	
Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant [PPE17] PROC1:	t gloves (tested to EN374) in combination with specific activity training No specific measures identified [EI18].	
General exposures (closed systems) [CS15].	No specific measures identified [E110].	
Continuous process [CS54]. Process sampling	Recommendations:	
[CS2] (closed systems) [CS107]	{Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.	
PROC2:	Industrial workers:	
General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open	No specific measures identified [EI18].	
systems) [CS108]	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:	Industrial workers:	
General exposures [CS1]. Use in contained batch processes [CS37].	No specific measures identified [EI18].	
With sample collection [CS56].	Professional workers:	
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]	
	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]

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];

5-25%:

Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66].



Material transfers [CS3].

Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].

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]

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]}.



P	R	റ	C	٩	•

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 ICS361.

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	Industrial workers:
General exposures [CS1]. Mixing operations	5-25%: We are a required to repring to FN140 with Type A/P2 filter or better (PDF20)
(open systems) [CS30]. Manual [CS34].	Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29] <5%:
Maridai [0004].	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]}
2.4	
Section 3	Exposure Estimation
2.1 Health	
3.1. Health Predicted exposures are not expected to exceed	d the applicable exposure limits (given in section 8 of the SDS) when the
Predicted exposures are not expected to exceed	d the applicable exposure limits (given in section 8 of the SDS) when the
Predicted exposures are not expected to exceed operational conditions/risk management measures.	, ,
Predicted exposures are not expected to exceed operational conditions/risk management measur 3.2. Environment	, ,
Predicted exposures are not expected to exceed operational conditions/risk management measur 3.2. Environment N.A.	res given in section 2 are implemented [G29]
Predicted exposures are not expected to exceed operational conditions/risk management measur 3.2. Environment N.A. Section 4	, ,
Predicted exposures are not expected to exceed operational conditions/risk management measur 3.2. Environment N.A. Section 4 4.1. Health	Guidance to check compliance with the Exposure Scenario
Predicted exposures are not expected to exceed operational conditions/risk management measur 3.2. Environment N.A. Section 4 4.1. Health	res given in section 2 are implemented [G29]
Predicted exposures are not expected to exceed operational conditions/risk management measur 3.2. Environment N.A. Section 4 4.1. Health The ECETOC TRA (V2.0) tool has been used to	Guidance to check compliance with the Exposure Scenario
Predicted exposures are not expected to exceed operational conditions/risk management measur 3.2. Environment N.A. Section 4 4.1. Health The ECETOC TRA (V2.0) tool has been used to 4.2. Environment	Guidance to check compliance with the Exposure Scenario
Predicted exposures are not expected to exceed operational conditions/risk management measur 3.2. Environment N.A. Section 4 4.1. Health The ECETOC TRA (V2.0) tool has been used to 4.2. Environment N.A.	Guidance to check compliance with the Exposure Scenario De estimate workplace exposures unless otherwise indicated [G21]
Predicted exposures are not expected to exceed operational conditions/risk management measur 3.2. Environment N.A. Section 4 4.1. Health The ECETOC TRA (V2.0) tool has been used to 4.2. Environment N.A. Section 5	Guidance to check compliance with the Exposure Scenario Destimate workplace exposures unless otherwise indicated [G21] Additional good practice advice beyond the REACH Chemical Safety
Predicted exposures are not expected to exceed operational conditions/risk management measur 3.2. Environment N.A. Section 4 4.1. Health The ECETOC TRA (V2.0) tool has been used to 4.2. Environment N.A. Section 5 Note: The measures reported in this section	Guidance to check compliance with the Exposure Scenario De estimate workplace exposures unless otherwise indicated [G21] Additional good practice advice beyond the REACH Chemical Safety Assessment -
Predicted exposures are not expected to exceed operational conditions/risk management measur 3.2. Environment N.A. Section 4 4.1. Health The ECETOC TRA (V2.0) tool has been used to 4.2. Environment N.A. Section 5 Note: The measures reported in this section	Guidance to check compliance with the Exposure Scenario estimate workplace exposures unless otherwise indicated [G21] Additional good practice advice beyond the REACH Chemical Safety Assessment - have not been taken into account in the exposure estimates related to the
Predicted exposures are not expected to exceed operational conditions/risk management measur 3.2. Environment N.A. Section 4 4.1. Health The ECETOC TRA (V2.0) tool has been used to 4.2. Environment N.A. Section 5 Note: The measures reported in this section is exposure scenario above. They are not subjections.	Guidance to check compliance with the Exposure Scenario estimate workplace exposures unless otherwise indicated [G21] Additional good practice advice beyond the REACH Chemical Safety Assessment - have not been taken into account in the exposure estimates related to the
Predicted exposures are not expected to exceed operational conditions/risk management measurement and an area operational conditions/risk management measurement and an area operational conditions/risk management measurement and an area operations. Section 4 4.1. Health The ECETOC TRA (V2.0) tool has been used to a condition and area operations. N.A. Section 5 Note: The measures reported in this section are exposure scenario above. They are not subject to control of Worker Exposure	Guidance to check compliance with the Exposure Scenario Destimate workplace exposures unless otherwise indicated [G21] Additional good practice advice beyond the REACH Chemical Safety Assessment - Thave not been taken into account in the exposure estimates related to the act to obligation laid down in Article 37 (4) of REACH.
Predicted exposures are not expected to exceed operational conditions/risk management measurement and an area operational conditions/risk management measurement and an area operational conditions/risk management measurement and an area operations. Section 4 4.1. Health The ECETOC TRA (V2.0) tool has been used to a condition and area operations. N.A. Section 5 Note: The measures reported in this section are exposure scenario above. They are not subject to control of Worker Exposure	Guidance to check compliance with the Exposure Scenario estimate workplace exposures unless otherwise indicated [G21] Additional good practice advice beyond the REACH Chemical Safety Assessment - have not been taken into account in the exposure estimates related to the ect to obligation laid down in Article 37 (4) of REACH. Skin protection: Gloves: - Observe breakthrough time of the gloves used
Predicted exposures are not expected to exceed operational conditions/risk management measurement and assume as a section and as a section and assume as a section and assume as a section and as a section and assume as a section	Guidance to check compliance with the Exposure Scenario Destinate workplace exposures unless otherwise indicated [G21] Additional good practice advice beyond the REACH Chemical Safety Assessment - have not been taken into account in the exposure estimates related to the ect to obligation laid down in Article 37 (4) of REACH. Skin protection: Gloves: - Observe breakthrough time of the gloves used Respiratory protection:
Predicted exposures are not expected to exceed operational conditions/risk management measurement and assume as a section and as a section and assume as a section and assume as a section and as a section and assume as a section	Guidance to check compliance with the Exposure Scenario Destimate workplace exposures unless otherwise indicated [G21] Additional good practice advice beyond the REACH Chemical Safety Assessment - Thave not been taken into account in the exposure estimates related to the ect to obligation laid down in Article 37 (4) of REACH. Skin protection: Gloves: Observe breakthrough time of the gloves used Respiratory protection: Respirators:
Predicted exposures are not expected to exceed operational conditions/risk management measurement and an area operational conditions/risk management measurement and an area operational conditions/risk management measurement and an area operations. Section 4 4.1. Health The ECETOC TRA (V2.0) tool has been used to a condition and area operations. N.A. Section 5 Note: The measures reported in this section are exposure scenario above. They are not subject to control of Worker Exposure	Guidance to check compliance with the Exposure Scenario Destinate workplace exposures unless otherwise indicated [G21] Additional good practice advice beyond the REACH Chemical Safety Assessment - have not been taken into account in the exposure estimates related to the ect to obligation laid down in Article 37 (4) of REACH. Skin protection: Gloves: - Observe breakthrough time of the gloves used Respiratory protection:



- Wear respirators ≤ 2 hrs/day

Solid, low dustiness:

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	
Use Descriptors	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 [E119]	
Contributing Scenarios	Risk Management Measures	



Below pH2 and above pH11 the substance has corrosive properties:		
Use suitable eye protection [PPE26].		
-	gloves (tested to EN374) in combination with specific activity training	
[PPE17]		
PROC1:	No specific measures identified [EI18].	
General exposures (closed systems) [CS15].		
Continuous process [CS54]. Process sampling	Recommendations:	
[CS2] (closed systems) [CS107]	{Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.	
PROC2:	No specific measures identified [EI18].	
General exposures [CS1]. Continuous process		
[CS54]. Process sampling [CS2] (open	Recommendations:	
systems) [CS108]	{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].;	Recommendations:	
With sample collection [CS56].	{Ensure the system is closed};	
Equipment cleaning and maintenance [CS39].	{Drain down and flush system prior to equipment break-in or maintenance	
	[E55]}.{Clear spills immediately [C&H13]}.	
PROC4:	No specific measures identified [EI18].	
General exposures (open systems) [CS16].		
Batch process [CS55] (open systems) [CS108];	Recommendations:	
Drum/batch transfers [CS8]. With sample	{Drain down and flush system prior to equipment break-in or maintenance [E55]};	
collection [CS56].	{Use drum pumps [E53]}. {Clean equipment and the work area every day	
Equipment cleaning and maintenance [CS39].	[C&H3]].;	
	{Clear spills immediately [C&H13]}.	
PROC5:	No specific measures identified [EI18].	
General exposures (open systems) [CS16].		
Mixing operations (open systems) [CS30].	Recommendations:	
Material transfers [CS3]. ;	{Drain down and flush system prior to equipment break-in or maintenance	
Batch process [CS55].;	[E55]} {Use drum pumps [E53]}. {Clean equipment and the work area every	
Cleaning [CS47].	day [C&H3]}. {Clear spills immediately [C&H13]}.	
PROC8a:	No specific measures identified [EI18].	
General exposures (open systems) [CS16];		
Non-dedicated facility [CS82]; Material	Recommendations:	
transfers [CS3]. ;	{Drain down and flush system prior to equipment break-in or maintenance [E55]}.	
Equipment cleaning and maintenance [CS39].;	{Use drum pumps [E53]}. {Clean equipment and the work area every day	
Bulk transfers [CS14].	[C&H3]}. {Clear spills immediately [C&H13]}.	
PROC8b:	No specific measures identified [EI18].	
General exposures, open systems [CS16].		
Dedicated facility [CS81]	{Drain down and flush system prior to equipment break-in or maintenance	
Material transfers [CS3].	[E55]].{Use drum pumps [E53]}. {Clean equipment and the work area every day	
Equipment cleaning and maintenance [CS39]	[C&H3]]. {Clear spills immediately [C&H13]}.	
Bulk transfers [CS14]. PROC9:	No specific measures identified [EI18].	
General exposures [CS1].	The specific medical de la chance [E110].	
Dedicated facility [CS81]	Recommendations:	
Drum and small package filling [CS6].	{Drain down and flush system prior to equipment break-in or maintenance	
Equipment cleaning and maintenance [CS39].	[E55]] .{Clean equipment and the work area every day [C&H3]}.{Clear spills	
[immediately [C&H13]}.	
PROC14:	No specific measures identified [EI18].	
General exposures (open systems) [CS16]		
Production or preparation or articles by	Recommendations:	



tabletting, compression, extrusion or	{Drain down and flush system prior to equipment break-in or maintenance
pelletization [CS100]	[E55]}.{Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC15:	No specific measures identified [EI18].
General exposures [CS1]. Laboratory activit	ties
[CS36].	Recommendations:
Small scale [CS61].	{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:	No specific measures identified [EI18].
General exposures [CS1]. Mixing operations	
(open systems) [CS30].	Recommendations:
Manual [CS34].	{Clean equipment and the work area every day [C&H3]}.;
	{Clear spills immediately [C&H13]}
Section 3	Exposure Estimation
3.1. Health	
	ceed the applicable exposure limits (given in section 8 of the SDS) when the operational
conditions/risk management measures give	n 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 us	sed 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 -
Note: The management was autod in this past	tion have not been taken into account in the average police to a valet of to the
	tion have not been taken into account in the exposure estimates related to the ubject to obligation laid down in Article 37 (4) of REACH.
exposure scenario above. They are not s	ubject 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 Woor respirators < 2 bre/day
<u>i</u>	- Wear respirators ≤ 2 hrs/day

Exposure Scenario 3: Use in synthesis and as Intermediate

Aqueous solution:

ES3 – Use of Aluminium salts (aqueous solutions) in synthesis as a process chemical and as an intermediate; Max. Aluminium content = 25%	
Section 1 Exposure Scenario Title	
Title	Use of Aluminium salts (aqueous solutions) in synthesis as a process chemical and as an intermediate; Max. Aluminium content = 25%
Use Descriptors	Sector of Use: SU6b, SU8, SU9, SU14



	Decree Octomolics
	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
	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 (aqueous solutions) in synthesis as a process chemical
	and as an intermediate. Includes material transfers and associated laboratory
	activities. Max. Aluminium 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	Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14].
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)
Francisco and direction of the	[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	Assumes use at not > 20°C above ambient [G15];
exposure	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 ha	s corrosive properties:
Use suitable eye protection [PPE26].	nd to EN274 [DDE45]
Avoid skin contact: wear suitable gloves tested PROC1:	
FRUUI.	
Canaral evnocures (closed systems) [CS15]	No specific measures identified [EI18].
General exposures (closed systems) [CS15].	
General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107]	Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.



PROC2:	No specific measures identified [EI18].
General exposures [CS1]. Continuous process	
[CS54]. Process sampling [CS2] (open	Recommendations:
systems) [CS108]	{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].	Recommendations:
With sample collection [CS56].	{Ensure the system is closed}
Equipment cleaning and maintenance [CS39].	{Drain down and flush system prior to equipment break-in or maintenance
	[E55]}.{Clear spills immediately [C&H13]}.
PROC4:	No specific measures identified [EI18].
General exposures (open systems) [CS16].	
Batch process [CS55] (open systems) [CS108];	Recommendations:
Drum/batch transfers [CS8]. With sample	{Drain down and flush system prior to equipment break-in or maintenance [E55]};
collection [CS56].;	{Use drum pumps [E53]}. {Clean equipment and the work area every day
Equipment cleaning and maintenance [CS39].	[C&H3]}.
	{Clear spills immediately [C&H13]}.
PROC8a:	No specific measures identified [EI18].
General exposures (open systems) [CS16];	
Non-dedicated facility [CS82];	Recommendations:
Material transfers [CS3].	{Drain down and flush system prior to equipment break-in or maintenance [E55]}.
Equipment cleaning and maintenance [CS39].	{Use drum pumps [E53]}. {Clean equipment and the work area every day
Bulk transfers [CS14].	[C&H3]].{Clear spills immediately [C&H13]}.
PROC8b:	No specific measures identified [EI18].
General exposures, open systems [CS16].	
Dedicated facility [CS81] Material transfers	Recommendations:
[CS3].	{Drain down and flush system prior to equipment break-in or maintenance [E55]}.
Equipment cleaning and maintenance [CS39].	{Use drum pumps [E53]}. {Clean equipment and the work area every day
Bulk transfers [CS14].	[C&H3]}. {Clear spills immediately [C&H13]}.
PROC9:	No specific measures identified [EI18].
General exposures [CS1].	
Dedicated facility [CS81]	Recommendations:
Drum and small package filling [CS6].	{Drain down and flush system prior to equipment break-in or maintenance [E55]}.
Equipment cleaning and maintenance [CS39].	{Clean equipment and the work area every day [C&H3]} {Clear spills immediately
	[C&H13]}.
PROC15:	No specific measures identified [EI18].
General exposures [CS1]. Laboratory activities	Pasammandationa
[CS36].	Recommendations:
Small scale [CS61].	{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 3	Exposure Estimation
Occide 5	Exposure Estimation
2.4 Haalib	

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

W. C.	
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 -
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

Solid, high dustiness:

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 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%
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, 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 > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [E119]
Contributing Scenarios	Risk Management Measures
[PPE17] PROC1:	t gloves (tested to EN374) in combination with specific activity training No specific measures identified [EI18].
General exposures (closed systems) [CS15].	8
Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107]	Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.
PROC2:	Industrial workers:
General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open	No specific measures identified [EI18].
systems) [CS108]	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].	Industrial workers: No specific measures identified [EI18].
With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	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]

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:	Industrial workers:
General exposures, open systems [CS16].	5-25%:
Dedicated facility [CS81]	Ensure material transfers are under containment or extract ventilation (90%
Material transfers [CS3].	efficiency) [E66]
Equipment cleaning and maintenance [CS39].	Provide extract ventilation to material transfer points and other openings (90%
Bulk transfers [CS14].	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:	Ensure material transfers are under containment or extract ventilation (80%
General exposures [CS1].	efficiency) [E66].
Dedicated facility [CS81]	Provide extract ventilation to material transfer points and other openings (80%
Drum and small package filling [CS6].	efficiency) [E82].
Equipment cleaning and maintenance [CS39].	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:	Carry out in a vented booth or extracted enclosure (80% efficiency) [E57].
General exposures [CS1]. Laboratory activities	
[CS36].	Recommendations:
Small scale [CS61].	{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 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 -
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

Solid, low dustiness:

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 Descriptors	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 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



	T
	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)
Dragona tooks activities sovered	ERC8a: Wide dispersive indoor use of processing aids in open systems Use of Aluminium salts (solid, high dustiness) in synthesis as a process chemical
Processes, tasks, activities covered	and as an intermediate. Includes material transfers and associated laboratory
	activities. Max. Aluminium 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	Assumes use at not > 20oC above ambient [G15];
exposure	Assumes a good basic standard of occupational hygiene is implemented [G1].
· · · · · · · · · · · · · · · · · · ·	
· · · · · · · · · · · · · · · · · · ·	Assumes a good basic standard of occupational hygiene is implemented [G1].
exposure Contributing Scenarios	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures
Contributing Scenarios Below pH2 and above pH11 the substance ha	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures
Contributing Scenarios Below pH2 and above pH11 the substance ha Use suitable eye protection [PPE26].	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures as corrosive properties:
Contributing Scenarios Below pH2 and above pH11 the substance ha Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures
Contributing Scenarios Below pH2 and above pH11 the substance ha Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant [PPE17]	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures as corrosive properties: t gloves (tested to EN374) in combination with specific activity training
exposure Contributing Scenarios Below pH2 and above pH11 the substance ha Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistan [PPE17] PROC1:	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures as corrosive properties:
exposure Contributing Scenarios Below pH2 and above pH11 the substance ha Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistan [PPE17] PROC1: General exposures (closed systems) [CS15].	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures as corrosive properties: t gloves (tested to EN374) in combination with specific activity training No specific measures identified [EI18].
Contributing Scenarios Below pH2 and above pH11 the substance has Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures as corrosive properties: t gloves (tested to EN374) in combination with specific activity training No specific measures identified [EI18]. Recommendations:
Contributing Scenarios Below pH2 and above pH11 the substance has Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107]	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures as corrosive properties: It gloves (tested to EN374) in combination with specific activity training No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.
Contributing Scenarios Below pH2 and above pH11 the substance has Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2:	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures as corrosive properties: t gloves (tested to EN374) in combination with specific activity training No specific measures identified [EI18]. Recommendations:
Contributing Scenarios Below pH2 and above pH11 the substance had Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures as corrosive properties: t gloves (tested to EN374) in combination with specific activity training No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18].
Contributing Scenarios Below pH2 and above pH11 the substance had Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures as corrosive properties: t gloves (tested to EN374) in combination with specific activity training No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18]. Recommendations:
Contributing Scenarios Below pH2 and above pH11 the substance had Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures as corrosive properties: t gloves (tested to EN374) in combination with specific activity training No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.
Contributing Scenarios Below pH2 and above pH11 the substance had Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108]	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures as corrosive properties: t gloves (tested to EN374) in combination with specific activity training No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}.
Contributing Scenarios Below pH2 and above pH11 the substance had Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108]	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures as corrosive properties: t gloves (tested to EN374) in combination with specific activity training No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.
Contributing Scenarios Below pH2 and above pH11 the substance had Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: General exposures [CS1]. Use in contained	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [E119] Risk Management Measures It gloves (tested to EN374) in combination with specific activity training No specific measures identified [E118]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [E118]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. (Clear spills immediately [C&H13]}. No specific measures identified [E118].
Contributing Scenarios Below pH2 and above pH11 the substance had Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: General exposures [CS1]. Use in contained batch processes [CS37].;	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [E119] Risk Management Measures It gloves (tested to EN374) in combination with specific activity training No specific measures identified [E118]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [E118]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. No specific measures identified [E118]. Recommendations:
Contributing Scenarios Below pH2 and above pH11 the substance had Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: General exposures [CS1]. Use in contained batch processes [CS37].; With sample collection [CS56].	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures Is corrosive properties: It gloves (tested to EN374) in combination with specific activity training No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed};
Contributing Scenarios Below pH2 and above pH11 the substance had Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: General exposures [CS1]. Use in contained batch processes [CS37].;	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [E119] Risk Management Measures Is corrosive properties: It gloves (tested to EN374) in combination with specific activity training No specific measures identified [E118]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [E118]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. No specific measures identified [E118]. Recommendations: {Ensure the system is closed}; {Cnain down and flush system prior to equipment break-in or maintenance
Contributing Scenarios Below pH2 and above pH11 the substance had Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: General exposures [CS1]. Use in contained batch processes [CS37].; With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [E119] Risk Management Measures Is corrosive properties: It gloves (tested to EN374) in combination with specific activity training No specific measures identified [E118]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [E118]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. No specific measures identified [E118]. Recommendations: {Ensure the system is closed}; {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clear spills immediately [C&H13]}.
Contributing Scenarios Below pH2 and above pH11 the substance had Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: General exposures [CS1]. Use in contained batch processes [CS37].; With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [E119] Risk Management Measures Is corrosive properties: It gloves (tested to EN374) in combination with specific activity training No specific measures identified [E118]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [E118]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. No specific measures identified [E118]. Recommendations: {Ensure the system is closed}; {Cnain down and flush system prior to equipment break-in or maintenance
Contributing Scenarios Below pH2 and above pH11 the substance had Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: General exposures [CS1]. Use in contained batch processes [CS37].; With sample collection [CS56]. Equipment cleaning and maintenance [CS39]. PROC4: General exposures (open systems) [CS16].	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [E119] Risk Management Measures Is corrosive properties: It gloves (tested to EN374) in combination with specific activity training No specific measures identified [E118]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [E118]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. No specific measures identified [E118]. Recommendations: {Ensure the system is closed}; {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clear spills immediately [C&H13]}.
Contributing Scenarios Below pH2 and above pH11 the substance had Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: General exposures [CS1]. Use in contained batch processes [CS37].; With sample collection [CS56]. Equipment cleaning and maintenance [CS39]. PROC4: General exposures (open systems) [CS16]. Batch process [CS55] (open systems) [CS108];	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures as corrosive properties: It gloves (tested to EN374) in combination with specific activity training No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. 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]}. No specific measures identified [EI18]. Recommendations:
Contributing Scenarios Below pH2 and above pH11 the substance had Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: General exposures [CS1]. Use in contained batch processes [CS37].; With sample collection [CS56]. Equipment cleaning and maintenance [CS39]. PROC4: General exposures (open systems) [CS16].	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures scorrosive properties: t gloves (tested to EN374) in combination with specific activity training No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. 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]}. No specific measures identified [EI18].



	{Clear spills immediately [C&H13]}.
	11 15 15 15 15
PROC8a:	No specific measures identified [EI18].
General exposures (open systems) [CS16];	Book was a total or
Non-dedicated facility [CS82]; Material	Recommendations:
transfers [CS3]. ;	{Drain down and flush system prior to equipment break-in or maintenance [E55]}.
Equipment cleaning and maintenance [CS39].;	
Bulk transfers [CS14].	[C&H3]]. {Clear spills immediately [C&H13]}.
PROC8b:	No specific measures identified [EI18].
General exposures, open systems [CS16].	(Drain dawn and flush avatam prior to aguinment break in ar maintanance
Dedicated facility [CS81]	{Drain down and flush system prior to equipment break-in or maintenance
Material transfers [CS3].	[E55]}.{Use drum pumps [E53]}. {Clean equipment and the work area every day
Equipment cleaning and maintenance [CS39]	[C&H3]}. {Clear spills immediately [C&H13]}.
Bulk transfers [CS14]. PROC9:	No specific measures identified [EI19]
General exposures [CS1].	No specific measures identified [EI18].
Dedicated facility [CS81]	Recommendations:
Drum and small package filling [CS6].	{Drain down and flush system prior to equipment break-in or maintenance
Equipment cleaning and maintenance [CS39].	[E55]] .{Clean equipment and the work area every day [C&H3]}.{Clear spills
Equipment ocaning and maintenance [0000].	immediately [C&H13]].
PROC15:	No specific measures identified [EI18].
General exposures [CS1]. Laboratory activities	The opening measures radiatined [E116].
[CS36].	Recommendations:
Small scale [CS61].	{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 3	Exposure Estimation
3.1. Health	
Predicted exposures are not expected to excee	d the applicable exposure limits (given in section 8 of the SDS) when the operational
conditions/risk management measures given in	, , ,
3.2. Environment	, , ,
N.A.	
Section 4 Gu	idance to check compliance with the Exposure Scenario
4.1. Health	
	to estimate workplace exposures unless otherwise indicated [G21]
4.2. Environment	to estimate workplace exposures unless strictwise indicated [621]
N.A.	
	ditional good practice advice beyond the REACH Chemical Safety
	sessment -
AS	oooment -
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 subj	ect to obligation laid down in Article 37 (4) of REACH.
Control of Worker Expenses	
Control of Worker Exposure	in protection:
	in protection:
Gio	oves: Observe breakthrough time of the gloves used
 R ₀	spiratory protection:
I -	spirators:
_	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
--	----------------------------------------



Exposure Scenario 4: Use in spraying Formulations

Aqueous solution:

ES4 – Industrial and Professional use of Aluminium salts in spraying formulations (aqueous solutions); Max. aluminium content = 25%	
Section 1	Exposure Scenario Title
Title	Industrial and Professional Use of Aluminium salts in spraying formulations (aqueous solutions) – Max. Aluminium content = 25%
Use Descriptor	Sector of Use: Industrial (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:
	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 (aqueous solutions, max Aluminium content = 25%). Includes equipment cleaning and maintenance.
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	Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14].
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 > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Indoor [OC8]. Ensure operatives are trained to minimize exposure [EI19]
Contributing Scenarios	Risk Management Measures
Below pH2 and above pH11 the substance has Use suitable eye protection [PPE26]. Avoid skin contact: wear suitable gloves tested	
PROC1:	No specific measures identified [EI18].
General exposures (closed systems) [CS15].	
Continuous process [CS54]. Process sampling	Recommendations:
[CS2] (closed systems) [CS107]	{Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.
PROC2:	No specific measures identified [EI18].
General exposures [CS1]. Continuous process	
[CS54]. Process sampling [CS2] (open systems)	Recommendations:
[CS108]	{Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.
PROC3:	{Clear spills immediately [C&H13]}. No specific measures identified [EI18].
General exposures [CS1]. Use in contained batch	No specific measures identified [E110].
processes [CS37].	Recommendations:
With sample collection [CS56].	{Ensure the system is closed}
Equipment cleaning and maintenance [CS39].	{Drain down and flush system prior to equipment break-in or maintenance
	[E55]}.{Clear spills immediately [C&H13]}.
PROC5:	No specific measures identified [EI18].
General exposures (open systems) [CS16].	
Mixing operations (open systems) [CS30].	Recommendations:
Material transfers [CS3].	{Drain down and flush system prior to equipment break-in or maintenance [E55]};
Batch process [CS55].	{Use drum pumps [E53]}. {Clean equipment and the work area every day
Cleaning [CS47].	[C&H3]}. {Clear spills immediately [C&H13]}.



PROC7:	5-25%:
PROC7: General exposures [CS1]. Spraying [CS10].	5-25%: Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (90% efficiency) [E60]. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 (90% efficiency) [E70]. 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] Plus: Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] Or: Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (90% efficiency) [E60]. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 (90% efficiency) [E70]. Plus: Avoid carrying out operation for more than 1 hour [OC11] <5%: 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%: Limit the substance content in the product to 1% [OC16].Avoid carrying out operation for more than 15 minutes [OC10]{
	Recommendations: {Clean equipment and the work area every day [C&H3]} {Clear spills immediately [C&H13]}.
PROC8a: General exposures (open systems) [CS16];	No specific measures identified [EI18].
Non-dedicated facility [CS82]; Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].	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]. 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].	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]}.



Γ	T
PROC11:	5-25%:
General exposures [CS1]. Spraying [CS10].	Minimise 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 (80% efficiency) [E70].
	Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] Or:
	Minimise 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 (80% efficiency) [E70].
	Avoid carrying out operation for more than 15 minutes [OC10]
	<5%:
	Minimise 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 (80% efficiency) [E70].
	Avoid carrying out operation for more than 1 hour [OC11] <1%:
	Avoid carrying out operation for more than 15 minutes [OC10]
	Avoid carrying out operation for more than 13 minutes [OO 10]
	Recommendations:
	{Clean equipment and the work area every day [C&H3]}
	{Clear spills immediately [C&H13]}.
PROC19:	Industrial workers:
General exposures [CS1]. Mixing operations	5-25%:
(open systems) [CS30].	Avoid carrying out operation for more than 1 hour [OC11]{
Manual [CS34].	<5% :
	Avoid carrying out operation for more than 4 hours [OC12]
	<1%:
	No specific measures identified [EI18]
	Professional workers:
	5-25%:
	Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] Or:
	Avoid carrying out operation for more than 15 minutes [OC10]{
	<5%: Avoid corn ing out operation for more than 1 hour [OC11]
	Avoid carrying out operation for more than 1 hour [OC11] <1%:
	Avoid carrying out operation for more than 4 hours [OC12]
	December deticate

Recommendations:

{Clean equipment and the work area every day [C&H3]}

{Clear spills immediately [C&H13]}

{Stay upwind/keep distance from source [EI22]}.

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 -	
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	

Solid, high dustiness:

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



	Emilian manufal Balance Catamarian
	Environmental Release Categories: ERC3: Formulation in materials
	ERC4: Industrial use
	ERC5: 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.
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, 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	Not applicable
management	
Other Operational Conditions affecting worker	Accompany of the Control of the Cont
	Assumes use at not > 20 G above ambient [G 15];
exposure	Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
· · · · · · · · · · · · · · · · · · ·	
· · · · · · · · · · · · · · · · · · ·	Assumes a good basic standard of occupational hygiene is implemented [G1].
exposure Contributing Scenarios	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures
exposure Contributing Scenarios Below pH2 and above pH11 the substance has	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures
exposure Contributing Scenarios Below pH2 and above pH11 the substance has Use suitable eye protection [PPE26].	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures corrosive properties:
exposure Contributing Scenarios Below pH2 and above pH11 the substance has Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant of	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures corrosive properties: gloves (tested to EN374) in combination with specific activity training [PPE17]
exposure Contributing Scenarios Below pH2 and above pH11 the substance has Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant of PROC1:	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures corrosive properties:
exposure Contributing Scenarios Below pH2 and above pH11 the substance has Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant of	Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures corrosive properties: gloves (tested to EN374) in combination with specific activity training [PPE17]



PROC2:	Industrial workers:
General exposures [CS1]. Continuous process	No specific measures identified [EI18].
[CS54]. Process sampling [CS2] (open systems)	
[CS108]	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:	Industrial workers:
General exposures [CS1]. Use in contained batch processes [CS37].	No specific measures identified [EI18].
With sample collection [CS56].	Professional workers:
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]
	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:	Industrial workers:
General exposures (open systems) [CS16].	Ensure material transfers are under containment or extract ventilation (90%
Mixing operations (open systems) [CS30].	efficiency) [E66].
Material transfers [CS3].	Provide extract ventilation to material transfer points and other openings (90%
Batch process [CS55]. Cleaning [CS47].	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:	5-25%:
General exposures [CS1]. Spraying [CS10].	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].



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: [C&H3]] -{Clear spills immediately [C&H1]

General exposures, open systems [CS16].

Dedicated facility [CS81]

Material transfers [CS3].

Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].

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:	Ensure material transfers are under containment or extract ventilation (80%
General exposures [CS1].	efficiency) [E66].
Dedicated facility [CS81]	Provide extract ventilation to material transfer points and other openings (80%
Drum and small package filling [CS6].	efficiency) [E82].
Equipment cleaning and maintenance [CS39].	Avoid carrying out operation for more than 4 hours [OC12]{
	Decomposedations
	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:	5-25%:
General exposures [CS1]. Spraying [CS10].	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;
	Recommendations; {Clean equipment and the work area every day [C&H3]}.; {Clear spills immediately [C&H13]}.



PROC1	9
General	e

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]

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]

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 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 -

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



Solid, low dustiness:

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: Industrial (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 - solid, low dust - in spraying formulations
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	Assumes use at not > 20oC above ambient [G15];
exposure	Assumes a good basic standard of occupational hygiene is implemented [G1].
On while which to On a ward and	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 g	loves (tested to EN374) in combination with specific activity training [PPE17]
PROC1:	No specific measures identified [EI18].
General exposures (closed systems) [CS15].	
Continuous process [CS54]. Process sampling	Recommendations:
[CS2] (closed systems) [CS107]	{Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.
PROC2:	No specific measures identified [EI18].
General exposures [CS1]. Continuous process	
[CS54]. Process sampling [CS2] (open systems)	Recommendations:
[CS108]	{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	The appearing medical administration [E110].
processes [CS37].;	Recommendations:
With sample collection [CS56].	{Ensure the system is closed};
Equipment cleaning and maintenance [CS39].	{Drain down and flush system prior to equipment break-in or maintenance
	[E55]}.{Clear spills immediately [C&H13]}.
PROC5:	No specific measures identified [EI18].
General exposures (open systems) [CS16].	D
Mixing operations (open systems) [CS30].	Recommendations:
Material transfers [CS3]. ; Batch process [CS55]. ;	{Drain down and flush system prior to equipment break-in or maintenance [E55]} {Use drum pumps [E53]}. {Clean equipment and the work area every
Cleaning [CS47].	day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC7:	No specific measures identified [EI18].
General exposures [CS1]. Spraying [CS10].	No specific measures identified [E110].
Contoral expectation [CC1]. Opinying [CC10].	Recommendations:
	{Clean equipment and the work area every day [C&H3]}.
	{Clear spills immediately [C&H13]}.
PROC8a:	No specific measures identified [EI18].
General exposures (open systems) [CS16];	
Non-dedicated facility [CS82]; Material transfers	Recommendations:
[CS3]. ;	{Drain down and flush system prior to equipment break-in or maintenance [E55]}.
Equipment cleaning and maintenance [CS39].; Bulk transfers [CS14].	{Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC8b:	No specific measures identified [EI18].
General exposures, open systems [CS16].;	specimo modosi do idonanos [Erroj.
Dedicated facility [CS81]Material transfers	
,	(Due in decima and fluck assistant prior to assistant the act in an arcintant are
[CS3]. ;	{Drain down and flush system prior to equipment break-in or maintenance
Equipment cleaning and maintenance [CS39].;	[E55]].{Use drum pumps [E53]}. {Clean equipment and the work area every day
Equipment cleaning and maintenance [CS39]. ; Bulk transfers [CS14].	[E55]].{Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
Equipment cleaning and maintenance [CS39]. ; Bulk transfers [CS14]. PROC9:	[E55]].{Use drum pumps [E53]}. {Clean equipment and the work area every day
Equipment cleaning and maintenance [CS39].; Bulk transfers [CS14]. PROC9: General exposures [CS1].;	[E55]].{Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. No specific measures identified [EI18].
Equipment cleaning and maintenance [CS39].; Bulk transfers [CS14]. PROC9: General exposures [CS1].; Dedicated facility [CS81]Drum and small package	[E55]].{Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. No specific measures identified [EI18]. Recommendations:
Equipment cleaning and maintenance [CS39].; Bulk transfers [CS14]. PROC9: General exposures [CS1].;	[E55]].{Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. No specific measures identified [EI18].



PROC11:	No specific measures identified [EI18].
General exposures [CS1]. Spraying [CS10].	
	Recommendations:
	{Clean equipment and the work area every day [C&H3]}.;
	{Clear spills immediately [C&H13]}.
PROC19:	No specific measures identified [EI18].
General exposures [CS1]. Mixing operations	
(open systems) [CS30].	Recommendations:
Manual [CS34].	{Clean equipment and the work area every day [C&H3]}.;
	{Clear spills immediately [C&H13]}
Section 3	Exposure Estimation
3.1. Health	
Predicted exposures are not expected to exce	ed the applicable exposure limits (given in section 8 of the SDS) when the operational
conditions/risk management measures given i	n 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	d to estimate workplace exposures unless otherwise indicated [G21]
4.2. Environment	
N.A.	
	Additional good practice advice beyond the REACH Chemical Safety Assessment -
	n have not been taken into account in the exposure estimates related to the bject to obligation laid down in Article 37 (4) of REACH.
· · · · · · · · · · · · · · · · · · ·	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



Exposure Scenario 5: Use in non-spraying Formulations

Aqueous solution:

Section 1	Exposure Scenario Title
Title	Industrial and Professional Use of Aluminium salts in non-spraying formulations (aqueous solutions) – Max. Aluminium content = 25%
Jse Descriptor	Sector of Use: Industrial (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 lo
	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
	(aqueous solutions, max Alu content = 25%). Includes equipment cleaning and
CC avecaure eritori-	maintenance.
GES exposure criteria	DNEL, inhalation long term: 1.8 mg/m3



Section 2.1	Control of worker exposure
Product characteristics	·
Physical form of product	Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less;
	Liquid, vapour pressure < 10 Pa [OC14].
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	Not applicable
management	
Other Operational Conditions affecting worker	Assumes use at not > 20°C above ambient [G15];
exposure	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 suitable gloves tested	
PROC1:	No specific measures identified [EI18].
General exposures (closed systems) [CS15].	B
Continuous process [CS54]. Process sampling	Recommendations:
[CS2] (closed systems) [CS107]	{Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.
PROC2:	No specific measures identified [EI18].
General exposures [CS1]. Continuous process	
[CS54]. Process sampling [CS2] (open systems)	Recommendations:
[CS108]	{Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.
PROC3:	{Clear spills immediately [C&H13]}. No specific measures identified [EI18].
General exposures [CS1]. Use in contained batch	No specific measures identified [E110].
processes [CS37].	Recommendations:
With sample collection [CS56].	{Ensure the system is closed}
Equipment cleaning and maintenance [CS39].	{Drain down and flush system prior to equipment break-in or maintenance
	[E55]].{Clear spills immediately [C&H13]}.
PROC4:	No specific measures identified [EI18].
General exposures (open systems) [CS16]. Batch	
process [CS55] (open systems) [CS108];	Recommendations:
Drum/batch transfers [CS8]. With sample	{Drain down and flush system prior to equipment break-in or maintenance [E55]};
collection [CS56].;	{Use drum pumps [E53]}. {Clean equipment and the work area every day
Equipment cleaning and maintenance [CS39].	[C&H3]}.
	{Clear spills immediately [C&H13]}.
PROC5:	No specific measures identified [EI18].
General exposures (open systems) [CS16].	
Mixing operations (open systems) [CS30].	Recommendations:
Material transfers [CS3].	{Drain down and flush system prior to equipment break-in or maintenance [E55]};
Batch process [CS55].	(Use drum pumps [E53]). (Clean equipment and the work area every day
Cleaning [CS47].	[C&H3]]. {Clear spills immediately [C&H13]}.
PROC6: General exposures (open systems) [CS16]	No specific measures identified [EI18]. Recommendations:
General exposures (open systems) [CS16] Mixing operations (open systems) [CS30].	
whally operations (open systems) [Coot].	{Clean equipment and the work area every day [C&H3]}.;
* · · · · · · · · · · · · · · · · · · ·	Clear snills immediately [C&H13]
Material transfers [CS3]. ; Batch process [CS55]. ;	{Clear spills immediately [C&H13]}.



PROC8a:	No specific measures identified [El18].
General exposures (open systems) [CS16];	
Non-dedicated facility [CS82];	Recommendations:
Material transfers [CS3].	{Drain down and flush system prior to equipment break-in or maintenance [E55]}.
Equipment cleaning and maintenance [CS39].	{Use drum pumps [E53]}. {Clean equipment and the work area every day
Bulk transfers [CS14].	[C&H3]}.{Clear spills immediately [C&H13]}.
PROC8b:	No specific measures identified [EI18].
General exposures, open systems [CS16].	
Dedicated facility [CS81] Material transfers [CS3].	Recommendations:
Equipment cleaning and maintenance [CS39].	{Drain down and flush system prior to equipment break-in or maintenance [E55]}.
Bulk transfers [CS14].	{Use drum pumps [E53]}. {Clean equipment and the work area every day
	[C&H3]}. {Clear spills immediately [C&H13]}.
PROC9:	No specific measures identified [EI18].
General exposures [CS1].	
Dedicated facility [CS81]	Recommendations:
Drum and small package filling [CS6].	{Drain down and flush system prior to equipment break-in or maintenance [E55]}.
Equipment cleaning and maintenance [CS39].	{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].

Industrial workers:

5-25%:

Minimise 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 (80% efficiency) [E70].

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]

<5%:

Avoid carrying out operation for more than 4 hours [OC12]

<1%:

No specific measures identified [EI18]

Professional workers:

5-25%:

Minimise 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 (80% efficiency) [E70]. Plus: Avoid carrying out operation for more than 1 hour [OC11]

Or:

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 1 hour [OC11]

Or:

Minimise 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 (80% efficiency) [E70].

<1%:

Minimise 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 (80% efficiency) [E70].

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 [El18].

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:	No specific measures identified [EI18].
General exposures (open systems) [CS16]	Recommendations:
Production or preparation or articles by tabletting, compression, extrusion or pelletisation [CS100]	{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:	No specific measures identified [EI18].
General exposures [CS1]. Laboratory activities	B
[CS36].	Recommendations:
Small scale [CS61].	{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:	Industrial workers:
General exposures [CS1]. Mixing operations	5-25%:
(open systems) [CS30]. Manual [CS34].	Avoid carrying out operation for more than 1 hour [OC11] <5%:
	Avoid carrying out operation for more than 4 hours [OC12] <1%:
	No specific measures identified [EI18]
	Professional workers:
	5-25%:
	Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] Or:
	Avoid carrying out operation for more than 15 minutes [OC10]{ <5%:
	Avoid carrying out operation for more than 1 hour [OC11] <1%:
	Avoid carrying out operation for more than 4 hours [OC12]
	Recommendations:
	{Clean equipment and the work area every day [C&H3]}
	{Clear spills immediately [C&H13]}
	{Stay upwind/keep distance from source [EI22]}.
Section 3	Exposure Estimation
0.4.11.10	
3.1. Health	the applicable assessment limite (niver in continue 0 of the CDC) when the appendicus
conditions/risk management measures given in se	the applicable exposure limits (given in section 8 of the SDS) when the operationa ection 2 are implemented [G29]
3.2. Environment	
N.A.	
	Suidance to check compliance with the Exposure Scenario
4.1. Health	estimate workshoo everenuse unless otherwise indicated ICOM
4.2. Environment	estimate workplace exposures unless otherwise indicated [G21]
N.A.	
	Additional good practice advice beyond the REACH Chemical Safety
	Assessment -

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

Solid, high dustiness:

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
	PROC14: 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



	Farijaan waantal Balaasa Catananijaa
	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.
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, 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	
· · · · · · · · · · · · · · · · · · ·	Not applicable
	Not applicable
management	
management Other Operational Conditions affecting worker	Assumes use at not > 20°C above ambient [G15];
management	Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
management 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 [E119]
management Other Operational Conditions affecting worker	Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].
management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the substance has	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 [E119] Risk Management Measures
management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the substance has Use suitable eye protection [PPE26].	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 [E119] Risk Management Measures s corrosive properties:
management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the substance has Use suitable eye protection [PPE26].	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 [E119] Risk Management Measures
management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the substance has Use suitable eye protection [PPE26].	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 [E119] Risk Management Measures s corrosive properties:
management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the substance has Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant	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 [E119] Risk Management Measures s corrosive properties: gloves (tested to EN374) in combination with specific activity training [PPE17]
management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the substance has Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant PROC1:	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 [E119] Risk Management Measures s corrosive properties: gloves (tested to EN374) in combination with specific activity training [PPE17]



PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems)	Industrial workers:
General exposures [CS1]. Continuous process	
· · · · · · · · · · · · · · · · · · ·	No specific measures identified [EI18].
Occident to the state of the st	The opening medical de lacitation [Enter].
[CS108]	Professional workers:
CS 100]	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]}.
DD000.	{Clear spills immediately [C&H13]}
PROC3:	Industrial workers:
General exposures [CS1]. Use in contained batch	No specific measures identified [EI18].
processes [CS37].	
With sample collection [CS56].	Professional workers:
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]
	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:	Industrial workers:
General exposures (open systems) [CS16].	5-25%:
Batch process [CS55] (open systems) [CS108];	Ensure material transfers are under containment or extract ventilation (90%
Drum/batch transfers [CS8]. With sample	efficiency) [E66].
collection [CS56].	Provide extract ventilation to material transfer points and other openings (90%
Equipment cleaning and maintenance [CS39].	efficiency) [E82].
	B. C. Mariana
	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:	Industrial workers:
General exposures (open systems) [CS16].	Ensure material transfers are under containment or extract ventilation (90%
constant expectation (open by sterilis) [OO 10].	· · · · · · · · · · · · · · · · · · ·



Material transfers [CS3].
Batch process [CS55].
Cleaning [CS47].

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]

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].

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].



Bulk transfers [CS14].	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]
	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:	Industrial workers:
General exposures, open systems [CS16].	5-25%:
Dedicated facility [CS81]	Ensure material transfers are under containment or extract ventilation (90%
Material transfers [CS3]. Equipment cleaning and maintenance [CS39].	efficiency) [E66] Provide extract ventilation to material transfer points and other openings (90%
Bulk transfers [CS14].	efficiency) [E82].
Bulk transfers [OC14].	emoionoy) [E52].
	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]
	Avoid carrying out operation for more than 1 flour [OOTI]
	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:	Ensure material transfers are under containment or extract ventilation (80%
General exposures [CS1].	efficiency) [E66].
Dedicated facility [CS81]	Provide extract ventilation to material transfer points and other openings (80%
Drum and small package filling [CS6].	efficiency) [E82].
Equipment cleaning and maintenance [CS39].	Avoid carrying out operation for more than 4 hours [OC12]{



	T
PROC10	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]}.
General exposures (open systems) [CS16] Rolling, Brushing [CS51].;	Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66].
Equipment cleaning and maintenance [CS39]	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	Minimize exposure by partial enclosure of the operation or equipment and
General exposures, open systems [CS16] Dipping, immersion and pouring [CS4]	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	Industrial:
General exposures (open systems) [CS16] Production or preparation or articles by tabletting, compression, extrusion or pelletization [CS100]	Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (90%
compression, extrusion or penetization [CS100]	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%



Section 3	Exposure Estimation
	{Clear spills immediately [C&H13]} {Stay upwind/keep distance from source [El22]}
	{Clean equipment and the work area every day [C&H3]}.
	Recommendations:
	Avoid carrying out operation for more than 1 hour [OC11]{
	<1%:
	<5%: Avoid carrying out operation for more than 15 minutes [OC10]
	Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29]
	Avoid carrying out operation for more than 4 hours [OC12]
	Professional workers:: 5-25%:
	Avoid carrying out operation for more than 4 hours [OO12
	<1%: Avoid carrying out operation for more than 4 hours [OC12
	Avoid carrying out operation for more than 1 hour [OC11]
Manual [CS34].	wear a respirator comorning to EN 140 with Type A/P2 Tiller or better {PPE29} <5%:
General exposures [CS1]. Mixing operations (open systems) [CS30].;	5-25%: Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29}
PROC19	Industrial workers:
	{Clear spills immediately [C&H13]}.
Small scale [CS61].	{Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clean equipment and the work area every day [C&H3]}.
[CS36].	Recommendations:
General exposures [CS1]. Laboratory activities	zam, zam. z z
PROC15:	Carry out in a vented booth or extracted enclosure (80% efficiency) [E57].
	immediately [C&H13]}.
	[E55]}.{Clean equipment and the work area every day [C&H3]}. {Clear spills
	Recommendations: {Drain down and flush system prior to equipment break-in or maintenance
	Recommendations
	Avoid carrying out operation for more than 1 hour [OC11]
	<1%:
	1-5%: Avoid carrying out operation for more than 15 minutes [OC10]
	Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29]
	efficiency) [E82].
	efficiency) [E66].; Provide extract ventilation to material transfer points and other openings (80%

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

NΑ

14.7 (.	
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 -
-	ve not been taken into account in the exposure estimates related to the 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

Solid, low dustiness:

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



Processes, tasks, activities covered	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 Industrial and Professional use of Aluminium salts - solid, low dust - in
050	non-spraying formulations; Alu-content max. 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
PROC1:	corrosive properties: loves (tested to EN374) in combination with specific activity training [PPE17] No specific measures identified [EI18].
General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107]	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:	No specific measures identified [EI18].
General exposures (open systems) [CS16]. Batch process [CS55] (open systems) [CS108]; Drum/batch transfers [CS8]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	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]}.
PROC6:	No specific measures identified [EI18].
General exposures (open systems) [CS16] Mixing operations (open systems) [CS30]. Material transfers [CS3]. Batch process [CS55].; Cleaning [CS47]	Recommendations: {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.
PROC8a:	No specific measures identified [EI18].
General exposures (open systems) [CS16]; Non-dedicated facility [CS82]; Material transfers [CS3].; Equipment cleaning and maintenance [CS39].; Bulk transfers [CS14].	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:	No specific measures identified [EI18].
General exposures, open systems [CS16].; Dedicated facility [CS81]Material transfers [CS3].; Equipment cleaning and maintenance [CS39].;	{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
Bulk transfers [CS14].	[C&H3]}. {Clear spills immediately [C&H13]}.
PROC9: General exposures [CS1].; Dedicated facility [CS81]Drum and small package	No specific measures identified [EI18]. Recommendations:
filling [CS6]. ; Equipment cleaning and maintenance [CS39].	{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:	No specific measures identified [EI18].
General exposures (open systems) [CS16] Rolling, Brushing [CS51].; Equipment cleaning and maintenance [CS39]	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:	No specific measures identified [EI18].
General exposures, open systems [CS16]	,
Dipping, immersion and pouring [CS4]	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:	No specific measures identified [El18].
General exposures (open systems) [CS16] Production or preparation or articles by tabletting, compression, extrusion or pelletization [CS100]	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]}.
No specific measures identified [EI18].
ities
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]}.
No specific measures identified [EI18].
ns en
Recommendations:
{Clean equipment and the work area every day [C&H3]}.;
{Clear spills immediately [C&H13]}
Exposure Estimation
xceed the applicable exposure limits (given in section 8 of the SDS) when the operational
en in section 2 are implemented [G29]
Guidance to check compliance with the Exposure Scenario
sed to estimate workplace exposures unless otherwise indicated [G21]
Additional good practice advice beyond the REACH Chemical Safety Assessment -
tion have not been taken into account in the exposure estimates related to the subject to obligation laid down in Article 37 (4) of REACH.
Olin mark of an
Skin protection: Gloves:
- Observe breakthrough time of the gloves used
Respiratory protection:
100phatory proteotion.
Respirators:
Respirators:
- Wear a disposable mask only once



Exposure Scenario 6: Use as flocculant or coagulant in water and waste water treatment

Aqueous solution:

Section 1	Exposure Scenario Title
Title	Industrial and Professional use of Aluminium salts in aqueous solutions as
Tiue	a flocculants or coagulant in water and waste water treatment; max 25%
	Aluminium content.
Use Descriptor	Sector of Use: Industrial (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 a 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 of processing aids and products, not becoming part of
	articles 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 a flocculants or coagulant
Troccocci, tacke, activities severed	in water and waste water treatment; max 25% Aluminium content. 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	Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less;
	Liquid, vapour pressure <10 Pa [OC14]
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)
For more and dissection of the	[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	Assumes use at not > 20oC above ambient [G15];
exposure	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	t to EN374 [PPE15]	
PROC2:	No specific measures identified [El18].	
General exposures [CS1]. Continuous process		
[CS54]. Process sampling [CS2] (open systems)	Recommendations:	
[CS108]	{Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.	
PD000	{Clear spills immediately [C&H13]}.	
PROC3:	No specific measures identified [EI18].	
General exposures [CS1]. Use in contained batch processes [CS37].	Recommendations:	
With sample collection [CS56].	{Ensure the system is closed};	
Equipment cleaning and maintenance [CS39].	{Drain down and flush system prior to equipment break-in or maintenance	
Equipment oleaning and maintenance [0000].	[E55]].{Clear spills immediately [C&H13]}.	
PROC4:	No specific measures identified [EI18].	
General exposures (open systems) [CS16]. Batch	[
process [CS55] (open systems) [CS108];	Recommendations:	
Drum/batch transfers [CS8]. With sample	{Drain down and flush system prior to equipment break-in or maintenance [E55]};	
collection [CS56].	{Use drum pumps [E53]}. {Clean equipment and the work area every day	
Equipment cleaning and maintenance [CS39].	[C&H3]}.	
	{Clear spills immediately [C&H13]}.	
PROC5:	No specific measures identified [EI18].	
General exposures (open systems) [CS16].		
Mixing operations (open systems) [CS30].	Recommendations:	
Material transfers [CS3].	{Drain down and flush system prior to equipment break-in or maintenance [E55]};	
Batch process [CS55].	{Use drum pumps [E53]}. {Clean equipment and the work area every day	
Cleaning [CS47].	[C&H3]}. {Clear spills immediately [C&H13]}.	
PROC8a:	No specific measures identified [EI18].	
General exposures (open systems) [CS16];	D	
Non-dedicated facility [CS82];	Recommendations:	
Material transfers [CS3]. Equipment cleaning and maintenance [CS39].	{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	
Bulk transfers [CS14].	[C&H3]].{Clear spills immediately [C&H13]}.	
PROC8b:	No specific measures identified [EI18].	
General exposures, open systems [CS16].	The opening measures restrained [E116].	
Dedicated facility [CS81] Material transfers [CS3].	Recommendations:	
Equipment cleaning and maintenance [CS39].	{Drain down and flush system prior to equipment break-in or maintenance [E55]}.	
Bulk transfers [CS14].	{Use drum pumps [E53]}. {Clean equipment and the work area every day	
	[C&H3]}. {Clear spills immediately [C&H13]}.	
PROC9:	No specific measures identified [El18].	
General exposures [CS1].	no specific fileasules luctifilieu [Effo].	
Dedicated facility [CS81]	Recommendations:	
Drum and small package filling [CS6].	{Drain down and flush system prior to equipment break-in or maintenance [E55]}.	
Equipment cleaning and maintenance [CS39].	{Clean equipment and the work area every day [C&H3]} {Clear spills immediately	
, , <u> </u>	[C&H13]}.	
PROC19:	Industrial worker:	
General exposures [CS1]. Mixing operations	5-25%:	
(open systems) [CS30].	Avoid carrying out operation for more than 1 hour [OC11]	
Manual [CS34].	1-5%:	
	Avoid carrying out operation for more than 4 hours [OC12]	



	-40/.
	<1%: No specific measures identified [EI18].
	No specific measures identified [E110].
	Professional worker:
	5-25%:
	Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29]
	or:
	Avoid carrying out operation for more than 15 minutes [OC10]{
	1-5%:
	Avoid carrying out operation for more than 1 hour [OC11] <1%:
	Avoid carrying out operation for more than 4 hours [OC12]
	Recommendations:
	{Clean equipment and the work area every day [C&H3]}.
	{Clear spills immediately [C&H13]}. {Stay upwind/keep distance from source
	[EI22]}.
Section 3	Exposure Estimation
3.1. Health	
	the applicable exposure limits (given in section8 of the SDS) when the operational
conditions/risk management measures given in se	ction 2 are implemented [G29]
3.2. Environment	
N.A.	
Section 4	Guidance to check compliance with the Exposure Scenario
4.1. Health	
	estimate workplace exposures unless otherwise indicated [G21]
4.2. Environment	
N.A.	
Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment -
Note: The measures reported in this section ha	ve not been taken into account in the exposure estimates related to the
	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
	- Clean non-disposable masks after each use and store in a clean box in a clean area
	- Wear respirators ≤ 2 hrs/day
	Troui respirators = 2 morady

Solid, high dustiness:

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 salts as flocculants or
	coagulant in water and waste water treatment; solid - high dustiness;
	Aluminium content = max. 25%



Use Descriptor	Sector of Use: SU2, SU5, SU6b, SU10, SU23)
Use Descriptor	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 a 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
Processes, tasks, activities covered	Environmental Release Categories: ERC2: Formulation of preparations ERC4: Industrial use of processing aids and products, not becoming part of articles 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 ERC8d: Wide dispersive outdoor use of processing aids in open systems Industrial and Professional use of Aluminium salts as flocculants or coagulant in water and waste water treatment.
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, 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	
	Ensure operatives are trained to minimize exposures [EI19] Risk Management Measures
Below pH2 and above pH11 the substance has	Ensure operatives are trained to minimize exposures [EI19] Risk Management Measures
Below pH2 and above pH11 the substance has Use suitable eye protection [PPE26].	Ensure operatives are trained to minimize exposures [EI19] Risk Management Measures corrosive properties:
Below pH2 and above pH11 the substance has Use suitable eye protection [PPE26]. Avoid skin contact: wear suitable gloves tested	Ensure operatives are trained to minimize exposures [EI19] Risk Management Measures corrosive properties: I to EN374 [PPE15]
Below pH2 and above pH11 the substance has Use suitable eye protection [PPE26]. Avoid skin contact: wear suitable gloves tested PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems)	Ensure operatives are trained to minimize exposures [EI19] Risk Management Measures corrosive properties: I to EN374 [PPE15] Industrial use: No specific measures identified [EI18].
Below pH2 and above pH11 the substance has Use suitable eye protection [PPE26]. Avoid skin contact: wear suitable gloves tested PROC2: General exposures [CS1]. Continuous process	Ensure operatives are trained to minimize exposures [EI19] Risk Management Measures corrosive properties: I to EN374 [PPE15] Industrial use: No specific measures identified [EI18]. Professional use:
Below pH2 and above pH11 the substance has Use suitable eye protection [PPE26]. Avoid skin contact: wear suitable gloves tested PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems)	Ensure operatives are trained to minimize exposures [EI19] Risk Management Measures corrosive properties: I to EN374 [PPE15] Industrial use: No specific measures identified [EI18].



	efficiency) [E82].
	Recommendations:
	{Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}.
	{Clear spills immediately [C&H13]}.
PROC3:	Industrial workers:
General exposures [CS1]. Use in contained batch	No specific measures identified [EI18].
processes [CS37]. With sample collection [CS56].	Professional workers:
Equipment cleaning and maintenance [CS39].	Ensure material transfers are under containment or extract ventilation (80%
Equipment stearing and maintenance [5556].	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:	Industrial workers:
General exposures (open systems) [CS16].	5-25%:
Batch process [CS55] (open systems) [CS108];	Ensure material transfers are under containment or extract ventilation (90%
Drum/batch transfers [CS8]. With sample collection [CS56].	efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (90%
Equipment cleaning and maintenance [CS39].	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:	Industrial workers:
General exposures (open systems) [CS16].	Ensure material transfers are under containment or extract ventilation (90%
Mixing operations (open systems) [CS30].	efficiency) [E66].
Material transfers [CS3].	Provide extract ventilation to material transfer points and other openings (90%
Batch process [CS55]. Cleaning [CS47].	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]

ΩR

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]

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].



Occilon 0	
Section 3	Exposure Estimation
	{Stay upwind/keep distance from source [EI22]}
	{Clear spills immediately [C&H13]}
	{Clean equipment and the work area every day [C&H3]}.
	Recommendations:
	Avoid carrying out operation for more than 1 hour [OC11]{
	<1%:
	Avoid carrying out operation for more than 15 minutes [OC10]
	45%:
	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]
	5-25%:
	Professional workers::
	Avoid carrying out operation for more than 4 hours [OC12
	<1%: Avoid corrying out energtion for more than 4 hours IOC12
	Avoid carrying out operation for more than 1 hour [OC11]
Manual [CS34].	Veal a respirator comorning to ENT40 with Type AN 2 Timer of better [11 E29]
General exposures [CS1]. Mixing operations (open systems) [CS30].;	Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29]
PROC19 General exposures [CS1] Mixing operations	Industrial workers: 5-25%:
PD0040	{Clear spills immediately [C&H13]}.
	and the work area every day [C&H3]}.
	system prior to equipment break-in or maintenance [E55]}. {Clean equipment
	Discharge sacks via suitable vented charge chute [E44].Drain down and flush
	Recommendations: Use bulk or semi-bulk handling systems [E43].;
	Pagammandations:
Equipment cleaning and maintenance [CS39].	Avoid carrying out operation for more than 4 hours [OC12]{
Drum and small package filling [CS6].	efficiency) [E82].
Dedicated facility [CS81]	Provide extract ventilation to material transfer points and other openings (80%
General exposures [CS1].	efficiency) [E66].
PROC9:	{Clear spills immediately [C&H13]}. Ensure material transfers are under containment or extract ventilation (80%
	[C&H3]].
	{Use drum pumps [E53]}. {Clean equipment and the work area every day
	{Drain down and flush system prior to equipment break-in or maintenance [E55]}
	Recommendations:
	Avoid carrying out operation for more than 1 hour [OC11]
	<1%: Avoid corrying out energtion for more than 1 hour [OC11]
	Avoid carrying out operation for more than 15 minutes [OC10]
	1-5%:
	Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29]
	Avoid carrying out operation for more than 4 hours [OC12] plus
	Or:

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 -	
Note: The measures reported in this sec	ction 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	

Solid, low dustiness:

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: Industrial (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 a 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 of processing aids and products, not becoming part of
	articles 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	Assumes use at not > 20oC above ambient [G15];
exposure	Assumes a good basic standard of occupational hygiene is implemented [G1]
	Ensure operatives are trained to minimize exposures [EI19]
Contributing Scenarios	Risk Management Measures
PROC2:	No specific measures identified [EI18].
General exposures [CS1]. Continuous process	The specime measures (Enter)
[CS54]. Process sampling [CS2] (open systems)	Recommendations
[CS108]	{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	Base manufations.
processes [CS37].	Recommendations:
With sample collection [CS56]. Equipment cleaning and maintenance [CS39].	{Ensure the system is closed} {Drain down and flush system prior to equipment break-in or maintenance [E55]}.
Equipment dealing and maintenance [0000].	{Clear spills immediately [C&H13]}.
PROC4:	No specific measures identified [EI18].
General exposures (open systems) [CS16]. Batch	The specimen meaning factor
process [CS55] (open systems) [CS108];	Recommendations:
Drum/batch transfers [CS8]. With sample	{Drain down and flush system prior to equipment break-in or maintenance [E55]},
collection [CS56].	{Use drum pumps [E53]}. {Clean equipment and the work area every day
Equipment cleaning and maintenance [CS39].	[C&H3]}.{Clear spills immediately [C&H13]}.
PROC5:	No specific measures identified [EI18].
General exposures (open systems) [CS16].	
Mixing operations (open systems) [CS30].	Recommendations:
Material transfers [CS3].	{Drain down and flush system prior to equipment break-in or maintenance [E55]},
Batch process [CS55].	(Use drum pumps [E53]). (Clean equipment and the work area every day
Cleaning [CS47].	[C&H3]]. {Clear spills immediately [C&H13]}.
PROC8a:	No specific measures identified [EI18].
General exposures (open systems) [CS16]; Non-dedicated facility [CS82]; Material transfers	Recommendations:
[CS3]. Equipment cleaning and maintenance	{Drain down and flush system prior to equipment break-in or maintenance [E55]}.
[CS39].	{Use drum pumps [E53]}. {Clean equipment and the work area every day
Bulk transfers [CS14].	[C&H3]]. {Clear spills immediately [C&H13]}.



PROC8b:		No specific measures identified [EI18].
General exposures, open systems [CS	161	No specime measures rechance [E116].
Dedicated facility [CS81]	10].	Recommendations:
Material transfers [CS3].		{Drain down and flush system prior to equipment break-in or maintenance [E55]}.
Equipment cleaning and maintenance	CS301	{Use drum pumps [E53]}. {Clean equipment and the work area every day
Bulk transfers [CS14].	GG53].	[C&H3]]. {Clear spills immediately [C&H13]}.
PROC9:		No specific measures identified [EI18].
		No specific fileasures identified [E110].
General exposures [CS1].;	معمادمهم	Recommendations:
Dedicated facility [CS81]Drum and sma	iii package	
filling [CS6].	00001	{Drain down and flush system prior to equipment break-in or maintenance
Equipment cleaning and maintenance	CS39J.	[E55]]. {Clean equipment and the work area every day [C&H3]}. {Clear spills
PPOGA		immediately [C&H13]].
PROC19:	··	No specific measures identified [EI18].
General exposures [CS1]. Mixing opera	itions	B
(open systems) [CS30].		Recommendations:
Manual [CS34].		{Clean equipment and the work area every day [C&H3]}.;
		{Clear spills immediately [C&H13]}
Section 3		Exposure Estimation
3.1. Health		
·		he applicable exposure limits (given in section 8 of the SDS) when the operational
conditions/risk management measures	given in sec	ction 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	n used to e	stimate workplace exposures unless otherwise indicated [G21]
4.2. Environment		
N.A.		
Section 5	Additiona	al good practice advice beyond the REACH Chemical Safety Assessment -
	41 1	
-		ve not been taken into account in the exposure estimates related to the
exposure scenario above. They are i	iot subject	to obligation laid down in Article 37 (4) of REACH.
Control of Worker Exposure		
Use of PPE	Skin prote	ection:
	Gloves:	
		Observe breakthrough time of the gloves used
		ry protection:
	Respirato	
		Vear a disposable mask only once
		Clean non-disposable masks after each use and store in a clean box in a clean
		area
		Near respirators ≤ 2 hrs/day
		1



Exposure Scenario 7: Use in laboratory

Aqueous solution:

content = 25%		
Section 1	Exposure Scenario Title	
Title	Use of Aluminium salts – Aqueous solution – in industrial and	
	professional laboratory settings; max Aluminium content = 25%	
Use Descriptors	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 (aqueous solution) 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	Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid,	
	vapour pressure < 10 Pa [OC14]	
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	Assumes use at not > 20oC above ambient [G15];	
exposure	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]	
PROC15:	No specific measures identified [EI18].	
General exposures [CS1]. Laboratory activities		
[CS36].	Recommendations:	
Small scale [CS61].	{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 3	Exposure Estimation	
3.1. Health		
Predicted exposures are not expected to exceed the conditions/risk management measures given in second time.	ne applicable exposure limits (given in section8 of the SDS) when the operational tion 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 e	stimate workplace exposures unless otherwise indicated [G21]	
4.2. Environment		
N.A.		
Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment -	
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	

Solid, high dustiness:

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 Descriptors	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]



Below pH2 and above pH11 the substance has	s corrosive properties:
Use suitable eye protection [PPE26]	
Avoid skin contact: Wear suitable gloves test	
PROC15:	Carry out in a vented booth or extracted enclosure (80% efficiency) [E57].
General exposures [CS1]. Laboratory activities	
[CS36].	Recommendations:
Small scale [CS61].	{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 3	Exposure Estimation
3.1. Health	
Predicted exposures are not expected to exceed conditions/risk management measures given in s	the applicable exposure limits (given in section8 of the SDS) when the operational ection 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 -
	ave not been taken into account in the exposure estimates related to the ct to obligation laid down in Article 37 (4) of REACH.
Use of PPE	Okin mustastian.
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

Solid, low dustiness:

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	
[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]}.	
Section 3	Exposure Estimation	
3.1. Health		
Predicted exposures are not expected to exceed conditions/risk management measures given in	d the applicable exposure limits (given in section8 of the SDS) when the operational section 2 are implemented [G29]	
3.2. Environment		
N.A.		
	Guidance to check compliance with the Exposure Scenario	
4.1. Health The ECETOC TRA (V2.0) tool has been used t	o estimate workplace exposures unless otherwise indicated [G21]	
4.2. Environment		
N.A.		
Section 5	Additional good practice advice beyond the REACH Chemical Safety Assessment -	
-	have not been taken into account in the exposure estimates related to the ect to obligation laid down in Article 37 (4) of REACH.	
Control of Worker Exposure		
	Skin protection:	
Use of PPE	Skin protection: Gloves:	



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