SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

CAUSTIC POTASH SOLID (All grades)

Version 6.0 Print Date 2016/11/08

Revision date / valid from 2016/11/08 **MSDS code: MCPF100**

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name	:	CAUSTIC POTASH SOLID (All grades)
Substance name	:	potassium hydroxide
Index-No.	:	019-002-00-8
CAS-No.	:	1310-58-3
EC-No.	:	215-181-3
EU REACH-Reg. No.	:	01-2119487136-33-xxxx

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

Use of the Substance/Mixture	:	Identified use: See table in front of appendix for a complete overview of identified uses.
Uses advised against	:	At this moment we have not identified any uses advised against

1.3. Details of the supplier of the safety data sheet

Company	:	YouWish Venserweg 21M 1112 AR Diemen The Netherlands
E-mail address	:	contact@youwish.nl

1.4. Emergency telephone number

Emergency telephone number	:	Emergency only telephone number +31 20 7867784

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

REGULATION (EC) No 1272/2008			
Hazard class	**Hazard category**	**Target Organs**	**Hazard statements**
Corrosive to metals	Category 1	---	H290

Acute toxicity (Oral)	Category 4	---	H302
Skin corrosion	Category 1A	---	H314

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

Most important adverse effects

Human Health	:	See section 11 for toxicological information.
Physical and chemical hazards	:	See section 9 for physicochemical information.
Potential environmental effects	:	See section 12 for environmental information.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008

Hazard symbols :

Signal word : Danger

Hazard statements :

H290	May be corrosive to metals.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.

Precautionary statements

Prevention :

P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P260	Do not breathe dust/ mist.

Response :

P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER/doctor.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

Hazardous components which must be listed on the label:

- potassium hydroxide

2.3. Other hazards

For Results of PBT and vPvB assessment see section 12.5.

SECTION 3: Composition/information on ingredients

3.1. Substances

Chemical nature : Chemical intermediate

Hazardous components	Amount [%]	Classification (REGULATION (EC) No 1272/2008)	
		Hazard class / Hazard category	Hazard statements
potassium hydroxide			
Index-No. : 019-002-00-8 CAS-No. : 1310-58-3 EC-No. : 215-181-3 EU REACH-Reg. No. : 01-2119487136-33-xxxx	>= 89.5	Met. Corr.1 Acute Tox.4 Skin Corr.1A	H290 H302 H314
sodium hydroxid			
Index-No. : 011-002-00-6 CAS-No. : 1310-73-2 EC-No. : 215-185-5	<= 1	Met. Corr.1 Skin Corr.1A	H290 H314

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

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice : Take off all contaminated clothing immediately.

If inhaled : In case of accident by inhalation: remove casualty to fresh air and keep at rest. If breathing is irregular or stopped, administer artificial respiration. Call a physician immediately.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Consult an eye specialist immediately. Go to an ophthalmic hospital if possible.

If swallowed : Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. If a person vomits when lying on his back, place him in the recovery position. Call a physician immediately.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms : Extremely corrosive and destructive to tissue. See Section 11 for more detailed information on health effects and symptoms.

Effects : If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach. See Section 11 for more detailed information on health effects and symptoms.

4.3. Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.No further information available.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. The product itself does not burn.

Unsuitable extinguishing media : No information available.

5.2. Special hazards arising from the substance or mixture

Specific hazards during firefighting : Gives off hydrogen by reaction with metals. Risk of explosion.

5.3. Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.Wear appropriate body protection (full protective suit)

Further advice : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions : Use personal protective equipment. Keep away unprotected persons. Avoid dust formation. Avoid contact with skin, eyes and clothing. Do not breathe dust. Contaminated surfaces will be extremely slippery.

6.2. Environmental precautions

Environmental precautions : Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration. If the product contaminates rivers and lakes or drains inform respective authorities.

6.3. Methods and materials for containment and cleaning up

Methods and materials for containment and cleaning up	:	Use mechanical handling equipment. Keep in suitable, closed containers for disposal. Flush with plenty of water.
Further information	:	Treat recovered material as described in the section "Disposal considerations".

6.4. Reference to other sections

See Section 1 for emergency contact information.
See Section 8 for information on personal protective equipment.
See Section 13 for waste treatment information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling	:	Keep container tightly closed. Avoid dust formation. Use personal protective equipment. Avoid contact with the skin and the eyes. Provide appropriate exhaust ventilation at places where dust is formed. Emergency eye wash fountains and emergency showers should be available in the immediate vicinity.
Hygiene measures	:	Keep away from food, drink and animal feedingstuffs. Smoking, eating and drinking should be prohibited in the application area. Wash hands before breaks and at the end of workday. Take off all contaminated clothing immediately. Avoid contact with the skin and the eyes. Do not breathe dust.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Keep in an area equipped with alkali resistant flooring. Suitable materials for containers: polyethylene containers; Unsuitable materials for containers: Aluminium; Zinc
Advice on protection against fire and explosion	:	The product is not flammable. Gives off hydrogen by reaction with metals. Risk of explosion.
Fire-fighting class	:	non-combustible
Further information on storage conditions	:	Keep container tightly closed and dry. Product is hygroscopic. Keep in a well-ventilated place.
Advice on common storage	:	Keep away from food, drink and animal feedingstuffs.

7.3. Specific end use(s)

Specific use(s)	:	Identified use: See table in front of appendix for a complete overview of identified uses.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Component:	potassium hydroxide	CAS-No. 1310-58-3

Derived No Effect Level (DNEL)/Derived Minimal Effect Level (DMEL)

DNEL
Workers, Long-term - local effects, Inhalation : 1 mg/m3

DNEL
Consumers, Long-term - local effects, Inhalation : 1 mg/m3

Predicted No Effect Concentration (PNEC)

No PNEC value was derived. :

Other Occupational Exposure Limit Values

UK. EH40 Workplace Exposure Limits (WELs), Short Term Exposure Limit (STEL):
2 mg/m3

ELV (IE), Short Term Exposure Limit (STEL):
2 mg/m3

Component:	sodium hydroxid	CAS-No. 1310-73-2

Other Occupational Exposure Limit Values

UK. EH40 Workplace Exposure Limits (WELs), Short Term Exposure Limit (STEL):
2 mg/m3

ELV (IE), Short Term Exposure Limit (STEL):
2 mg/m3

8.2. Exposure controls

Personal protective equipment

Respiratory protection

Advice : Respirator must be worn if exposed to dust.
Recommended Filter type:
Particle filter:P2
Particle filter:P3

Hand protection

Advice	:	The glove material has to be impermeable and resistant to the product / the substance / the preparation. Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact). The following materials are suitable: natural rubber polychloroprene Nitrile rubber Polyvinylchloride fluorocarbon rubber Protective gloves should be replaced at first signs of wear.

Eye protection

Advice	:	Tightly fitting safety goggles

Skin and body protection

Advice	:	alkali resistant protective clothing

Environmental exposure controls

General advice	:	Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration. If the product contaminates rivers and lakes or drains inform respective authorities.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Form	:	flakes pellets
Colour	:	white
Odour	:	odourless
Odour Threshold	:	Not applicable
pH	:	14 (100 g/l ; 20 °C) (as aqueous solution) > 11.5 (1 %) (as aqueous solution)
Melting point/range	:	406 °C
Boiling point/boiling range	:	1,327 °C
Flash point	:	Not applicable

Evaporation rate	:	Not applicable
Flammability (solid, gas)	:	does not ignite
Upper explosion limit	:	Not applicable
Lower explosion limit	:	Not applicable
Vapour pressure	:	1.3 hPa (719 °C)
Relative vapour density	:	Not applicable
Density	:	0.8 g/cm3
Water solubility	:	1200 g/l (25 °C)
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	Not applicable
Thermal decomposition	:	no data available
Viscosity, dynamic	:	Not applicable
Explosive properties	:	EU legislation: Not explosive
Explosivity	:	Product is not explosive.
Oxidizing properties	:	not oxidising

9.2. Other information

Corrosion to metals	:	Corrosive to metals

SECTION 10: Stability and reactivity

10.1. Reactivity

Advice : No decomposition if used as directed.

10.2. Chemical stability

Advice : No decomposition if stored and applied as directed.

10.3. Possibility of hazardous reactions

Hazardous reactions : Exothermic reaction with strong acids. Reacts exothermically with water. Gives off hydrogen by reaction with base metals (zinc, aluminium). Risk of explosion.

10.4. Conditions to avoid

Conditions to avoid : Protect from humidity and keep away from water.Product is

hygroscopic.

Thermal decomposition : no data available

10.5. Incompatible materials

Materials to avoid : Water, Amines, Ammonia, Light metals, Strong acids, ammonium compounds, Halogenated compounds, Organic materials

10.6. Hazardous decomposition products

Hazardous decomposition products : No information available.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Data for the product	
Acute toxicity	
Oral	
Please find this information in the listing of the component/components below in this section.	
Inhalation	
no data available	
Dermal	
no data available	
Irritation	
Skin	
Result :	Please find this information in the listing of the component/components below in this section.
Eyes	
Result :	Please find this information in the listing of the component/components below in this section.
Sensitisation	
Result :	Please find this information in the listing of the component/components below in this section.

CMR effects

CMR Properties

Carcinogenicity	:	no data available
Mutagenicity	:	no data available
Teratogenicity	:	no data available
Reproductive toxicity	:	no data available

Specific Target Organ Toxicity

Single exposure

Remark	:	The substance or mixture is not classified as specific target organ toxicant, single exposure.

Repeated exposure

Remark	:	The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Other toxic properties

Aspiration hazard

No aspiration toxicity classification,

Further information

Other relevant toxicity information	:	If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.

Component: potassium hydroxide CAS-No. 1310-58-3

Acute toxicity

Oral

LD50	:	333 mg/kg (Rat, male) (OECD Test Guideline 425)

Irritation

Skin

Result	:	Very corrosive (reconstructed human epidermis (RhE)) (OECD Test Guideline 431) May cause burns with pain, redness and wounds.

Eyes		
Result	:	Very corrosive (Rabbit) (OECD Test Guideline 405)

Sensitisation		
Result	:	not sensitizing (Guinea pig)

SECTION 12: Ecological information

12.1. Toxicity

Component:	potassium hydroxide	CAS-No. 1310-58-3

Acute toxicity		
Fish		
LC50	:	80 mg/l (Gambusia affinis (Mosquito fish); 96 h) (static test)
LC50	:	165 mg/l (Poecilia reticulata; 24 h)
Bacteria		
EC50	:	22 mg/l (Photobacterium phosphoreum; 15 min)

Component:	sodium hydroxid	CAS-No. 1310-73-2

Acute toxicity		
Fish		
LC50	:	125 mg/l (Gambusia affinis; 96 h) (No guideline followed)
LC50	:	145 mg/l (Poecilia reticulata; 24 h) (No guideline followed)
Toxicity to daphnia and other aquatic invertebrates		
EC50	:	40.4 mg/l (Ceriodaphnia (water flea); 48 h) (No guideline followed)
Bacteria		
EC50	:	22 mg/l (Photobacterium phosphoreum; 15 min) (EPS 1/RM/24)

12.2. Persistence and degradability

Component:	potassium hydroxide	CAS-No. 1310-58-3
Persistence and degradability		

Persistence		
Result	:	no data available

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

12.3. Bioaccumulative potential

Component:	potassium hydroxide	CAS-No. 1310-58-3
Bioaccumulation		
Result	:	Bioaccumulation is not expected.

12.4. Mobility in soil

Component:	potassium hydroxide	CAS-No. 1310-58-3
Mobility		
Soil	:	Adsorption to solid soil phase is not expected.
Water	:	The product is water soluble.

12.5. Results of PBT and vPvB assessment

Component:	potassium hydroxide	CAS-No. 1310-58-3
Results of PBT and vPvB assessment		
Result	:	The PBT or vPvB criteria of Annex XIII to the REACH Regulation does not apply to inorganic substances.

12.6. Other adverse effects

Data for the product		
Additional ecological information		
Result	:	Harmful effects to aquatic organisms due to pH-shift. Neutralization is normally necessary before waste water is discharged into water treatment plants. Do not flush into surface water or sanitary sewer system.

Component:	potassium hydroxide	CAS-No. 1310-58-3

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product	:	Disposal together with normal waste is not allowed. Special disposal required according to local regulations. Do not let product enter drains. Contact waste disposal services.
Contaminated packaging	:	Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning. Packagings that cannot be cleaned are to be disposed of in the same manner as the product.
European Waste Catalogue Number	:	No waste code according to the European Waste Catalogue can be assigned for this product, as the intended use dictates the assignment. The waste code is established in consultation with the regional waste disposer.

SECTION 14: Transport information

14.1. UN number

1813

14.2. UN proper shipping name

ADR : POTASSIUM HYDROXIDE, SOLID
RID : POTASSIUM HYDROXIDE, SOLID
IMDG : POTASSIUM HYDROXIDE, SOLID

14.3. Transport hazard class(es)

ADR-Class	: 8
(Labels; Classification Code; Hazard identification No; Tunnel restriction code)	8; C6; 80; (E)
RID-Class	: 8
(Labels; Classification Code; Hazard identification No)	8; C6; 80
IMDG-Class	: 8
(Labels; EmS)	8; F-A, S-B

14.4. Packaging group

ADR : II
RID : II
IMDG : II

14.5. Environmental hazards

Environmentally hazardous according to ADR	: no
Environmentally hazardous according to RID	: no
Marine Pollutant according to IMDG-Code	: no

14.6. Special precautions for user

Not applicable.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

IMDG : Not applicable.

SECTION 15: Regulatory information

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

Component:	potassium hydroxide	CAS-No. 1310-58-3

WGK (DE) : WGK 1: slightly water endangering: 345; Classification source is Annex 2.

15.2. Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

H290	May be corrosive to metals.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.

Abbreviations and Acronyms

BCF	bioconcentration factor
BOD	biochemical oxygen demand
CAS	Chemical Abstracts Service
CLP	Classification, Labelling and Packaging
CMR	carcinogenic, mutagenic or toxic to reproduction
COD	chemical oxygen demand
DNEL	derived no-effect level
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
LC50	median lethal concentration
LOAEC	lowest observed adverse effect concentration

LOAEL	lowest observed adverse effect level
LOEL	lowest observed effect level
NLP	no-longer polymer
NOAEC	no observed adverse effect concentration
NOAEL	no observed adverse effect level
NOEC	no observed effect concentration
NOEL	no observed effect level
OECD	Organisation for Economic Cooperation and Development
OEL	occupational exposure limit
PBT	persistent, bioaccumulative and toxic
PNEC	predicted no-effect concentration
STOT	specific target organ toxicity
SVHC	substance of very high concern
UVCB	substance of unknown or variable composition, complex reaction products or biological materials
vPvB	very persistent and very bioaccumulative

Further information

Key literature references and sources for data	:	Supplier information and data from the "Database of registered substances" of the European Chemicals Agency (ECHA) were used to create this safety data sheet.
Methods used for product classification	:	The classification for human health, physical and chemical hazards and environmental hazards were derived from a combination of calculation methods and if available test data.
Hints for trainings	:	The workers have to be trained regularly on the safe handling of the products based on the information provided in the Safety Data Sheet and the local conditions of the workplace. National regulations for the training of workers in the handling of hazardous materials must be adhered to.
Other information	:	Restricted to professional users. Attention - Avoid exposure - obtain special instructions before use. The information provided in this Safety Data Sheet is correct to our knowledge at the date of its revision. The information given only describes the products with regard to safety arrangements and is not to be considered as a warranty or quality specification and does not constitute a legal relationship. The information contained in this Safety Data Sheet relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

|| Indicates updated section.

CAUSTIC POTASH SOLID (All grades)

No.	Short title	Main User Group (SU)	Sector of Use (SU)	Product Category (PC)	Process Category (PROC)	Environmental Release Category (ERC)	Article Category (AC)	Specified
1	Manufacture of substance - liquid	3	NA	NA	1, 2, 3, 4, 8a, 8b, 9	1	NA	ES50
2	Manufacture of substance - solid	3	NA	NA	1, 2, 3, 4, 8a, 8b, 9	1	NA	ES53
3	Use in batteries	21	NA	NA	NA	9a, 9b	3	ES62
4	Industrial use	3	NA	NA	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 14, 15, 19, 23, 24, 26	2, 4, 5, 6a, 6b, 7	NA	ES55
5	Professional use	22	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 10, 11, 13, 14, 15, 19, 23, 24, 26	8a, 8b, 8c, 8d, 8e, 8f	NA	ES58
6	Consumer use	21	NA	9a, 9b, 9c, 12, 20, 28, 35, 39	NA	8a, 8b, 8d, 8e	NA	ES60

1. Short title of Exposure Scenario 1: Manufacture of substance - liquid		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	
Environmental Release Categories	ERC1: Manufacture of substances	
2.1 Contributing scenario controlling environmental exposure for: ERC1		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage of substance in the product up to 75%.
Frequency and duration of use	Continuous exposure	200 days/year
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0 %
	Emission or Release Factor: Soil	0 %
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Water	Neutralization is normally necessary before waste water is discharged into water treatment plants.,Regular control of the pH value during introduction into open waters is required.,In general discharges should be carried out such that pH changes in receiving surface waters are minimised.,In general most aquatic organisms can tolerate pH values in the range of 6-9. This is also reflected in the description of standard OECD tests with aquatic organisms.,Risk management measures related to the environment aim to avoid discharging the substance into municipal wastewater or to surface water, in case such discharges are expected to cause significant pH changes.
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	municipal
	Flow rate of sewage treatment plant effluent	2,000 m3/d
	Sludge Treatment	PH adjustment
	The pH of wastewater released from manufacturing sites should be between 6 and 9.	
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Solutions with high pH-value must be neutralized before discharge.
	Disposal methods	Waste should be reused or discharged to the industrial wastewater and further neutralized if needed.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage of substance in the product up to 75%.
	Physical Form (at time of use)	liquid
Amount used	The amount used per worker varies from activity to activity	
Frequency and duration of use	Frequency of use	200 days/year
	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes use at not more than 20 °C above ambient temperature, unless stated differently.	
Technical conditions and measures to control dispersion from source towards the worker	Route of Exposure	General exposures
	Use closed systems or covering of open containers (e.g. screens) Transport over pipes, technical barrel filling/emptying of barrel with automatic systems (suction pumps etc.) Use of pliers, grip arms with long handles with manual use to avoid direct contact and exposure by splashes (no working over one's head)	
Organisational measures to prevent /limit releases, dispersion and exposure	Route of Exposure	General exposures
	Workers in the risky process/areas identified should be trained a) to avoid to work without respiratory protection and b) to understand the corrosive properties and, especially, the respiratory inhalation effects and c) to follow the safety procedures instructed by the employer. The employer has also to ascertain that the required PPE is available Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions. Ensure control measures are regularly inspected and maintained.	
Conditions and measures related to personal protection, hygiene and health evaluation	Route of Exposure	General exposures
	In case of dust or aerosol formation: use respiratory protection with approved filter (P2) Wear protective gloves. wear tightly fitting safety goggles, face–shield Wear suitable protective clothing, aprons, shield and suits Rubber or plastic boots	

3. Exposure estimation and reference to its source

Environment

The sludge application route is not relevant for the emission to agricultural soil, as no sorption of the substance to particulate matter will occur in STPs/WWTPs. If emitted to air as a water-based aerosol, the substance will be rapidly neutralised as a result of its reaction with CO2 (or acids). Significant emissions to air are not expected due to the very low vapour pressure of the substance. If emitted to soil, sorption to soil particles will be negligible. Significant emissions to the terrestrial environment are not expected. The sediment compartment is not considered, because it is not relevant for the substance.

Workers

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9: Used ECETOC TRA model.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9	worst-case, Drum/batch transfers	Inhalation worker exposure	0.33mg/m³	---

Indirect exposure of humans via the environment is not relevant in the case of this substance. Estimated dermal exposure value is regarded to be negligible.

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

If measured data are not available, the DU may make use of an appropriate scaling tool such as ECETOC TRA.
Important note: By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2).
Inhalation Exposure is estimated with Ecetoc TRA
For further information on the assessment method, see: http://www.ecetoc.org/tra
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Local exhaust ventilation is not required but good practice.
Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 2: Manufacture of substance - solid		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	
Environmental Release Categories	ERC1: Manufacture of substances	
2.1 Contributing scenario controlling environmental exposure for: ERC1		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 90%.
Frequency and duration of use	Continuous exposure	200 days/year
Other given operational conditions affecting environmental exposure	Solid, low dustiness, .	
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Water	Regular control of the pH value during introduction into open waters is required.,In general discharges should be carried out such that pH changes in receiving surface waters are minimised.,In general most aquatic organisms can tolerate pH values in the range of 6-9. This is also reflected in the description of standard OECD tests with aquatic organisms.,Risk management measures related to the environment aim to avoid discharging the substance into municipal wastewater or to surface water, in case such discharges are expected to cause significant pH changes.
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Sludge Treatment	PH adjustment
	The pH of wastewater released from manufacturing sites should be between 6 and 9.	
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Solutions with high pH-value must be neutralized before discharge.
	Disposal methods	Waste should be reused or discharged to the industrial wastewater and further neutralized if needed.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	Solid, low dustiness
Amount used	Amount per Day	21000 kg

	The amount used per worker varies from activity to activity	
Frequency and duration of use	Frequency of use	200 days/year
	Covers daily exposures up to 8 hours (unless stated differently).	
	Frequency of use	5 days/week
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes use at not more than 20 °C above ambient temperature, unless stated differently.	
Technical conditions and measures to control dispersion from source towards the worker	Route of Exposure	Inhalation exposure
	Exposure time	Continuous exposure
	Application Area	Industrial use
	Use closed systems or covering of open containers (e.g. screens) Transport over pipes, technical barrel filling/emptying of barrel with automatic systems (suction pumps etc.) Use of pliers, grip arms with long handles with manual use to avoid direct contact and exposure by splashes (no working over one's head) Handle substance within a closed system.	
Organisational measures to prevent /limit releases, dispersion and exposure	Route of Exposure	Inhalation exposure
	Exposure time	Continuous exposure
	Application Area	Industrial use
	Workers in the risky process/areas identified should be trained a) to avoid to work without respiratory protection and b) to understand the corrosive properties and, especially, the respiratory inhalation effects and c) to follow the safety procedures instructed by the employer. Replacing, where appropriated, manual processes by automated and/or closed processes. This would avoid irritating mists, sprayings and subsequent potential splashes. Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions. Ensure control measures are regularly inspected and maintained.	
Conditions and measures related to personal protection, hygiene and health evaluation	Route of Exposure	Inhalation exposure
	Exposure time	Continuous exposure
	Application Area	Industrial use
	In case of dust or aerosol formation: use respiratory protection with approved filter (P2) Wear protective gloves/ protective clothing/ eye protection/ face protection. If splashes are likely to occur: wear tightly fitting safety goggles, face–shield Wear suitable protective clothing, aprons, shield and suits Rubber or plastic boots	

3. Exposure estimation and reference to its source

Environment

The sludge application route is not relevant for the emission to agricultural soil, as no sorption of the substance to particulate matter will occur in STPs/WWTPs. Significant emissions to air are not expected due to the very low vapour pressure of the substance. Significant emissions to the terrestrial environment are not expected. If emitted to

air as a water-based aerosol, the substance will be rapidly neutralised as a result of its reaction with CO2 (or acids). The sediment compartment is not considered, because it is not relevant for the substance.

Workers

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9: Used ECETOC TRA model.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC2	---	Inhalation worker exposure	0.01mg/m3	---
PROC3, PROC9	---	Inhalation worker exposure	0.1mg/m3	---
PROC4, PROC8a, PROC8b	---	Inhalation worker exposure	0.5mg/m3	---

Indirect exposure of humans via the environment is not relevant in the case of this substance.

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

If measured data are not available, the DU may make use of an appropriate scaling tool such as ECETOC TRA.
Important note: By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2).
Inhalation Exposure is estimated with Ecetoc TRA
For further information on the assessment method, see: http://www.ecetoc.org/tra
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Local exhaust ventilation is not required but good practice.
General ventilation is good practice unless local exhaust ventilation
Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 3: Use in batteries		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Article categories	AC3: Electrical batteries and accumulators	
Environmental Release Categories	ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems	
2.1 Contributing scenario controlling environmental exposure for: ERC9a, ERC9b		
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	There are no specific risk management measures related to environment.	
Conditions and measures related to external treatment of waste for disposal	Disposal methods	Batteries should be recycled as much as possible (e.g. by returning to a public recycling facility)., Recovery of the substance from alkaline batteries includes emptying the electrolyte, collection and neutralization.
2.2 Contributing scenario controlling consumer exposure for: AC3		
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	For use in batteries, it is required to use completely sealed articles with a long service life maintenance.

3. Exposure estimation and reference to its source

Environment

There is no environmental release as batteries are sealed articles with a long service life.

Consumers

Consumer exposure to the substance in batteries is zero because batteries are sealed articles with a long service life maintenance.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

1. Short title of Exposure Scenario 4: Industrial use	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) 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) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available PROC23: Open processing and transfer operations with minerals/ metals at elevated temperature PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles PROC26: Handling of solid inorganic substances at ambient temperature
Environmental Release Categories	ERC2: Formulation of preparations ERC4: Industrial use of processing aids in processes and products, not becoming part of articles 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 ERC7: Industrial use of substances in closed systems

2.1 Contributing scenario controlling environmental exposure for: ERC2, ERC4, ERC5, ERC6a, ERC6b, ERC7

The environmental release categories mentioned above are assumed to be the most important ones but other environmental release categories could also be possible.

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Continuous exposure	200 days/year
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Water	Regular control of the pH value during introduction into open waters is required.,In general discharges should be carried out such that pH changes in receiving surface waters are minimised.,In general most aquatic organisms can tolerate pH values in the range of 6-9. This is also reflected in the description of standard OECD tests with aquatic organisms.,Neutralization is normally necessary before waste water is discharged into water treatment plants.,Risk management measures related to the environment aim to avoid discharging the substance into municipal wastewater or to surface water, in case such discharges are

		expected to cause significant pH changes.
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste are recycled into the process

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC16, PROC23, PROC24, PROC26

The process categories mentioned above are assumed to be the most important ones but other process categories could also be possible (PROC 1-27)

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	solid, liquid
Amount used	Percentage of global production	95 %
	The amount used per worker varies from activity to activity	
Frequency and duration of use	Frequency of use	200 days/year
	Covers daily exposures up to 8 hours (unless stated differently).	
Technical conditions and measures to control dispersion from source towards the worker	Use closed systems or covering of open containers (e.g. screens) Use of pliers, grip arms with long handles with manual use to avoid direct contact and exposure by splashes (no working over one's head) Transport over pipes, technical barrel filling/emptying of barrel with automatic systems (suction pumps etc.) Automate activity where possible. Transfer via enclosed lines. Ensure material transfers are under containment or extract ventilation. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. Avoid splashing. Containment of liquid volumes in sumps to collect/prevent accidental spillage	
Organisational measures to prevent /limit releases, dispersion and exposure	Workers in the risky process/areas identified should be trained a) to avoid to work without respiratory protection and b) to understand the corrosive properties and, especially, the respiratory inhalation effects and c) to follow the safety procedures instructed by the employer. The employer has also to ascertain that the required PPE is available Replacing, where appropriated, manual processes by automated and/or closed processes. This would avoid irritating mists, sprayings and subsequent potential splashes. Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions. Ensure control measures are regularly inspected and maintained. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related to personal protection, hygiene and health evaluation	In case of dust or aerosol formation: use respiratory protection with approved filter (P2) Wear chemically resistant gloves. Wear suitable protective clothing, aprons, shield and suits	

	If splashes are likely to occur: Wear rubber boots. Tightly fitting safety goggles Face-shield

3. Exposure estimation and reference to its source

Environment

Substance will disassociate upon contact with water, the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk.

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19, PROC23, PROC24, PROC26: Used ECETOC TRA model.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19, PROC23, PROC24, PROC26	liquid	Inhalation worker exposure	0.23mg/m³	---
PROC8b, PROC9, PROC10, PROC13, PROC15, PROC19, PROC24	solid	Inhalation worker exposure	0.5mg/m³	---
PROC23	solid	Inhalation worker exposure	0.4mg/m³	---
PROC1, PROC2, PROC3	solid	Inhalation worker exposure	0.01mg/m³	---
PROC4, PROC5, PROC11, PROC14	solid, with local exhaust ventilation	Inhalation worker exposure	0.2mg/m³	---
PROC15	solid	Inhalation worker exposure	0.1mg/m³	---

Dermal exposure to the substance was not quantified. Indirect exposure of humans via the environment is not relevant in the case of this substance.

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

If measured data are not available, the DU may make use of an appropriate scaling tool such as ECETOC TRA. Important note: By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2).

Inhalation Exposure is estimated with Ecetoc TRA
For further information on the assessment method, see: http://www.ecetoc.org/tra
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Local exhaust ventilation is not required but good practice.
General ventilation is good practice unless local exhaust ventilation
Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 5: Professional use	
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available PROC23: Open processing and transfer operations with minerals/ metals at elevated temperature PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles PROC26: Handling of solid inorganic substances at ambient temperature
Environmental Release Categories	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 ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC8e: Wide dispersive outdoor use of reactive substances in open systems ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f

The environmental release categories mentioned above are assumed to be the most important ones but other environmental release categories could also be possible.

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Continuous exposure	200 days/year
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Water	Neutralization is normally necessary before waste water is discharged into water treatment plants.,Regular control of the pH value during introduction into open waters is required.,In general discharges should be carried out such that pH changes in receiving surface waters are minimised.,In general most aquatic organisms can tolerate pH values in the range of 6-9. This is also reflected in the description of standard OECD tests with aquatic organisms.,Risk management measures related to the environment aim to avoid discharging the substance into municipal wastewater or to surface water, in case such discharges are expected to cause significant pH changes.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19, PROC23, PROC24, PROC26

The process categories mentioned above are assumed to be the most important ones but other process categories could also be possible (PROC 1-27)

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	solid, liquid
Amount used	Amount per Application	0.6 kg
Frequency and duration of use	Frequency of use	200 days/year
	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor use.	
Technical conditions and measures to control dispersion from source towards the worker	Use closed systems or covering of open containers (e.g. screens) Use of pliers, grip arms with long handles with manual use to avoid direct contact and exposure by splashes (no working over one's head) Transport over pipes, technical barrel filling/emptying of barrel with automatic systems (suction pumps etc.) Automate activity where possible. Transfer via enclosed lines. Ensure material transfers are under containment or extract ventilation. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. Avoid splashing. Containment of liquid volumes in sumps to collect/prevent accidental spillage	
Organisational measures to prevent /limit releases, dispersion and exposure	Workers in the risky process/areas identified should be trained a) to avoid to work without respiratory protection and b) to understand the corrosive properties and, especially, the respiratory inhalation effects and c) to follow the safety procedures instructed by the employer. The employer has also to ascertain that the required PPE is available Replacing, where appropriated, manual processes by automated and/or closed processes. This would avoid irritating mists, sprayings and subsequent potential splashes. Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions. Ensure control measures are regularly inspected and maintained. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related to personal protection, hygiene and health evaluation	In case of dust or aerosol formation: use respiratory protection with approved filter (P2) Wear suitable gloves tested to EN374. Wear eye glasses with side protection according to EN 166. Wear suitable protective clothing, aprons, shield and suits If splashes are likely to occur: Wear rubber boots. Tightly fitting safety goggles Face-shield	

3. Exposure estimation and reference to its source

Environment

Substance will disassociate upon contact with water, the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk.

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19, PROC23, PROC24, PROC26: Used ECETOC TRA model.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19, PROC23, PROC24, PROC26	liquid	Inhalation worker exposure	0.23mg/m³	---
PROC8b, PROC9, PROC10, PROC13, PROC15, PROC19, PROC24	solid	Inhalation worker exposure	0.5mg/m³	---
PROC23	solid	Inhalation worker exposure	0.4mg/m³	---
PROC1, PROC2, PROC3	solid	Inhalation worker exposure	0.01mg/m³	---
PROC4, PROC5, PROC11, PROC14	solid	Inhalation worker exposure	0.2mg/m³	---
PROC15	solid	Inhalation worker exposure	0.1mg/m³	---

Dermal exposure to the substance was not quantified.

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

If measured data are not available, the DU may make use of an appropriate scaling tool such as ECETOC TRA.
Important note: By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2).
Inhalation Exposure is estimated with Ecetoc TRA
For further information on the assessment method, see: http://www.ecetoc.org/tra
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that

risks are managed to at least equivalent levels.
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 6: Consumer use		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC9a: Coatings and paints, thinners, paint removers PC9b: Fillers, putties, plasters, modelling clay PC9c: Finger paints PC12: Fertilizers PC20: Products such as ph-regulators, flocculants, pre-cipitants, neutralization agents PC28: Perfumes, fragrances PC35: Washing and cleaning products (including solvent based products) PC39: Cosmetics, personal care products	
Environmental Release Categories	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 ERC8e: Wide dispersive outdoor use of reactive substances in open systems	
Activity	Note: this Exposure Scenario is only relevant for an appropriated use according to the quality grade of the substance delivered	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8d, ERC8e		
No exposure assessment presented for the environment		
Conditions and measures related to external treatment of waste for disposal	Disposal methods	This material and its container must be disposed of in a safe way (e.g. by returning to a public recycling facility)., If container is empty, trash as regular municipal waste.
2.2 Contributing scenario controlling consumer exposure for: PC9a, PC9b, PC9c, PC12, PC20, PC28, PC35, PC39		
No restriction (from PC0 to PC40)		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: > 2%
	Physical Form (at time of use)	Liquid mixture
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Exposure routes	Dermal exposure
	Consumer Measures	Keep out of the reach of children. Do not apply product into ventilator openings or slots. If splashes are likely to occur: wear tightly fitting safety goggles, face–shield Wear impervious chemical resistant protective gloves. In case of dust or aerosol formation: use respiratory protection with approved filter (P2) It is required to use resistant labelling-package to avoid its auto-damage and loss of the label integrity, under normal use and storage of the product. The lack of quality of the package provokes the physical loss of information on hazards and use instructions. It is required that improved use instructions, and product information should always be provided to the consumers. This clearly can efficiently reduce the risk of misuse. It is advisable to deliver only in very viscous preparations. It is advisable to delivery only in small amounts.

2.3 Contributing scenario controlling consumer exposure for: PC9a, PC9b, PC9c, PC12, PC20, PC28, PC35, PC39		
No restriction (from PC0 to PC40)No restriction (from PC0 to PC40)		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0,5% - 2%
	Physical Form (at time of use)	Liquid mixture
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Exposure routes	Dermal exposure
	Consumer Measures	Keep out of the reach of children. Do not apply product into ventilator openings or slots. It is required to use resistant labelling-package to avoid its auto-damage and loss of the label integrity, under normal use and storage of the product. The lack of quality of the package provokes the physical loss of information on hazards and use instructions. It is required that improved use instructions, and product information should always be provided to the consumers. This clearly can efficiently reduce the risk of misuse. It is advisable to deliver only in very viscous preparations. It is advisable to delivery only in small amounts.
2.4 Contributing scenario controlling consumer exposure for: PC9a, PC9b, PC9c, PC12, PC20, PC28, PC35, PC39		
No restriction (from PC0 to PC40)		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: < 0,5%
	Physical Form (at time of use)	Liquid mixture
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Exposure routes	Dermal exposure
	Safe use can be concluded because no health effects are observed.	
3. Exposure estimation and reference to its source		
Environment		
Consumer uses relate to already diluted products which will further be neutralized quickly in the sewer, well before reaching a WWTP or surface water.		
Consumers		
When existing controls and recommended RMMs are applied, safe use can be concluded. The substance will be rapidly neutralised as a result of its reaction with CO2 (or other acids). Since the substance concentration and amount handled are smaller compared to professional use and since the DNEL and RMMs are similar, safe use can be concluded for consumer use.		
4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the		

Exposure Scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.
Avoid inhalation of the product.