· SFC ·

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

CAUSTIC POTASH SOLID (ALL GRADES)

Version 7.0 Print Date 2024/12/09

Revision date / valid from 2024/12/09 **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) TSK-DRYI28
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
Remarks	:	Before referring to any Exposure Scenario attached to this Safety Data Sheet please check the grade of the product: the Exposure Scenarios presented are not related to all product grade

1.3. Details of the supplier of the safety data sheet

Company	:	Supplies for Candles & The Soap Kitchen Ltd Unit E Swinton Bridge Industrial Estate, White Lea Road,Swinton
	:	South Yorkshire
	:	S64 8BH, UK
E-mail address	:	Office Hours: Mon to Fri 08.00 to 16.00 customerservice@suppliesforcandles.co.uk

1.4. Emergency telephone number

TEL: 01709 257151

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation S.I. 2019/720 (GB CLP)

Regulation S.I. 2019/720 (GB CLP)			
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
Serious eye damage	Category 1	---	H318

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 9/10 for physicochemical information.

Potential environmental effects : See section 12 for environmental information.

2.2. Label elements

Labelling according to Regulation S.I. 2019/720 (GB CLP)

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.

Response :

P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with

	water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P390	Absorb spillage to prevent material damage.

Hazardous components which must be listed on the label:

- potassium hydroxide

2.3. Other hazards

The PBT or vPvB criteria of Annex XIII to the REACH Regulation does not apply to inorganic substances.

Ecological information: No information available about endocrine disruption properties for environment.

Toxicological information: No information available about endocrine disruption properties for human health.

Potential for exothermic hazard

SECTION 3: Composition/information on ingredients

3.1. Substances

Hazardous components	Amount [%]	Classification (Regulation S.I. 2019/720 (GB CLP))	
		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	<= 100	Met. Corr.1 Acute Tox.4 Oral Skin Corr.1A Eye Dam.1 specific concentration limit Skin Irrit. 2; H315 0.5 - < 2 % Eye Irrit. 2; H319 0.5 - < 2 % Skin Corr. 1A; H314 >= 5 % Skin Corr. 1B; H314 2 - < 5 % Acute toxicity estimate Acute oral toxicity: 333 mg/kg	H290 H302 H314 H318

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 soap and plenty of water. Call a physician immediately.
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. Call a physician immediately.
Protection of First Aid Responders	: First Aid responders should pay attention to self-protection and use the recommended protective clothing.

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

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

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	: High volume water jet

5.2. Special hazards arising from the substance or mixture

Specific hazards during firefighting	:	Incomplete combustion may form toxic pyrolysis products.
Hazardous combustion products	:	The formation of caustic fumes is possible.

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)
Specific extinguishing methods	:	Control smoke with water spray.
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	:	Keep away unprotected persons. Use personal protective equipment. Ensure adequate ventilation. Avoid contact with the skin and the eyes. Do not breathe vapours or spray mist.

6.2. Environmental precautions

Environmental precautions	:	Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration.

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. Ensure adequate ventilation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Use respirator with appropriate filter if vapours or aerosol are released. 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.

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.
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), as amended, Short Term Exposure Limit

(STEL):
2 mg/m3, (15 minutes)

ELV (IE), Short Term Exposure Limit (STEL):
2 mg/m3, (15 minutes)

8.2. Exposure controls

Appropriate engineering controls

Refer to protective measures listed in sections 7 and 8.

Personal protective equipment

Respiratory protection

Advice	:	In case of brief exposure or low pollution use breathing filter apparatus. In case of intensive or longer exposure use self-contained breathing apparatus. Recommended Filter type: Particle filter:P2 Particle filter:P3 Equipment should conform to EN 14387

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). Protective gloves should be replaced at first signs of wear.
Material	:	butyl-rubber
Break through time	:	>= 8 h
Glove thickness	:	0.5 mm
Material	:	Natural Rubber
Break through time	:	>= 8 h
Glove thickness	:	0.5 mm
Material	:	polychloroprene
Break through time	:	>= 8 h
Glove thickness	:	0.5 mm
Material	:	Nitrile rubber
Break through time	:	>= 8 h
Glove thickness	:	0.35 mm

Material	:	Fluorinated rubber
Break through time	:	>= 8 h
Glove thickness	:	0.4 mm

Material	:	Polyvinylchloride
Break through time	:	>= 8 h
Glove thickness	:	0.5 mm

Eye protection

Advice	:	Safety goggles Face-shield

Skin and body protection

Protecting Clothes	:	Impervious clothing Chemical resistant apron

Environmental exposure controls

General advice	:	Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Form	:	No data available
Physical state	:	solid
Colour	:	white
Odour	:	odourless
Odour Threshold	:	Not applicable
Melting point/ range	:	360 °C
Boiling point/boiling range	:	1,327 °C
Flammability (solid, gas)	:	does not ignite Remarks: non-combustible
Upper explosion limit / Upper flammability limit	:	Not applicable
Lower explosion limit / Lower flammability limit	:	Not applicable
Flash point	:	Not applicable
Auto-ignition temperature	:	Not applicable

Decomposition temperature	:	No data available
Self-Accelerating decomposition temperature (SADT)	:	No data available
pH	:	14 (20 °C) Concentration: 100 g/l (as aqueous solution) > 11.5 Concentration: 1 % (as aqueous solution)
Viscosity		
Viscosity, dynamic	:	Not applicable
Viscosity, kinematic	:	No data available
Flow time	:	No data available
Solubility(ies)		
Water solubility	:	1200 g/l (25 °C)
Solubility in other solvents	:	No data available
Dissolution Rate	:	No data available
Partition coefficient: n-octanol/water	:	Not applicable
Dispersion Stability	:	No data available
Vapour pressure	:	Not applicable
Relative density	:	No data available
Density	:	2.04 g/cm3
Bulk density	:	No data available
Relative vapour density	:	Not applicable

Particle characteristics
No data available

9.2 Other information

Explosives	:	Product is not explosive.
Oxidizing properties	:	not oxidising
Flammability (liquids)	:	Not applicable Remarks: non-combustible

Metal corrosion rate	:	Corrosive to metals
Evaporation rate	:	Not applicable

SECTION 10: Stability and reactivity

10.1. Reactivity

Advice : No decomposition if stored and applied as directed. Corrosive in contact with metals

10.2. Chemical stability

Advice : Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions : Exothermic reaction with strong bases. 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 : Sodium oxides, Hydrogen

SECTION 11: Toxicological information

11.1. Information on the hazard classes within the meaning of Regulation (EC) No. 1272/2008

Component:	potassium hydroxide	CAS-No. 1310-58-3
Acute toxicity		
Oral		
LD50	:	333 mg/kg (Rat, male) (OECD Test Guideline 425)
Inhalation		

Inhalation may cause pain in respiratory system, sneezing, coughing and difficulty in breathing. Risk for pulmonary edema by high concentration.

Dermal

No data available

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)

CMR effects

CMR Properties

Carcinogenicity : No data available
Mutagenicity : In vitro tests did not show mutagenic effects
Teratogenicity : No data available
Reproductive toxicity : No data available

Genotoxicity in vitro

Result : negative (Mutagenicity (Salmonella typhimurium - reverse mutation assay); with and without metabolic activation)

Specific Target Organ Toxicity

Single exposure

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

Repeated exposure

Remarks : The substance or mixture is not classified as specific target organ

toxicant, repeated exposure.

Other toxic properties
Aspiration hazard

Not applicable,

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.

11.2. Information on other hazards

Data for the product
Endocrine disrupting properties

Assessment : No information available about endocrine disruption properties for human health.

Component:	potassium hydroxide	CAS-No. 1310-58-3
Endocrine disrupting properties		

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

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)

Toxicity to daphnia and other aquatic invertebrates

: No data available

algae

: No data available

Bacteria

EC50 : 22 mg/l (Photobacterium phosphoreum; 15 min)

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 the biological degradability 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

Data for the product		
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.

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. Endocrine disrupting properties

Data for the product		
Endocrine disrupting potential	:	No information available about endocrine disruption properties for environment.

Component:	potassium hydroxide	CAS-No. 1310-58-3
Endocrine disrupting potential	:	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7. Other adverse effects

Data for the product		
Additional ecological information		
Result	:	Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration. Harmful effects to aquatic organisms due to pH-shift.

Component:	potassium hydroxide	CAS-No. 1310-58-3
Additional ecological information		
Result	:	Do not flush into surface water or sanitary sewer system. Harmful effects to aquatic organisms due to pH-shift.

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. This

product shall be disposed of or recovered in compliance with Directive 2008/98/EC on waste as lastly amended.

Contaminated packaging : Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning. If recycling is not practicable, dispose of in compliance with local regulations.

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 or ID 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 Number; Tunnel restriction code)	8; C6; 80; (E)
RID-Class	: 8
(Labels; Classification Code; Hazard Identification Number)	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 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

Data for the product		
Other regulations	:	SDS updated according to Regulation (EU) 2020/878

Component:	**potassium hydroxide**	**CAS-No. 1310-58-3**
Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	:	; The substance/mixture does not fall under this legislation.
EU. REACH, Annex XVII, Marketing and Use Restrictions (Regulation 1907/2006/EC)	:	Point Nos.: , 75; Listed
EU. Regulation No. 1223/2009 on cosmetic products, Annex III: List of Restricted Substances in Cosmetic Products	:	Maximum concentration in ready for use preparation: 4.5 %; Professional use products for straightening hair; See the text of the regulation for applicable exceptions or provisions. Maximum concentration in ready for use preparation: 2 %; General use products for straightening hair; See the text of the regulation for applicable exceptions or provisions. Maximum concentration in ready for use preparation: 5 %; Nail cuticle products; See the text of the regulation for applicable exceptions or provisions. ; Cosmetic products other than depilatories; See the text of the regulation for applicable exceptions or provisions. ; Depilatories; See the text of the regulation for applicable exceptions or provisions.

EU. Directive 2012/18/EU (SEVESO III) on major accident hazards involving dangerous substances, Annex I	:	; The substance/mixture does not fall under this legislation.
Germany. List of Substances That Are Not Water-Endangering, AwSV of 21 April 2017, UBA, Banz AT, as amended	:	WGK 1: slightly hazardous to water: 345

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.
H318	Causes serious eye damage.

Full text of the Notes referred to under section 3.

Abbreviations and Acronyms

AU AIICL	Australia. Industrial Chemicals Act (AIIC) List
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
DSL	Canada. Environmental Protection Act, Domestic Substances List
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
ENCS (JP)	Japan. Kashin-Hou Law List
GHS	Globally Harmonized System of Classification and Labelling of

	Chemicals
IECSC	China. Inventory of Existing Chemical Substances
INSQ	Mexico. National Inventory of Chemical Substances
ISHL (JP)	Japan. Inventory of Industrial Safety & Health
KECI (KR)	Korea. Existing Chemicals Inventory
LC50	median lethal concentration
LOAEC	lowest observed adverse effect concentration
LOAEL	lowest observed adverse effect level
LOEL	lowest observed effect level
NDSL	Canada. Environmental Protection Act. Non-Domestic Substances List
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
NZIOC	New Zealand. Inventory of Chemicals
OECD	Organisation for Economic Cooperation and Development
OEL	occupational exposure limit
ONT INV	Canada. Ontario Inventory List
PBT	persistent, bioaccumulative and toxic
PHARM (JP)	Japan. Pharmacopoeia Listing
PICCS (PH)	Philippines. Inventory of Chemicals and Chemical Substances
PNEC	predicted no-effect concentration
REACH Auth. No.:	REACH Authorisation Number
REACH AuthAppC. No.	REACH Authorisation Application Consultation Number
UK REACH Auth. No.:	UK REACH Authorisation Number
UK REACH AuthAppC. No.	UK REACH Authorisation Application Consultation Number
UK REACH-Reg.No	UK REACH Registration Number
STOT	specific target organ toxicity
SVHC	substance of very high concern
TCSI	Taiwan. Existing Chemicals Inventory
TH INV	Thailand. Existing Chemicals Inventory from FDA
TSCA	US. Toxic Substances Control Act
UVCB	substance of unknown or variable composition, complex reaction products or biological materials
VN INVL	Vietnam. National Chemical Inventory
vPvB	very persistent and very bioaccumulative

Further information

Key literature references : Supplier information and data from the "Database of registered

and sources for data		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	:	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	REACH Auth. No.:/ REACH AuthAppC. No.	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	NA NA	3	NA	NA	1, 2, 3, 8a, 8b, 9	1	NA	ES50
2	Manufacture of substance - solid	NA NA	3	NA	NA	1, 2, 3, 4, 8a, 8b, 9	1	NA	ES53
3	Other consumer uses	NA NA	21	NA	20	NA	9a, 9b	3	ES62
4	Industrial use	NA NA	3	NA	NA	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 12, 13, 14, 15, 19, 20	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7	NA	ES55
5	Professional use	NA NA	22	NA	NA	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 11, 13, 14, 15, 19, 20	8a, 8b, 8c, 8d, 8e, 8f, 9a, 9b, 10a, 10b, 11a, 11b	NA	ES58
6	Consumer use	NA NA	21	NA	9a, 35	NA	8a, 8b, 8d, 8e, 9a	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: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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 the percentage of the substance in the product up to 100 % (unless stated differently).
	Concentration of the Substance in Mixture/Article	The substance is used up in the process, Concentration of substance in product : 50%
	Concentration of the Substance in Mixture/Article	Product may be diluted before use, Concentration of substance in product: > 10%, Covers percentage of substance in the product up to 75%.
	Physical Form (at time of use)	liquid
Frequency and duration of use	Continuous exposure	200 days/year, Continuous release, Batch process
	Continuous exposure	8 hours/day, Continuous release, Batch process
Technical conditions and measures at process level 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., Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	WWTP/local STP (e.g. biological treatment)
	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	Waste treatment	Solutions with high pH-value must be neutralized

disposal		before discharge.
	Disposal methods	Waste should be reused or discharged to the industrial wastewater and further neutralized if needed.
	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC9		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
	Concentration of the Substance in Mixture/Article	The substance is used up in the process, Concentration of substance in product : 50%
	Concentration of the Substance in Mixture/Article	Product may be diluted before use, Concentration of substance in product: > 10%, Covers percentage of substance in the product up to 75%.
	Physical Form (at time of use)	liquid
	Assumes use at not more than 20°C above ambient temperature.	
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	
	Frequency of use	<= 8 h/day
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure Use in batch and other process (synthesis) where opportunity for exposure arises	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) Use in closed process, no likelihood of exposure Automate activity where possible. Local exhaust ventilation is not required but is recommended where exposure arises Avoid splashing. 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. Prevent further leakage or spillage if safe to do so.
Organisational measures to prevent /limit releases, dispersion and 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 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. The work place and work methods shall be organized in such a way that direct contact with the product is prevented or minimized. 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	General exposures	Avoid contact with skin. Workers wear protective clothing (face/eye protection, helmet, anti-acid gloves, boots and protective coverall) In case of dust or aerosol formation: use respiratory protection with approved filter (P2) material: nitrile-rubber, fluorinated rubber, material thickness: 0.35-0.4 mm, breakthrough time: > 480 min Chemical resistant goggles must be worn. If splashes are likely to occur: wear tightly fitting safety goggles, face–shield Rubber or plastic boots Avoid direct eye contact with product, also via contamination on hands.
	Chemically resistant gloves tested to EN374. (Efficiency: 95 %)	
	Wear alkali-resistant protective clothing. (Efficiency: 95 %)	

3. Exposure estimation and reference to its source

Environment

ERC1: ECETOC TRA

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC1	liquid	Water	All routes	---	< 1
ERC1	liquid	Indirect exposure to humans via the environment	man via environment	---	< 1

This substance is corrosive. The environmental exposure assessment is only relevant for the aquatic environment, when applicable including STPs/WWTP's, as emissions in the industrial stages mainly apply to (waste) water. The aquatic effect and risk assessment only deals with the effect on organisms/ecosystems due to possible pH changes related to OH- discharges, as the toxicity of the metal ion is expected to be insignificant compared to the (potential) pH effect. 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. Qualitative risk characterisation. The environmental release is considered negligible Qualitative approach to the determination of safe use. Any pH effect of local releases will be neutralized by the buffer capacity of the receiving water and therefore no pH impacts at the regional scale related to KOH releases should be expected.

Workers

Relevant for all PROCs: ECETOC TRA worker v3

PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC9, Relevant for all PROCs: Other measured data

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
---	---	---	---	---
Relevant for all PROCs	worst-case	Worker - inhalation, local, acute	0.33mg/m³	< 1
Relevant for all PROCs	worst-case	Worker - inhalative, long-term - local	0.33mg/m³	< 1
Relevant for all PROCs	General exposures	Inhalation worker exposure	0.14mg/m³	---
Relevant for all PROCs, PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC9	All relevant routes of exposure	Worker - inhalative, long-term - local	0.56mg/m³	0.56
PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC9	All relevant routes of exposure	Worker - dermal, long-term - local	---	< 1
Relevant for all PROCs	---	Inhalation worker exposure	0.17mg/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. This substance is corrosive. The substance is not expected to be systemically available in the body under normal handling and use conditions. The environmental release is considered negligible Qualitative approach to the determination of safe use. Qualitative approach used to conclude safe use. Significant emissions to air are not expected due to the very low vapour pressure of the substance. Safe use for exposures >4 h. Also without the use of LEV or personal breathing protection.

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

Health

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).

Worker exposure was modeled following worst case scenario,any deviation should be checked using ECETOC TRA tool

If measured data are not available, the DU may make use of an appropriate scaling tool such as ECETOC TRA. For further information on the assessment method, see: https://www.ecetoc.org/

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

According to the NaOH EU RAR (2007), dermal exposure to >2% KOH formulations is not quantitatively assessed.

Environment

If the local conditions deviate significantly from the values in the EU RAR, then further site specific evaluation is required

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.

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Measured data could be used to confirm exposure levels are within the boundaries of the exposure scenario

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

For further information on the assessment method, see: https://www.ecetoc.org/

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.
Replacing, where appropriated, manual processes by automated and/or closed processes. This would avoid irritating mists, sprayings and subsequent potential splashes.
General ventilation is good practice unless local exhaust ventilation
Training staff on good practice

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: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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%., Commercial solid product contains in general 10% of water.
	Physical Form (at time of use)	Solid, low dustiness
	At ambient temperature the chemical is a solid and the vapour pressure is therefore very low	
Frequency and duration of use	Continuous exposure	200 days/year, The maximum duration considered for this exposure scenario is a full working shift: 8 hrs/day (40 hours/week).
Technical conditions and measures at process level 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., Neutralization is normally necessary before waste water is discharged into water treatment plants., Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system. (waste:, Liquid preparations ERC1)
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	WWTP/local STP (e.g. biological treatment)
	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.
	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	
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 %.
	Concentration of the Substance in Mixture/Article	The substance is used up in the process, Concentration of substance in product : 50%
	Concentration of the Substance in Mixture/Article	Product may be diluted before use, Concentration of substance in product: > 10%, Covers percentage of substance in the product up to 75%.
	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	
	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.	
Technical conditions and measures to control dispersion from source towards the worker	Use in closed, continuous process with occasional controlled exposure Use in batch and other process (synthesis) where opportunity for exposure arises	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) Use in closed process, no likelihood of exposure Automate activity where possible. Local exhaust ventilation is not required but is recommended where exposure arises Avoid splashing. 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.
Organisational measures to prevent /limit releases, dispersion and 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 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. The work place and work methods shall be organized in such a way that direct contact with the product is prevented or minimized. 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	General exposures	Avoid contact with skin. Workers wear protective clothing (face/eye protection, helmet, anti-acid gloves, boots and protective coverall) In case of dust or aerosol formation: use respiratory protection with approved filter (P2) material: nitrile-rubber, fluorinated rubber, material thickness: 0.35-0.4 mm, breakthrough time: > 480 min Chemical resistant goggles must be worn. If splashes are likely to occur: wear tightly fitting safety goggles, face–shield Rubber or plastic boots Avoid direct eye contact with product, also via contamination on hands.

3. Exposure estimation and reference to its source

Environment

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. This substance is corrosive. The environmental exposure assessment is only relevant for the aquatic environment, when applicable including STPs/WWTP's, as emissions in the industrial stages mainly apply to (waste) water. The aquatic effect and risk assessment only deals with the effect on organisms/ecosystems due to possible pH changes related to OH- discharges, as the toxicity of the metal ion is expected to be insignificant compared to the (potential) pH effect. Qualitative risk characterisation. 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.

Workers

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC9, Relevant for all PROCs: ECETOC TRA

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	< 1
PROC4, PROC8a	---	Inhalation worker exposure	0.5mg/m3	< 1
Relevant for all	---	Worker inhalation, acute	0.2mg/m3	0.2

PROCs		and long-term - local and systemic		

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

Health
Worker exposure was modeled following worst case scenario,any deviation should be checked using ECETOC TRA tool
If measured data are not available, the DU may make use of an appropriate scaling tool such as ECETOC TRA.
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
Inhalation Exposure is estimated with Ecetoc TRA
Environment
If the local conditions deviate significantly from the values in the EU RAR, then further site specific evaluation is required
Measured data could be used to confirm exposure levels are within the boundaries of the exposure scenario
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.
For further information on the assessment method, see: https://www.ecetoc.org/
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: https://www.ecetoc.org/
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: Other consumer uses		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC20: Products such as pH-regulators, flocculants, precipitants, neutralization agents	
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		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 0,5%
	Physical Form (at time of use)	liquid
Technical conditions and measures at process level 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: PC20, AC3		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 0,5%
	Physical Form (at time of use)	liquid
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. Keep away from children. 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.
	Exposure to the substance is considered to occur only accidentally if the required protection is strictly adhered to	

3. Exposure estimation and reference to its source

Environment

ERC9a: ECETOC TRA

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC9a	---	---	---	---	< 1
ERC9a	---	Indirect exposure	---	---	< 1

		to humans via the environment			

There is no environmental release as batteries are sealed articles with a long service life. Exposure is considered negligible. The environmental exposure has been evaluated on the basis of the EU RAR. no exposure expected.

Consumers

PC20: ECETOC TRA

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC20	---	Consumer - inhalative, long-term - local	---	< 1
PC20	---	Consumer - dermal, long-term - local	---	< 1

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

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

Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
A quantitative risk assessment is not required for human health.
Environment
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.
If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.
Measured data could be used to confirm exposure levels are within the boundaries of the exposure scenario
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Additional good practice advice beyond the REACH Chemical Safety Assessment

General good hygiene and housekeeping.

CAUSTIC POTASH SOLID (ALL GRADES)

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: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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 PROC12: Use of blowing agents in manufacture of foam 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 PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems	
Environmental Release Categories	ERC1: Manufacture of substances ERC2: Formulation of preparations ERC3: Formulation in materials 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 ERC6c: Industrial use of monomers for manufacture of thermoplastics ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers ERC7: Industrial use of substances in closed systems	
2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid, Solid, low dustiness
Frequency and duration of use	Continuous exposure	200 days/year, Continuous release
	Continuous exposure	8 hours/day, Continuous release
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and	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

releases to soil Organizational measures to prevent/limit release from the site		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., Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system., Drift should be minimized
	Comply with all local legislative requirements on permitted local emission limits.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	WWTP/local STP (e.g. biological treatment)
	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., 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.
	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15, PROC19, PROC20

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 the percentage of the substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	solid, liquid
Amount used	The amount used per worker varies from activity to activity	
Frequency and duration of use	Covers daily exposures up to 8 hours, Continuous use/release	
	Frequency of use	200 days/year(Industrial use)
	Covers daily exposures up to 8 hours(Industrial use)	
	Frequency of use	< 15 minutes/day(Liquid preparations)
Other operational conditions affecting workers exposure	Indoor or outdoor use	
Technical conditions and measures to control dispersion from source towards the worker	General exposures	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. Avoid splashing. Containment of liquid volumes in sumps to collect/prevent accidental spillage Provide local exhaust ventilation (LEV). or 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.
Organisational measures to prevent /limit releases, dispersion and 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 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 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	General exposures	In case of dust or aerosol formation: use respiratory protection with approved filter (P2) Use eye protection according to EN 166. Wear chemically resistant gloves. Wear suitable gloves tested to EN374. material: butyl-rubber, PVC, polychloroprene with natural latex liner, material thickness: 0.5 mm, breakthrough time: >480 min material: nitrile-rubber, fluorinated rubber, material thickness: 0.35-0.4 mm, breakthrough time: > 480 min If splashes are likely to occur: Wear suitable protective clothing, aprons, shield and suits Wear rubber boots. Tightly fitting safety goggles

		Face-shield
	General exposures	Dermal Protection Wear suitable gloves tested to EN374. Wear alkali-resistant protective clothing. (Efficiency: 95 %)

Worker can be exposed to corrosive concentrations

3. Exposure estimation and reference to its source

Environment

Relevant for all ERCs: ECETOC TRA model v2

ERC1, ERC2, ERC4, ERC6a, ERC6b: ECETOC TRA

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
Relevant for all ERCs	---	---	---	---	< 1
ERC1, ERC2, ERC4, ERC6a, ERC6b	liquid	Indirect exposure to humans via the environment	---	---	< 1

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. Bioaccumulation will not occur. 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. This substance is corrosive. The environmental exposure assessment is only relevant for the aquatic environment, when applicable including STPs/WWTP's, as emissions in the industrial stages mainly apply to (waste) water. The aquatic effect and risk assessment only deals with the effect on organisms/ecosystems due to possible pH changes related to OH- discharges, as the toxicity of the metal ion is expected to be insignificant compared to the (potential) pH effect. Qualitative risk characterisation. 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.

Workers

PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC15, PROC19: ECETOC TRA worker v3

PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC15, PROC19: MEASE 1.02

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19: Inhalation exposure

PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19, Relevant for all PROCs: ECETOC TRA

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

Health

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).

Worker exposure was modeled following worst case scenario,any deviation should be checked using ECETOC TRA tool

If measured data are not available, the DU may make use of an appropriate scaling tool such as ECETOC TRA.

For further information on the assessment method, see: https://www.ecetoc.org/

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

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
If the local conditions deviate significantly from the values in the EU RAR, then further site specific evaluation is required
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.
If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.
Measured data could be used to confirm exposure levels are within the boundaries of the exposure scenario
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.
For further information on the assessment method, see: https://www.ecetoc.org/
Guidance is based on assumed operating conditions which may not be applicable to all sites. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
DU's can calculate their own Risk Ratios and/or PEC/PNEC ratios using DNEL's and PNEC's listed in the SDS, as well as the actual quantities of the substance, daily usage pattern, substance concentration, etc.
Does not present any particular risk for environment.

Additional good practice advice beyond the REACH Chemical Safety Assessment

In line with the requirements of good agricultural practice, agricultural soil should be assessed prior to application of the substance and the application rate should be adjusted according to the results of the assessment and crop requirements.

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.
To improve air quality and avoid potential respiratory track irritation in working areas.

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: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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 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 PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems	
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 ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release ERC10b: Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing) ERC11a: Wide dispersive indoor use of long-life articles and materials with low release ERC11b: Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing)	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10a, ERC10b, ERC11a, ERC11b		
The environmental release categories mentioned above are assumed to be the most important ones but other environmental release categories could also be possible.		
Activity	Potassium hydroxide can be used in many different chemical product categories (PC): Coatings and Paints, Fillers, Putties, Thinners (PC 9), Fertilizers (PC12), Intermediate (PC19), Products such as pH-regulators, flocculants, precipitants, neutralization agents (PC20), Washing and Cleaning Products (PC35), Water treatment chemicals (PC37), Cosmetics (PC39), Extraction agents (PC40). However, it could potentially also be used in other chemical product categories (PC 0 – 40).	
Product characteristics	Concentration of the	Covers percentage substance in the product up to

	Substance in Mixture/Article	100 %.
	Concentration of the Substance in Mixture/Article	The substance is used up in the process, Concentration of substance in product : 50%
	Concentration of the Substance in Mixture/Article	Product may be diluted before use, Concentration of substance in product: > 10%, Covers percentage of substance in the product up to 75%.
	Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 5%., Covers percentage substance in the product up to 90%.
	Physical Form (at time of use)	Solid, low dustiness
	Very hygroscopic	
	Physical Form (at time of use)	liquid
Frequency and duration of use	Continuous exposure	200 days/year, Continuous process
	Continuous exposure	8 hours/day, Continuous process
Technical conditions and measures at process level 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., Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system., Drift should be minimized
	Comply with all local legislative requirements on permitted local emission limits.	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	WWTP/local STP (e.g. biological treatment)
	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., 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.
	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19, PROC20

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	Solid, low dustiness
	Very hygroscopic	
	Physical Form (at time of use)	or in solution
Frequency and duration of use	Exposure time	10 - 15 min(Floor stripper, professional use)
	Exposure duration per day	10 min(Oven cleaners, professional use)
	Frequency of use	1 Times per day(Oven cleaners, professional use)
	Exposure duration per day	1 - 15 min(drain cleaner, closet cleaner, professional use)
	Frequency of use	1 Times per day(drain cleaner, closet cleaner, professional use)
	Frequency of use	< 15 minutes/day(hand-mixing with intimate contact and only ppe available PROC19)
	Frequency of use	< 15 minutes/day(Spraying, professional use PROC11)
Human factors not influenced by risk management	Exposed skin area	Hands and forearms. 1 g/sec (Oven cleaners, Spraying)
	Assumes activities are at ambient temperature.(Oven cleaners, Spraying)	
Other operational conditions affecting workers exposure	Indoor or outdoor use	
Technical conditions and measures to control dispersion from source towards the worker	General exposures	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. Avoid splashing. Containment of liquid volumes in sumps to collect/prevent accidental spillage Provide local exhaust ventilation (LEV). or 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.
Organisational measures to prevent /limit releases, dispersion and 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 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 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	General exposures	In case of dust or aerosol formation: use respiratory protection with approved filter (P2) Use eye protection according to EN 166. Wear chemically resistant gloves. Wear suitable gloves tested to EN374. material: butyl-rubber, PVC, polychloroprene with natural latex liner, material thickness: 0.5 mm, breakthrough time: >480 min material: nitrile-rubber, fluorinated rubber, material thickness: 0.35-0.4 mm, breakthrough time: > 480 min If splashes are likely to occur: Wear suitable protective clothing, aprons, shield and suits Wear rubber boots. Tightly fitting safety goggles Face-shield
	General exposures	Dermal Protection Wear suitable gloves tested to EN374. Wear alkali-resistant protective clothing. (Efficiency: 95 %)
Worker can be exposed to corrosive concentrations		

3. Exposure estimation and reference to its source

Environment

ERC2, ERC8a, ERC8b: ECETOC TRA

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC2, ERC8a, ERC8b	---	Workers exposure	---	---	< 1
ERC2, ERC8a, ERC8b	---	Indirect exposure to humans via the environment	---	---	< 1

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. As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Workers

PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19: ECETOC TRA worker v3

PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19: Inhalation exposure

PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19, Relevant for all PROCs: ECETOC TRA

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

Health
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).
Worker exposure was modeled following worst case scenario,any deviation should be checked using ECETOC TRA tool
If measured data are not available, the DU may make use of an appropriate scaling tool such as ECETOC TRA.
For further information on the assessment method, see: https://www.ecetoc.org/
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
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
If measured data are not available, the DU may make use of an appropriate scaling tool such as MEASE (www.ebrc.de/mease.html) to estimate the associated exposure.
Environment
If the local conditions deviate significantly from the values in the EU RAR, then further site specific evaluation is required
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.
If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.
Measured data could be used to confirm exposure levels are within the boundaries of the exposure scenario
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.
For further information on the assessment method, see: https://www.ecetoc.org/
Guidance is based on assumed operating conditions which may not be applicable to all sites. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
DU's can calculate their own Risk Ratios and/or PEC/PNEC ratios using DNEL's and PNEC's listed in the SDS, as well as the actual quantities of the substance, daily usage pattern, substance concentration, etc.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.
High viscosity adjustment with aids (good to avoid splashes practice).
Delivery only as barrel commodity and/or in tank car (good practice).

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 PC35: Washing and cleaning 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 ERC9a: Wide dispersive indoor use of substances in closed 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, ERC9a		
No exposure assessment presented for the environment		
Activity	Potassium hydroxide can be used in many different chemical product categories (PC): Coatings and Paints, Fillers, Putties, Thinners (PC 9), Fertilizers (PC12), Intermediate (PC19), Products such as pH-regulators, flocculants, precipitants, neutralization agents (PC20), Washing and Cleaning Products (PC35), Water treatment chemicals (PC37), Cosmetics (PC39), Extraction agents (PC40). However, it could potentially also be used in other chemical product categories (PC 0 – 40).	
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	Solid, low dustiness
	Physical Form (at time of use)	liquid
Frequency and duration of use	Continuous exposure	Continuous release
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	WWTP/local STP (e.g. biological treatment)
	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	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%, liquid
	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %., solid
	Physical Form (at time of use)	Liquid mixture
	Physical Form (at time of use)	Solid, low dustiness, Powder in liquid

Frequency and duration of use	Continuous use/release	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Exposure time	Continuous 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. It is required to use completely sealed articles with a long service life maintenance.
	Exposure routes	Inhalation exposure
	Consumer Measures	In case of dust or aerosol formation: use respiratory protection with approved filter (P2)
	Exposure routes	Dermal exposure
	Consumer Measures	Wear impervious chemical resistant protective gloves.
	Consumer Measures	If splashes are likely to occur: wear tightly fitting safety goggles, face–shield

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: 0,25 - 2 %, liquid
	Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently)., solid
	Physical Form (at time of use)	Liquid mixture
	Physical Form (at time of use)	Solid, low dustiness, powder to liquid
Amount used	The amount used per worker varies from activity to activity	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Exposure time	Continuous exposure
	Consumer Measures	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. Keep locked up and out of the reach of children.
	Exposure routes	Dermal exposure
	Consumer Measures	Wear suitable gloves. If splashes are likely to occur: wear tightly fitting safety goggles, face–shield
	Exposure routes	Inhalation exposure
	Consumer Measures	In case of dust or aerosol formation: use respiratory protection with approved filter (P2)

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%, liquid
	Physical Form (at time of use)	liquid
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.

3. Exposure estimation and reference to its source

Environment

Relevant for all ERCs: ECETOC TRA model v2

ERC8b, ERC9a: ECETOC TRA

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
Relevant for all	liquid	---	---	---	< 1

ERCs					
ERC8b, ERC9a	liquid	Indirect exposure to humans via the environment	---	---	< 1

Consumer uses relate to already diluted products which will further be neutralized quickly in the sewer, well before reaching a WWTP or surface water. 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. Significant emissions to air are not expected due to the very low vapour pressure of the substance. Qualitative risk characterisation.

Consumers

PC9a, PC35: Other measured data

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. The consumer Exposure through inhalation is not further quantitatively assessed. Qualitative approach used to conclude safe use. no exposure expected.

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

Health
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
Measured data could be used to confirm exposure levels are within the boundaries of the exposure scenario
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.
The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL (given that the processes and activities in question are covered by the PROCs listed above) as given below
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).
Safe use is demonstrated, if the calculated exposure level is below the relevant DNEL (RCR <1).
ECETOC-TRA model was used for risk assessment, but EUSES model may also be used for environmental risk.
Environment
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.
If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.
Avoid inhalation of the product.
To avoid risks to human health and the environment, comply with the instructions for use.
Assumes a good basic standard of occupational hygiene is implemented.