

## Safety data sheet according to 1907/2006/EC, Article 31

Printing date 20.10.2019

Version number 4

Revision: 20.10.2019

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

#### 1.1 Product identifier

**Trade name:** LOCK/AMATA Laugenperlen

**CAS Number:**

1310-73-2

**EC number:**

215-185-5

**Index number:**

011-002-00-6

**Registration number** 01-2119457892-27-xxxx

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

**Sector of Use** Sectors of Use are to be taken from the attached exposure scenarios.

**Process category** The Process Categories are to be taken from the attached exposure scenarios.

**Environmental release category**

The Environmental Release Categories are to be taken from the attached exposure scenarios.

**Application of the substance / the mixture**

Food additive

Lyeing baked good

#### 1.3 Details of the supplier of the safety data sheet

**Manufacturer/Supplier:**

Ludwig Lock GmbH & Co. KG

Robert-Bosch-Str. 20

D - 73431 Aalen

Telefon: +49 (0) 7361 / 376 155

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**Further information obtainable from:**

Daniela Vogt

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#### 1.4 Emergency telephone number:

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Giftnotruf: Telefon +49 (0) 761 19240

### SECTION 2: Hazards identification

#### 2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008



GHS05 corrosion

Met. Corr.1 H290 May be corrosive to metals.

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*Skin Corr. 1A H314 Causes severe skin burns and eye damage.***2.2 Label elements****Labelling according to Regulation (EC) No 1272/2008***The substance is classified and labelled according to the CLP regulation.***Hazard pictograms**

GHS05

**Signal word** *Danger***Hazard-determining components of labelling:***sodium hydroxide***Hazard statements***H290 May be corrosive to metals.**H314 Causes severe skin burns and eye damage.***Precautionary statements***P260 Do not breathe dust/fume/gas/mist/vapours/spray.**P280 Wear protective gloves/protective clothing/eye protection/face protection.**P264 Wash thoroughly after handling.**P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.**P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.**P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.***2.3 Other hazards****Results of PBT and vPvB assessment****PBT:** *Not applicable.***vPvB:** *Not applicable.***SECTION 3: Composition/information on ingredients****3.1 Substances****CAS No. Description***1310-73-2 sodium hydroxide***Identification number(s)***EC number: 215-185-5**Index number: 011-002-00-6***SECTION 4: First aid measures****4.1 Description of first aid measures****General information:** *Immediately remove any clothing soiled by the product.***After inhalation:** *Supply fresh air or oxygen; call for doctor.***After skin contact:***Wash off immediately with plenty of water for at least 15 minutes.**Immediate medical treatment necessary. Failure to treat burns can prevent wounds from healing.***After eye contact:** *Rinse opened eye for several minutes under running water. Then consult a doctor.***After swallowing:***Rinse out mouth and then drink plenty of water.**Do not induce vomiting; call for medical help immediately.**A person vomiting while laying on their back should be turned onto their side.***4.2 Most important symptoms and effects, both acute and delayed** *No further relevant information available.*

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**4.3 Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

### SECTION 5: Firefighting measures

#### 5.1 Extinguishing media

**Suitable extinguishing agents:** Use fire extinguishing methods suitable to surrounding conditions.

**5.2 Special hazards arising from the substance or mixture** Forms slippery coatings, greasy with water.

#### 5.3 Advice for firefighters

##### Protective equipment:

Wear fully protective suit.

Wear self-contained respiratory protective device.

**Additional information** Collect contaminated fire fighting water separately. It must not enter the sewage system.

### SECTION 6: Accidental release measures

#### 6.1 Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away.

Avoid formation of dust.

Forms slippery coatings, greasy with water.

#### 6.2 Environmental precautions:

Do not allow to enter sewers/ surface or ground water.

Do not allow to penetrate the ground/soil.

Inform respective authorities in case of seepage into water course or sewage system.

In case of seepage into the ground inform responsible authorities.

#### 6.3 Methods and material for containment and cleaning up:

Pick up mechanically.

Send for recovery or disposal in suitable receptacles.

#### 6.4 Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

### SECTION 7: Handling and storage

#### 7.1 Precautions for safe handling

Wear protective clothing.

Keep receptacles tightly sealed.

Prevent formation of dust.

Ensure good ventilation/exhaustion at the workplace.

Emergency eye baths should be available in the immediate vicinity.

##### Information about fire - and explosion protection:

No special measures required.

The product is not flammable.

#### 7.2 Conditions for safe storage, including any incompatibilities

##### Storage:

##### Requirements to be met by storerooms and receptacles:

Store only in the original receptacle.

Provide alkali-resistant floor.

##### Information about storage in one common storage facility:

Do not store together with acids and ammonium salts.

Substances to avoid: Organic peroxide

##### Further information about storage conditions:

Store in cool, dry conditions in well sealed receptacles.

This product is hygroscopic.

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**7.3 Specific end use(s)**

Food additive  
Lyeing baked good

**SECTION 8: Exposure controls/personal protection**

**Additional information about design of technical facilities:** No further data; see item 7.

**8.1 Control parameters**

**Ingredients with limit values that require monitoring at the workplace:**

**1310-73-2 sodium hydroxide**

WEL (Great Britain)	Short-term value: 2 mg/m <sup>3</sup>
EL (Canada)	Short-term value: C 2 mg/m <sup>3</sup>
PEL (USA)	Long-term value: 2 mg/m <sup>3</sup>
REL (USA)	Short-term value: C 2 mg/m <sup>3</sup>
TLV (USA)	Short-term value: C 2 mg/m <sup>3</sup>

**DNELs**

Employees, long-term - local effects, inhalation: 1.0mg/m<sup>3</sup>  
Consumers, long-term - local effects, inhalation: 1.0 mg/m<sup>3</sup>

**Additional information:**

The lists valid during the making were used as basis.  
DNEL and PNEC values are based on manufacturers' data.

**8.2 Exposure controls****Personal protective equipment:****General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.  
Immediately remove all soiled and contaminated clothing  
Wash hands before breaks and at the end of work.  
Avoid contact with the eyes and skin.  
Emergency eye baths should be available in the immediate vicinity.

**Respiratory protection:**

Suitable respiratory protective device recommended.  
on dust formation  
Filter P2  
Filter P3

**Protection of hands:**

Protective gloves

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation  
After use of gloves apply skin-cleaning agents and skin cosmetics.  
Check protective gloves prior to each use for their proper condition.

**Material of gloves**

Fluorocarbon rubber (Viton)  
Chloroprene rubber, CR  
Natural rubber, NR  
Butyl rubber, BR

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

**Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

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**Eye protection:**

Tightly sealed goggles

**Body protection:** Alkaline resistant protective clothing

### SECTION 9: Physical and chemical properties

**9.1 Information on basic physical and chemical properties****General Information****Appearance:**

<b>Form:</b>	Solid
<b>Colour:</b>	White
<b>Odour:</b>	Odourless
<b>Odour threshold:</b>	Not determined.

**pH-value at 20 °C:** >14 (100g/l)**Change in condition**

<b>Melting point/Melting range:</b>	ca.319-322 °C
<b>Boiling point/Boiling range:</b>	1390 °C

**Flash point:** Not applicable.**Flammability (solid, gaseous):** Product is not flammable.**Ignition temperature:****Decomposition temperature:** Not determined.**Self-igniting:** Not determined.**Danger of explosion:** Product does not present an explosion hazard.**Explosion limits:**

<b>Lower:</b>	Not determined.
<b>Upper:</b>	Not determined.

**Vapour pressure at 800 °C:** 3.5 hPa

<b>Density at 20 °C:</b>	2.13 g/cm <sup>3</sup>
<b>Relative density</b>	Not determined.
<b>Vapour density</b>	Not applicable.
<b>Evaporation rate</b>	Not applicable.

**Solubility in / Miscibility with water at 20 °C:** 1090-1260 g/l**Partition coefficient (n-octanol/water):** Not determined.**Viscosity:**

<b>Dynamic:</b>	Not applicable.
<b>Kinematic:</b>	Not applicable.
<b>Organic solvents:</b>	0.0 %

**Solids content:** 100.0 %**9.2 Other information** No further relevant information available.

### SECTION 10: Stability and reactivity

**10.1 Reactivity** No further relevant information available.**10.2 Chemical stability****Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

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**10.3 Possibility of hazardous reactions**

Hydrogen is released when it reacts with base metals (aluminium, zinc).

Reacts exothermically with water.

Reacts exothermically with acids.

**10.4 Conditions to avoid**

Protect against air humidity and water.

This product is hygroscopic.

**10.5 Incompatible materials:** Acids, alloys, water, alcohols.**10.6 Hazardous decomposition products:** No dangerous decomposition products known.**SECTION 11: Toxicological information****11.1 Information on toxicological effects**

Acute toxicity Based on available data, the classification criteria are not met.

**LD/LC50 values relevant for classification:****1310-73-2 sodium hydroxide**

Oral LD50 2000 mg/kg (rat)

**Primary irritant effect:****Skin corrosion/irritation**

Causes severe skin burns and eye damage.

**Serious eye damage/irritation**

Causes severe skin burns and eye damage.

**Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.**CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)****Germ cell mutagenicity** Based on available data, the classification criteria are not met.**Carcinogenicity** Based on available data, the classification criteria are not met.**Reproductive toxicity** Based on available data, the classification criteria are not met.**STOT-single exposure** Based on available data, the classification criteria are not met.**STOT-repeated exposure** Based on available data, the classification criteria are not met.**Aspiration hazard** Based on available data, the classification criteria are not met.**SECTION 12: Ecological information****12.1 Toxicity****Aquatic toxicity:**LC50 *Gambusia affinis* 125mg/l - 96hEC50 *Daphnia magna* 76mg/l - 24hEC50 *Photobacterium phosphoreum* 22mg/l - 15min**12.2 Persistence and degradability**

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

**12.3 Bioaccumulative potential** No further relevant information available.**12.4 Mobility in soil** No further relevant information available.**Additional ecological information:****General notes:**

Water hazard class 1 (German Regulation) (Assessment by list): slightly hazardous for water

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Must not reach sewage water or drainage ditch undiluted or unneutralised.

**12.5 Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.**12.6 Other adverse effects** No further relevant information available.

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### SECTION 13: Disposal considerations

#### 13.1 Waste treatment methods

**Recommendation** Must not be disposed together with household garbage. Do not allow product to reach sewage system.

#### European waste catalogue

According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste Codes should be assigned by the user, preferably in discussion with the waste disposal authorities.

#### Uncleaned packaging:

##### Recommendation:

Empty contaminated packagings thoroughly. They may be recycled after thorough and proper cleaning.

Packagings that may not be cleansed are to be disposed of in the same manner as the product.

**Recommended cleansing agents:** Water, if necessary together with cleansing agents.

### SECTION 14: Transport information

#### 14.1 UN-Number

ADR, IMDG, IATA                      UN1823

#### 14.2 UN proper shipping name

ADR    1823 SODIUM HYDROXIDE, SOLID  
IMDG, IATA                                  SODIUM HYDROXIDE, SOLID

#### 14.3 Transport hazard class(es)

ADR, IMDG, IATA



Class    8 Corrosive substances.  
Label    8

#### 14.4 Packing group

ADR, IMDG, IATA                          II

#### 14.5 Environmental hazards:

Marine pollutant:                          No

#### 14.6 Special precautions for user

Not applicable.  
Warning: Corrosive substances.

Danger code (Kemler):                      80

EMS Number:                                  F-A,S-B

Segregation groups                          Alkalis

#### Transport/Additional information:

##### ADR

Limited quantities (LQ)                      1kg

Transport category                            2

Tunnel restriction code                        E

UN "Model Regulation":                      UN1823, SODIUM HYDROXIDE, SOLID, 8, II

### SECTION 15: Regulatory information

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

No further relevant information available.

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**15.2 Chemical safety assessment:** A Chemical Safety Assessment has been carried out.**SECTION 16: Other information**

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

**Department issuing SDS:** 10086/177**Contact:**

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**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

DNEL: Derived No-Effect Level (REACH)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Met. Corr.1: Corrosive to metals – Category 1

Skin Corr. 1A: Skin corrosion/irritation – Category 1A

**LOCK/AMATA Lye Pearls**  
**Annex to Safety Data Sheet - Exposure Scenarios**  
pursuant to 1907/2006/EC, Article 31

Print date: 12.10.2015

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No.	Short title	Main user group (SU)	Sector of use (SU)	Product category (PC)	Process category (PROC)	Environmental release category (ERC)	Article category (AC)	Specification
1	Manufacture of the substance - Liquid	3	8	NA	1, 2, 3, 4, 8a, 8b, 9	1	NA	ES035
2	Manufacture of the substance - Solid	3	8	NA	1, 2, 3, 4, 8a, 8b, 9	1	NA	ES057
3	Industrial use	3	NA	NA	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 15	2, 4, 6a, 6b, 7	NA	ES065
4	Commercial use	22	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 10, 11, 13, 15	8a, 8b, 8d, 9a	NA	ES067
5	Private use	21	NA	20, 35, 39	NA	8a, 8b, 8d, 9a	NA	ES075

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<b>1. Short description of the exposure scenario 1: Manufacture of the substance - Liquid</b>		
Main user groups	SU 3: Industrial uses: Use of substances as such or in preparations on industrial sites	
Sector of end-use	SU8: Manufacture of bulk chemicals (including mineral oil products)	
Process categories	PROC1: Use in closed processes, no likelihood of exposure PROC2: Use in closed, continuous processes with occasional controlled exposure PROC3: Use in closed batch processes (synthesis or formulation) PROC4: Use in batch and other processes (synthesis) whereby there is a likelihood of exposure PROC8a: Transfer of the substance or preparation (feeding/emptying) from/into vessels/large containers in facilities not specially intended for one single product PROC8b: Transfer of the substance or preparation (feeding/emptying) from/into vessels/large containers in facilities specially intended for one single product PROC9: Transfer of the substance or preparation into small containers (special filling line, including weighing)	
Environmental release categories	ERC1: Manufacture of substances	
<b>2.1 Contributing scenario to control environmental exposure for: ERC1</b>		
Product characteristics	Concentration of substance in blend/article	Proportion of substance in product: 0% - 50%
Other prescribed operating conditions that influence the environmental exposure	Continuous exposure	
Technical conditions and measures at the process level (source) to prevent releases Technical site conditions and measures to reduce and restrict discharges, air emissions and releases into the soil Organisational measures to prevent/limit releases from the facilities	Area of application	Industrial use
	Water	Requires regular monitoring of the pH value during discharge into open waters. In general the waste water discharge should ensure that pH changes in the surface water are minimised. In general most aquatic organisms tolerate pH values of 6-9. This is also reflected in the description of the OECD standard tests with aquatic organisms. Environment-related risk mitigation measures aim to avoid the disposal of substances in communal waste water or surface water in the event that such disposal is likely to trigger a significant change in pH.
Conditions and measures concerning external waste management for disposal	Methods of disposal	Waste water should be recycled or fed into industrial waste water and further neutralised if necessary.
<b>2.2 Contributing scenario to control workers' exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9</b>		
Product characteristics	Concentration of substance in blend/article	Proportion of substance in product: 0% - 50%
	Physical form (at the time of use)	Liquid
Frequency and duration of use	Frequency of use	200 days / year
	Frequency of use	8 hours / day
Technical conditions and measures for controlling	Area of application	Industrial use
	Use of closed systems or covering of open containers. Transport via pipes,	

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dispersion from source to worker	technical barrel filling/emptying with automated systems (suction pumps, etc.) Use of tongs, holding rods with long, manually-operated handles to avoid direct contact and exposure due to splashes (no over-head operations).	
Organisational measures to prevent/limit release, dispersion and exposure	Area of application	Industrial use
	Where possible: replace manual processes with automated or closed processes. This would avoid irritating mists, atomisation and subsequent potential splashes. Workers potentially exposed to hazard are instructed to a.) Avoid working without respiratory protection, b.) Understand the corrosive properties (particularly inhalation risks) and c.) Follow the employer safety regulations. The employer must ascertain the availability of the necessary PPE.	
Conditions and measures as regards personal protection, hygiene and health assessment	Area of application	Industrial use
	In the event of dust or mist formation: respiratory protection with the approved filter (P2) must be worn. Wear chemical-resistant gloves. Material: butyl rubber, PVC, polychloroprene with natural latex lining, Material thickness: 0.5 mm, Penetration time: > 480 min. Material: nitrile rubber, fluorinated rubber, Material thickness: 0.35-0.4 mm, Penetration time: > 480 min. If splashes are likely to occur: close-fitting safety-goggles or eye protection must be worn Wear suitable protective clothing, aprons, shields and coats. If splashes are likely to occur: rubber or plastic boots	

**3. Exposure estimation and reference to its source**

**Environment**

The impact and the associated risk assessment for the aquatic environment only considers effects on organisms/ecosystems, which are based on potential changes in the pH value, since marginal toxicity of the metal ions compared with the (potential) pH change is expected. The high water solubility and the very low vapour pressure indicate that the substance is to be found predominantly in water. If the environment-related risk mitigation measures are implemented, there is no exposure of the activated sludge of the waste water treatment plant and no exposure of the absorbing surface water. The sediment compartment was not taken into account as it is irrelevant to the substance. In the event of discharge into the watery compartment, the sorption on sediment particles is negligible. Significant emissions into the air are not anticipated due to the very low vapour pressure of the substance. In the event of air emissions as water-based aerosols, the substance is rapidly neutralised as it reacts with CO<sub>2</sub> (or acids). Significant emissions in the terrestrial environment are not anticipated. The application path for sludge is not relevant to emission in agricultural soils, as no sorption of the substance on suspended particles in sewage treatment plants/waste water treatment plans will occur. In the event of discharge into the soil, the sorption on soil particles is negligible. Depending on the buffer capacity of the soil, OH<sup>-</sup> in the ground pore water is neutralised or a pH increase occurs. The substance is not bioaccumulating.

**Workers**

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9 ECETOC TRA-model used.

Contributing scenario	Specific conditions	Routes of exposure	Degree of exposure	RCR
PROC1, PROC2, PROC3, PROC4,  PROC8a, PROC8b, PROC9	Calculated exposure data, severe  low vapour pressure, without local extraction, without respiratory protection	Workers' exposure by inhalation	0.17mg/m <sup>3</sup>	0.17
PROC1, PROC2, PROC3, PROC4,	Measured exposure data, worst-case	Workers - inhalation, short-term - local	0.33mg/m <sup>3</sup>	0.33

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PROC8a, PROC8b, PROC9				
PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9	Measured exposure data, worst-case	Workers - inhalation, long-term - local	0.14mg/m <sup>3</sup>	0.14
This substance is corrosive. When handling corrosive substances and formulations, direct contact is only occasional. It is assumed that repeated, daily exposure can be ignored. The dermal exposure to the substance was not quantified. The substance is not systemically available in usual handling and use conditions. The occurrence of systemic effects after dermal or inhalation exposure is not anticipated.				
<b>4. Guidelines for the downstream user to evaluate whether he/she is working within the limits stipulated in the exposure scenario</b>				
<p>The downstream user is working within the limits of the exposure scenario if he/she either applies the aforementioned risk mitigation measures or he/she can verify that his/her conditions of use are equivalent to the implemented risk mitigation measures. This verification must demonstrate that these measures limit the inhalation and dermal exposure to values below the associated DNEL (see below) (provided the questionable processes and activities are covered by the aforementioned PROCs).</p> <p>If no measurement data is available, the downstream user can make use of suitable tools (e.g. ECETOC TRA)</p> <p>Important note: demonstration of safe use by comparing exposure estimations with the long-term DNEL also covers the short-term DNEL (pursuant to Guideline R.14 acute exposure can be derived by multiplying the long-term exposure estimation by a factor of 2).</p>				
<b>Additional suggestions for good practice beyond the REACH chemical safety assessment</b>				
Local extraction is not necessary, but is advisable under good practice. General ventilation is good practice if there is no local extraction.				

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<b>1. Short description of the exposure scenario 2: Manufacture of the substance - Solid</b>		
Main user groups	SU 3: Industrial uses: Use of substances as such or in preparations on industrial sites	
Sector of end-use	SU8: Manufacture of bulk chemicals (including mineral oil products)	
Process categories	PROC1: Use in closed processes, no likelihood of exposure PROC2: Use in closed, continuous processes with occasional controlled exposure PROC3: Use in closed batch processes (synthesis or formulation) PROC4: Use in batch and other processes (synthesis) whereby there is a likelihood of exposure PROC8a: Transfer of the substance or preparation (feeding/emptying) from/into vessels/large containers in facilities not specially intended for one single product PROC8b: Transfer of the substance or preparation (feeding/emptying) from/into vessels/large containers in facilities specially intended for one single product PROC9: Transfer of the substance or preparation into small containers (special filling line, including weighing)	
Environmental release categories	ERC1: Manufacture of substances	
<b>2.1 Contributing scenario to control environmental exposure for: ERC1</b>		
Product characteristics	Concentration of substance in blend/article	Proportion of substance contained in the product up to 100% (unless otherwise indicated).
Other prescribed operating conditions that influence the environmental exposure	Continuous exposure	
Technical conditions and measures at the process level (source) to prevent releases Technical site conditions and measures to reduce and restrict discharges, air emissions and releases into the soil Organisational measures to prevent/limit releases from the facilities	Area of application	Industrial use
	Water	Requires regular monitoring of the pH value during discharge into open waters. In general the waste water discharge should ensure that pH changes in the surface water are minimised. In general most aquatic organisms tolerate pH values of 6-9. This is also reflected in the description of the OECD standard tests with aquatic organisms. Environment-related risk mitigation measures aim to avoid the disposal of substances in communal waste water or surface water in the event that such disposal is likely to trigger a significant change in pH.
<b>2.2 Contributing scenario to control workers' exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9</b>		
Product characteristics	Concentration of substance in blend/article	Proportion of substance contained in the product up to 100% (unless otherwise indicated).
	Physical form (at the time of use)	Solid
Frequency and duration of use	Frequency of use	200 days / year
	Frequency of use	8 hours / day
Technical conditions and measures for measuring dispersion from	Area of application	Industrial use
	Use of closed systems or covering of open	

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source to worker	containers. Transport via pipes, technical barrel filling/emptying with automated systems (suction pumps, etc.) Use of tongs, holding rods with long, manually-operated handles to avoid direct contact and exposure due to splashes (no over-head operations).	
Organisational measures to prevent/limit release, dispersion and exposure	Area of application	Industrial use
	Where possible: replace manual processes with automated or closed processes. This would avoid irritating mists, atomisation and subsequent potential splashes. Workers potentially exposed to hazard are instructed to a.) Avoid working without respiratory protection, b.) Understand the corrosive properties (particularly inhalation risks) and c.) Follow the employer safety regulations. The employer must ascertain the availability of the necessary PPE.	
Conditions and measures as regards personal protection, hygiene and health assessment	Area of application	Industrial use
	In the event of dust or mist formation: respiratory protection with the approved filter (P2) must be worn. Wear chemical-resistant gloves. Material: butyl rubber, PVC, polychloroprene with natural latex lining, Material thickness: 0.5 mm, Penetration time: > 480 min. Material: nitrile rubber, fluorinated rubber, Material thickness: 0.35-0.4 mm, Penetration time: > 480 min. If splashes are likely to occur: close-fitting safety-goggles or eye protection must be worn Wear suitable protective clothing, aprons, shields and coats. If splashes are likely to occur: rubber or plastic boots	

**3. Exposure estimation and reference to its source**

**Environment**

The impact and the associated risk assessment for the aquatic environment only considers effects on organisms/ecosystems, which are based on potential changes in the pH value, since marginal toxicity of the metal ions compared with the (potential) pH change is expected. The high water solubility and the very low vapour pressure indicate that the substance is to be found predominantly in water. If the environment-related risk mitigation measures are implemented, there is no exposure of the activated sludge of the waste water treatment plant and no exposure of the absorbing surface water. The sediment compartment was not taken into account as it is irrelevant to the substance. In the event of discharge into the watery compartment, the sorption on sediment particles is negligible. Significant emissions into the air are not anticipated due to the very low vapour pressure of the substance. In the event of air emissions as water-based aerosols, the substance is rapidly neutralised as it reacts with CO<sub>2</sub> (or acids). Significant emissions in the terrestrial environment are not anticipated. The application path for sludge is not relevant to emission in agricultural soils, as no sorption of the substance on suspended particles in sewage treatment plants/waste water treatment plans will occur. In the event of discharge into the soil, the sorption on soil particles is negligible. Depending on the buffer capacity of the soil, OH<sup>-</sup> in the ground pore water is neutralised or a pH increase occurs. The substance is not bioaccumulating.

**Workers**

**PROC1, PROC2, PROC3, PROC4, PROC8a, PROC9 ECETOC TRA-model used.**

Contributing scenario	Specific conditions	Routes of exposure	Degree of exposure	RCR
PROC1, PROC2	Calculated exposure data, low dust level, no local extraction, no respiratory protection (RPE)	Workers' exposure by inhalation	0.01mg/m <sup>3</sup>	0.01
PROC3, PROC9	Calculated exposure data, low dust level, no local extraction, no respiratory protection (RPE)	Workers' exposure by inhalation	0.1mg/m <sup>3</sup>	0.1
PROC4,	Calculated exposure	Workers' exposure by	0.5mg/m <sup>3</sup>	0.5

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PROC8a	data, low dust level, no local extraction, no respiratory protection (RPE)	inhalation		
PROC9	Measured exposure data, worst-case	Workers - inhalation, short-term - local	0.26mg/m <sup>3</sup>	0.26
<p>This substance is corrosive. When handling corrosive substances and formulations, direct contact is only occasional. It is assumed that repeated, daily exposure can be ignored. The dermal exposure to the substance was not quantified. The substance is not systemically available in usual handling and use conditions. The occurrence of systemic effects after dermal or inhalation exposure is not anticipated.</p>				
<p><b>4. Guidelines for the downstream user to evaluate whether he/she is working within the limits stipulated in the exposure scenario</b></p>				
<p>The downstream user is working within the limits of the exposure scenario if he/she either applies the aforementioned risk mitigation measures or he/she can verify that his/her conditions of use are equivalent to the implemented risk mitigation measures. This verification must demonstrate that these measures limit the inhalation and dermal exposure to values below the associated DNEL (see below) (provided the questionable processes and activities are covered by the aforementioned PROCs).  If no measurement data is available, the downstream user can make use of suitable tools (e.g. ECETOC TRA)  Important note: demonstration of safe use by comparing exposure estimations with the long-term DNEL also covers the short-term DNEL (pursuant to Guideline R.14 acute exposure can be derived by multiplying the long-term exposure estimation by a factor of 2).</p>				
<p><b>Additional suggestions for good practice beyond the REACH chemical safety assessment</b></p>				
<p>Local extraction is not necessary, but is advisable under good practice. General ventilation is good practice if there is no local extraction.</p>				

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<b>1. Short description of the exposure scenario 3: Industrial use</b>		
Main user groups	SU 3: Industrial uses: Use of substances as such or in preparations on industrial sites	
Process categories	PROC1: Use in closed processes, no likelihood of exposure PROC2: Use in closed, continuous processes with occasional controlled exposure PROC3: Use in closed batch processes (synthesis or formulation) PROC4: Use in batch and other processes (synthesis) whereby there is a likelihood of exposure PROC5: Mixture or blending in batch processes to formulate preparations and articles (multiple and/or significant contact) PROC7: Industrial spraying PROC8a: Transfer of the substance or preparation (feeding/emptying) from/into vessels/large containers in facilities not specially intended for one single product PROC8b: Transfer of the substance or preparation (feeding/emptying) from/into vessels/large containers in facilities specially intended for one single product PROC9: Transfer of the substance or preparation into small containers (special filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent	
Environmental release categories	ERC2: Formulation of preparations ERC4: Industrial use of processing aids that do not become part of articles in processes and products ERC6a: Industrial use that leads to the manufacture of another substance (use of intermediary products) ERC6b: Industrial use of reactive processing aids ERC7: Industrial use of substances in closed systems	
<b>2.1 Contributing scenario to control of environmental exposure for: ERC2, ERC4, ERC6a, ERC6b, ERC7</b>		
Product characteristics	Concentration of substance in blend/article	Proportion of substance contained in the product up to 100% (unless otherwise indicated).
Other prescribed operating conditions that influence the environmental exposure	Continuous exposure	
Technical conditions and measures at the process level (source) to prevent releases Technical site conditions and measures to reduce and restrict discharges, air emissions and releases into the soil Organisational measures to prevent/limit releases from the facilities	Area of application	Industrial use
	Water	Requires regular monitoring of the pH value during discharge into open waters. In general the waste water discharge should ensure that pH changes in the surface water are minimised. In general most aquatic organisms tolerate pH values of 6-9. This is also reflected in the description of the OECD standard tests with aquatic organisms. Environment-related risk mitigation measures aim to avoid the disposal of substances in communal waste water or surface water in the event that such disposal is likely to trigger a significant change in pH.
Conditions and measures concerning external waste management for disposal	Methods of disposal	Waste water should be recycled or fed into industrial waste water and further neutralised if necessary.

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<b>2.2 Contributing scenario to control workers' exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC15</b>		
Product characteristics	Concentration of substance in blend/article	Proportion of substance contained in the product up to 100% (unless otherwise indicated).
	Physical form (at the time of use)	Liquid
	Physical form (at the time of use)	Solid, low dust level
Frequency and duration of use	Frequency of use	8 hours / day
	Frequency of use	200 days / year
Technical conditions and measures for controlling dispersion from source to worker	Area of application	Industrial use
	Use of closed systems or covering of open containers. Transport via pipes, technical barrel filling/emptying with automated systems (suction pumps, etc.) Use of tongs, holding rods with long, manually-operated handles to avoid direct contact and exposure due to splashes (no over-head operations).	
Organisational measures to prevent/limit release, dispersion and exposure	Area of application	Industrial use
	Where possible: replace manual processes with automated or closed processes. This would avoid irritating mists, atomisation and subsequent potential splashes. Workers potentially exposed to hazard are instructed to a.) Avoid working without respiratory protection, b.) Understand the corrosive properties (particularly inhalation risks) and c.) Follow the employer safety regulations. The employer must ascertain the availability of the necessary PPE.	
Conditions and measures as regards personal protection, hygiene and health assessment	Area of application	Industrial use
	In the event of dust or mist formation: respiratory protection with the approved filter (P2) must be worn. Wear chemical-resistant gloves. Material: butyl rubber, PVC, polychloroprene with natural latex lining, Material thickness: 0.5 mm, Penetration time: > 480 min. Material: nitrile rubber, fluorinated rubber, Material thickness: 0.35-0.4 mm, Penetration time: > 480 min. If splashes are likely to occur: close-fitting safety-goggles or eye protection must be worn. Wear suitable protective clothing, aprons, shields and coats. Rubber or plastic boots	
<b>3. Exposure estimation and reference to its source</b>		
<b>Environment</b>		
<p>The impact and the associated risk assessment for the aquatic environment only considers effects on organisms/ecosystems, which are based on potential changes in the pH value, since marginal toxicity of the metal ions compared with the (potential) pH change is expected. The high water solubility and the very low vapour pressure indicate that the substance is to be found predominantly in water. If the environment-related risk mitigation measures are implemented, there is no exposure of the activated sludge of the waste water treatment plant and no exposure of the absorbing surface water. The sediment compartment was not taken into account as it is irrelevant to the substance. In the event of discharge into the watery compartment, the sorption on sediment particles is negligible. Significant emissions into the air are not anticipated due to the very low vapour pressure of the substance. In the event of air emissions as water-based aerosols, the substance is rapidly neutralised as it reacts with CO<sub>2</sub> (or acids). Significant emissions in the terrestrial environment are not anticipated. The application path for sludge is not relevant to emission in agricultural soils, as no sorption of the substance on suspended particles in sewage treatment plants/waste water treatment plans will occur. In the event of discharge into the soil, the sorption on soil particles is negligible. Depending on the buffer capacity of the soil, OH<sup>-</sup> in the ground pore water is neutralised or a pH increase occurs. The substance is not bioaccumulating.</p>		
<b>Workers</b>		
ECETOC TRA-model used.		

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Contributing scenario	Specific conditions	Routes of exposure	Degree of exposure	RCR
PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC19, PROC23, PROC24	Liquid, no local extraction, no respiratory protection (RPE)	Workers - inhalation, short-term - local	0.17mg/m <sup>3</sup>	0.17
PROC1, PROC2	Solid, no local extraction, no respiratory protection (RPE)	Workers - inhalation, short-term - local	0.01mg/m <sup>3</sup>	0.01
PROC3, PROC15	Solid, no local extraction, no respiratory protection (RPE)	Workers - inhalation, short-term - local	0.1mg/m <sup>3</sup>	0.1
PROC4, PROC5, PROC14	Solid, no respiratory protection (RPE)	Workers - inhalation, short-term - local	0.2mg/m <sup>3</sup>	0.2
PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC19	Solid, no local extraction, no respiratory protection (RPE)	Workers - inhalation, short-term - local	0.5mg/m <sup>3</sup>	0.5
PROC23	Solid, with RPE (90%)	Workers - inhalation, short-term - local	0.4mg/m <sup>3</sup>	0.4
PROC24	Solid, with RPE (90%)	Workers - inhalation, short-term - local	0.5mg/m <sup>3</sup>	0.5
<p>This substance is corrosive. When handling corrosive substances and formulations, direct contact is only occasional. It is assumed that repeated, daily exposure can be ignored. The dermal exposure to the substance was not quantified. The substance is not systemically available in usual handling and use conditions. The occurrence of systemic effects after dermal or inhalation exposure is not anticipated. Based on workplace measurements and in observance of the prescribed risk mitigation measures to control exposure of workers and industry, the inhalation exposure is below the DNEL.</p>				
<p><b>4. Guidelines for the downstream user to evaluate whether he/she is working within the limits stipulated in the exposure scenario</b></p>				
<p>The downstream user is working within the limits of the exposure scenario if he/she either applies the aforementioned risk mitigation measures or he/she can verify that his/her conditions of use are equivalent to the implemented risk mitigation measures. This verification must demonstrate that these measures limit the inhalation and dermal exposure to values below the associated DNEL (see below) (provided the questionable processes and activities are covered by the aforementioned PROCs).</p> <p>If no measurement data is available, the downstream user can make use of suitable tools (e.g. ECETOC TRA)</p> <p>Important note: demonstration of safe use by comparing exposure estimations with the long-term DNEL also covers the short-term DNEL (pursuant to Guideline R.14 acute exposure can be derived by multiplying the long-term exposure estimation by a factor of 2).</p>				
<p><b>Additional suggestions for good practice beyond the REACH chemical safety assessment</b></p>				
<p>Local extraction is not necessary, but is advisable under good practice. General ventilation is good practice if there is no local extraction.</p>				

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<b>1. Short description of the exposure scenario 4: Commercial use</b>		
Main user groups	SU 22: Commercial uses: public domain (administration, education, entertainment, services, trade)	
Process categories	PROC1: Use in closed processes, no likelihood of exposure PROC2: Use in closed, continuous processes with occasional controlled exposure PROC3: Use in closed batch processes (synthesis or formulation) PROC4: Use in batch and other processes (synthesis) whereby there is a likelihood of exposure PROC5: Mixture or blending in batch processes to formulate preparations and articles (multiple and/or significant contact) PROC8a: Transfer of the substance or preparation (feeding/emptying) from/into vessels/large containers in facilities not specially intended for one single product PROC8b: Transfer of the substance or preparation (feeding/emptying) from/into vessels/large containers in facilities specially intended for one single product PROC9: Transfer of the substance or preparation into small containers (special filling line, including weighing) PROC10: Roller application or brushing PROC11: Non-industrial spraying PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent	
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 ERC9a: Wide dispersive indoor use of substances in closed systems	
<b>2.1 Contributing scenario to control environmental exposure for: ERC8a, ERC8b, ERC8d, ERC9a</b>		
Product characteristics	Concentration of substance in blend/article	Proportion of substance contained in the product up to 100% (unless otherwise indicated).
Other prescribed operating conditions that influence the environmental exposure	Continuous exposure	
Technical conditions and measures at the process level (source) to prevent releases Technical site conditions and measures to reduce and restrict discharges, air emissions and releases into the soil Organisational measures to prevent/limit releases from the facilities	Area of application	Commercial use
	Water	Requires regular monitoring of the pH value during discharge into open waters. In general the waste water discharge should ensure that pH changes in the surface water are minimised. In general most aquatic organisms tolerate pH values of 6-9. This is also reflected in the description of the OECD standard tests with aquatic organisms. Environment-related risk mitigation measures aim to avoid the disposal of substances in communal waste water or surface water in the event that such disposal is likely to trigger a significant change in pH.
Conditions and measures concerning external waste management for disposal	Methods of disposal	Waste water should be recycled or fed into industrial waste water and further neutralised if necessary.
<b>2.2 Contributing scenario to control workers' exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC15</b>		

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Product characteristics	Concentration of substance in blend/article	Proportion of substance contained in the product up to 100% (unless otherwise indicated).		
	Physical form (at the time of use)	Liquid		
	Physical form (at the time of use)	Solid, low dust level		
Frequency and duration of use	Frequency of use	8 hours / day		
	Frequency of use	200 days / year		
Technical conditions and measures for controlling dispersion from source to worker	Area of application	Commercial use		
	Use of tongs, holding rods with long, manually-operated handles to avoid direct contact and exposure due to splashes (no over-head operations). Where possible: use of special manifolds and pumps that are specially designed to prevent splashes/overflows/exposure.			
Organisational measures to prevent/limit release, dispersion and exposure	Area of application	Commercial use		
	Where possible: replace manual processes with automated or closed processes. This would avoid irritating mists, atomisation and subsequent potential splashes. Workers potentially exposed to hazard are instructed to a.) Avoid working without respiratory protection, b.) Understand the corrosive properties (particularly inhalation risks) and c.) Follow the employer safety regulations. The employer must ascertain the availability of the necessary PPE.			
Conditions and measures as regards personal protection, hygiene and health assessment	Area of application	Commercial use		
	In the event of dust or mist formation: respiratory protection with the approved filter (P2) must be worn. Wear chemical-resistant gloves. Material: butyl rubber, PVC, polychloroprene with natural latex lining, Material thickness: 0.5 mm, Penetration time: > 480 min. Material: nitrile rubber, fluorinated rubber, Material thickness: 0.35-0.4 mm, Penetration time: > 480 min. If splashes are likely to occur: close-fitting safety-goggles or eye protection must be worn. Wear suitable protective clothing, aprons, shields and coats. Rubber or plastic boots			
<b>3. Exposure estimation and reference to its source</b>				
<b>Environment</b>				
<p>The impact and the associated risk assessment for the aquatic environment only considers effects on organisms/ecosystems, which are based on potential changes in the pH value, since marginal toxicity of the metal ions compared with the (potential) pH change is expected. The high water solubility and the very low vapour pressure indicate that the substance is to be found predominantly in water. If the environment-related risk mitigation measures are implemented, there is no exposure of the activated sludge of the waste water treatment plant and no exposure of the absorbing surface water. The sediment compartment was not taken into account as it is irrelevant to the substance. In the event of discharge into the watery compartment, the sorption on sediment particles is negligible. Significant emissions into the air are not anticipated due to the very low vapour pressure of the substance. In the event of air emissions as water-based aerosols, the substance is rapidly neutralised as it reacts with CO<sub>2</sub> (or acids). Significant emissions in the terrestrial environment are not anticipated. The application path for sludge is not relevant to emission in agricultural soils, as no sorption of the substance on suspended particles in sewage treatment plants/waste water treatment plans will occur. In the event of discharge into the soil, the sorption on soil particles is negligible. Depending on the buffer capacity of the soil, OH<sup>-</sup> in the ground pore water is neutralised or a pH increase occurs. The substance is not bioaccumulating.</p>				
<b>Workers</b>				
<b>ECETOC TRA-model used.</b>				
<b>Contributing scenario</b>	<b>Specific conditions</b>	<b>Routes of exposure</b>	<b>Degree of exposure</b>	<b>RCR</b>
PROC1, PROC2, PROC3, PROC4,	Liquid, no local extraction, no	Workers - inhalation, short-term - local	0.17mg/m <sup>3</sup>	0.17

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PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19, PROC23, PROC24	respiratory protection (RPE)			
PROC1, PROC2	Solid, no local extraction, no respiratory protection (RPE)	Workers - inhalation, short-term - local	0.01mg/m <sup>3</sup>	0.01
PROC3, PROC15	Solid, no local extraction, no respiratory protection (RPE)	Workers - inhalation, short-term - local	0.1mg/m <sup>3</sup>	0.1
PROC4, PROC5, PROC11, PROC14	Solid, no respiratory protection (RPE)	Workers - inhalation, short-term - local	0.2mg/m <sup>3</sup>	0.2
PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC19	Solid, no local extraction, no respiratory protection (RPE)	Workers - inhalation, short-term - local	0.5mg/m <sup>3</sup>	0.5
PROC23	Solid, with RPE (90%)	Workers - inhalation, short-term - local	0.4mg/m <sup>3</sup>	0.4
PROC24	Solid, with RPE (90%)	Workers - inhalation, short-term - local	0.5mg/m <sup>3</sup>	0.5
<p>This substance is corrosive. When handling corrosive substances and formulations, direct contact is only occasional. It is assumed that repeated, daily exposure can be ignored. The dermal exposure to the substance was not quantified. The substance is not systemically available in usual handling and use conditions. The occurrence of systemic effects after dermal or inhalation exposure is not anticipated. Based on workplace measurements and in observance of the prescribed risk mitigation measures to control exposure of workers and industry, the inhalation exposure is below the DNEL.</p>				
<p><b>4. Guidelines for the downstream user to evaluate whether he/she is working within the limits stipulated in the exposure scenario</b></p>				
<p>The downstream user is working within the limits of the exposure scenario if he/she either applies the aforementioned risk mitigation measures or he/she can verify that his/her conditions of use are equivalent to the implemented risk mitigation measures. This verification must demonstrate that these measures limit the inhalation and dermal exposure to values below the associated DNEL (see below) (provided the questionable processes and activities are covered by the aforementioned PROCs).  If no measurement data is available, the downstream user can make use of suitable tools (e.g. ECETOC TRA)  Important note: demonstration of safe use by comparing exposure estimations with the long-term DNEL also covers the short-term DNEL (pursuant to Guideline R.14 acute exposure can be derived by multiplying the long-term exposure estimation by a factor of 2).</p>				
<p><b>Additional suggestions for good practice beyond the REACH chemical safety assessment</b></p>				
<p>Local extraction is not necessary, but is advisable under good practice. General ventilation is good practice if there is no local extraction.</p>				

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<b>1. Short description of the exposure scenario 5: Private use</b>		
Main user groups	SU 21: Consumer uses: private households (= general public = consumers)	
Chemical category	PC20: Products such as pH regulators, flocculants, precipitants, neutralising agents PC35: Washing and cleaning agents (including solvent-based products) PC39: Cosmetics, personal care products	
Environmental release categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC9a: Wide dispersive indoor use of substances in closed systems	
Activity	Covers technical uses. Use in food and food stuffs or in human and/or animal medicinal products pursuant to Article 2 (5) (6) of the REACH Regulation is not intended. Note: this exposure scenario is only relevant for suitable use according to the quality of the substance delivered	
<b>2.1 Contributing scenario to control environmental exposure for: ERC8a, ERC8b, ERC8d, ERC9a</b>		
Product characteristics	Concentration of substance in blend/article	Proportion of substance contained in the product up to 100% (unless otherwise indicated).
Technical conditions and measures at the process level (source) to prevent releases Technical site conditions and measures to reduce and restrict discharges, air emissions and releases into the soil Organisational measures to prevent/limit releases from the facilities	There are no particular environment-related risk mitigation measures.	
Conditions and measures concerning external waste management for disposal	Methods of disposal	This material and its containers must be disposed of properly and safely (e.g. submission to a public waste recycling firm). Empty containers can be disposed of as normal household waste. Batteries should be recycled wherever possible (e.g. returned to public return points), recovery of substances from alkaline batteries involves emptying, collecting and neutralising the electrolytes
<b>2.2 Contributing scenario to control users' exposure for: PC20, PC35, PC39</b>		
Product characteristics	Concentration of substance in blend/article	Proportion of substance contained in the product up to 100% (unless otherwise indicated).
	Physical form (at the time of use)	Liquid
	Physical form (at the time of use)	Solid, low dust level
Conditions and measures to protect the user (e.g. suggested conduct, personal protection, healthcare)	Consumer measures	Use resistant container marking to prevent self-destruction and the loss of label integrity in normal use. Poor quality marking leads to a loss of information on hazards, risks and instructions for use.
	Consumer measures	In the event of dust or mist formation: respiratory protection with the approved filter (P2) must be worn.
<b>3. Exposure estimation and reference to its source</b>		

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<b>Environment</b>				
Consumer use refers to already diluted products that are rapidly further neutralised in drains until they reach the waste water treatment plant or the surface water.				
<b>Consumer</b>				
<b>ConsExpo and SprayExpo</b>				
Contributing scenario	Specific conditions	Routes of exposure	Degree of exposure	RCR
PC20, PC35, PC39	Only estimated for the most critical use, (use as substance in an open cleaning spray)	User - inhalation, acute - local	0.3 - 1.6mg/m <sup>3</sup>	< 1
The calculated short-term exposure is slightly over the inhalation long-term DNEL, yet lower than the short-term workplace limit. The source is rapidly neutralised by reaction with CO <sub>2</sub> (or other acids). Zero consumer exposure to substances contained in batteries because batteries constitute sealed articles with a long operating life.				
<b>4. Guidelines for the downstream user to evaluate whether he/she is working within the limits stipulated in the exposure scenario</b>				
<p>The downstream user is working within the limits of the exposure scenario if he/she either applies the aforementioned risk mitigation measures or he/she can verify that his/her conditions of use are equivalent to the implemented risk mitigation measures. This verification must demonstrate that these measures limit the inhalation and dermal exposure to values below the associated DNEL (see below) (provided the questionable processes and activities are covered by the aforementioned PCs).</p> <p>If no measurement data is available, the downstream user can make use of suitable tools (e.g. ConsEXpo).</p> <p>Important note: demonstration of safe use by comparing exposure estimations with the long-term DNEL also covers the short-term DNEL (pursuant to Guideline R.14 acute exposure can be derived by multiplying the long-term exposure estimation by a factor of 2).</p>				