

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

Printing date 21.07.2016

Version number 7

Revision: 21.07.2016

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

1.1 Product identifier

Trade name: LOCK / AMATA pretzel lye adapted for fresh and frozen foods
sodium hydroxide solution 36%

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

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Further information obtainable from:

Natalie Granieri

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1.4 Emergency telephone number:

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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.

Skin Corr. 1A H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008

The product is classified and labelled according to the CLP regulation.

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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

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P234 Keep only in original container.

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.

P310 Immediately call a POISON CENTER/doctor.

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

3.2 Mixtures**Description:** Mixture: consisting of the following components.**Dangerous components:**

CAS: 1310-73-2	sodium hydroxide	Met. Corr.1, H290; Skin Corr. 1A, H314	25-50%
EINECS: 215-185-5			
Index number: 011-002-00-6			

Additional information: For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures**General information:**

Personal protection for the First Aider.

Take affected persons out of danger area and lay down.

Immediately remove any clothing soiled by the product.

In case of irregular breathing or respiratory arrest provide artificial respiration.

Seek immediate medical advice.

After inhalation:

Take affected persons into fresh air and keep quiet.

Oxygen, or mouth-to-mouth resuscitation if necessary.

Call a doctor immediately.

In case of unconsciousness place patient stably in side position for transportation.

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.

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After swallowing:

Rinse out mouth and then drink plenty of water.

Do not induce vomiting; call for medical help immediately.

4.2 Most important symptoms and effects, both acute and delayed No further relevant information available.**Information for doctor:**

If swallowed and followed by vomiting, aspiration may occur in the lungs, which can lead to chemical pneumonia or asphyxiation.

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:**CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.**For safety reasons unsuitable extinguishing agents:** Water with full jet**5.2 Special hazards arising from the substance or mixture**

The product itself is not caustic.

Reacts exothermically with water.

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

5.3 Advice for firefighters**Protective equipment:**

Wear self-contained respiratory protective device.

Wear fully protective suit.

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.

Particular danger of slipping on leaked/spilled product.

Use respiratory protective device against the effects of fumes/dust/aerosol.

Ensure adequate ventilation

6.2 Environmental precautions:

Dilute with plenty of water.

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

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

6.3 Methods and material for containment and cleaning up:

Send for recovery or disposal in suitable receptacles.

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Use neutralising agent.

Dispose contaminated material as waste according to item 13.

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.

Ensure good ventilation/exhaustion at the workplace.

Prevent formation of aerosols.

Information about fire - and explosion protection: The product is not flammable.

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7.2 Conditions for safe storage, including any incompatibilities**Storage:****Requirements to be met by storerooms and receptacles:**

Provide alkali-resistant floor.

Store only in the original receptacle.

Suitable material for receptacles and pipes: steel or stainless steel.

Unsuitable material for receptacle: aluminium.

Information about storage in one common storage facility: Not required.**Further information about storage conditions:**

Store in dry conditions.

Store receptacle in a well ventilated area.

Keep container tightly sealed.

Recommended storage temperature: > 16 °C**7.3 Specific end use(s)** No further relevant information available.

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 Short-term value: 2 mg/m³**Additional information:** The lists valid during the making were used as basis.**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.

Respiratory protection:

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

Short term filter device:

Filter P2

Filter P3

Protection of hands:

To avoid skin problems reduce the wearing of gloves to the required minimum.

Check protective gloves prior to each use for their proper condition.

After use of gloves apply skin-cleaning agents and skin cosmetics.



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Material of gloves

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

Break through time: ≥ 8 hours (0,5mm)

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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For the permanent contact in work areas without heightened risk of injury (e.g. Laboratory) gloves made of the following material are suitable:

Break through time: ≥ 8 hours

Nitrile rubber, NBR

Eye protection:

Tightly sealed goggles

Body protection:

Protective work clothing

Acid resistant protective clothing

Boots

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

General Information

Appearance:

Form:	Fluid
Colour:	Colourless
Odour:	Odourless
Odour threshold:	Not determined.

pH-value at 20 °C: 14

Change in condition

Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	125 °C
Setting temperature / range:	ca. 13 °C

Flash point: Not applicable.

Flammability (solid, gaseous): Not applicable.

Ignition temperature: Not applicable.

Decomposition temperature: Not determined.

Self-igniting: Product is not selfigniting.

Danger of explosion: Product does not present an explosion hazard.

Explosion limits:

Lower:	Not determined.
Upper:	Not determined.

Vapour pressure at 20 °C: 23 hPa

Density at 20 °C:	1.39 g/cm ³
Relative density	Not determined.
Vapour density	Not determined.
Evaporation rate	Not determined.

Solubility in / Miscibility with water: Fully miscible.

Partition coefficient (n-octanol/water): Not determined.

Viscosity:

Dynamic:	Not determined.
Kinematic:	Not determined.

Solvent content:

Solids content: 36.0 %

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9.2 Other information

No further relevant information available.

SECTION 10: Stability and reactivity**10.1 Reactivity** Hydrogen is released when it reacts with base metals (aluminium, zinc).**10.2 Chemical stability****Thermal decomposition / conditions to be avoided:** No decomposition if used and stored according to specifications.**10.3 Possibility of hazardous reactions**

Exothermic reaction with strong acids.

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

10.4 Conditions to avoid No further relevant information available.**10.5 Incompatible materials:** Acids, Light metals, Aluminium, Zinc, Organic peroxides**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 serious eye damage.

Respiratory or skin sensitisation Based on available data, the classification criteria are not met.**Additional toxicological information:**

Inhalation can cause respiratory pain, sneezing, coughing and respiratory dysfunction. Danger of lung oedema in high concentrations.

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

The declaration of the ecology refers to the main component.

Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water

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

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Must not reach sewage water or drainage ditch undiluted or unneutralised.
Rinse off of bigger amounts into drains or the aquatic environment may lead to increased pH-values. A high pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably reduced, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.

12.5 Results of PBT and vPvB assessment**PBT:** Not applicable.**vPvB:** Not applicable.**12.6 Other adverse effects** No further relevant information available.**SECTION 13: Disposal considerations****13.1 Waste treatment methods****Recommendation**

Disposal must be made according to official regulations.

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:** 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** UN1824**14.2 UN proper shipping name****ADR, IMDG, IATA** SODIUM HYDROXIDE SOLUTION**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)** 1L**Excepted quantities (EQ)** Code: E2

Maximum net quantity per inner packaging: 30 ml

Maximum net quantity per outer packaging: 500 ml

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Transport category 2
Tunnel restriction code E

IMDG

Limited quantities (LQ) 1L
Excepted quantities (EQ) Code: E2
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 500 ml

UN "Model Regulation": UN1824, SODIUM HYDROXIDE SOLUTION, 8, II

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3

National regulations:

Information about limitation of use:

Employment restrictions concerning juveniles must be observed.

Employment restrictions concerning pregnant and lactating women must be observed.

15.2 Chemical safety assessment: A Chemical Safety Assessment has not 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.

Relevant phrases

H290 May be corrosive to metals.

H314 Causes severe skin burns and eye damage.

Department issuing SDS: 10086/146

Abbreviations and acronyms:

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

ICAO: International Civil Aviation Organisation

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

ELINCS: European List of Notified Chemical Substances

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

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

Eye Dam. 1: Serious eye damage/eye irritation – Category 1

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Annex to Safety Data Sheet - Exposure Scenarios

pursuant to 1907/2006/EC, Article 31

Print date: 12.10.2015

Revised: 12.06.2015

1. Short description of the exposure scenario 1: Manufacture of the substance - Liquid		
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	
2.1 Contributing scenario to control environmental exposure for: ERC1		
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 discharge of waste water 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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2.2 Contributing scenario to control workers' exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9		
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 to control 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. Wear close-fitting safety goggles or eye protection 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		
<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.</p> <p>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 CO₂ (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 sew-</p>		

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age 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⁻ in the ground pore water is neutralised or a pH increase occurs. The substance is not bioaccumulating.

Workers

ECETOC TRA-model used.

Contributing scenario	Specific conditions	Routes of exposure	Degree of exposure	RCR
PROC1, PROC2, PROC3, PROC4,	Calculated exposure data, severe	Workers' exposure by inhalation	0.17mg/m ³	0.17
PROC8a, PROC8b, PROC9	low vapour pressure, without local extraction, without respiratory protection			
PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9	Measured exposure data, worst-case	Workers - inhalation, Short-term - local	0.33mg/m ³	0.33
PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9	Measured exposure data, worst-case	Workers - inhalation, Long-term - local	0.14mg/m ³	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.

4. Guidelines for the downstream user to evaluate whether he/she is working within the limits stipulated in the exposure scenario

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).

Additional suggestions for good practice beyond the REACH chemical safety assessment

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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1. Short description of the exposure scenario 2: Commercial use		
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	
2.1 Contributing scenario to control environmental exposure for: ERC8a, ERC8b, ERC8d, ERC9a		
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 discharge of waste water 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.

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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.
2.2 Contributing scenario to control workers' exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC15		
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	Frequency of use 8 hours / day
	Frequency of use	Frequency of use 200 days / year
Technical conditions and measures to control 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	
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 sub-		

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Revised: 12.06.2015

stance is rapidly neutralised as it reacts with CO₂ (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⁻ in the ground pore water is neutralised or a pH increase occurs. The substance is not bioaccumulating.

Workers

ECETOC TRA-model used.

Contributing scenario	Specific conditions	Routes of exposure	Degree of exposure	RCR
PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19, PROC23, PROC24	Liquid, no local extraction, no respiratory protection (RPE)	Workers - inhalation, short-term - local	0.17mg/m ³	0.17
PROC1, PROC2	Solid, no local extraction, no respiratory protection (RPE)	Workers - inhalation, short-term - local	0.01mg/m ³	0.01
PROC3, PROC15	Solid, no local extraction, no respiratory protection (RPE)	Workers - inhalation, short-term - local	0.1mg/m ³	0.1
PROC4, PROC5, PROC11, PROC14	Solid, no respiratory protection (RPE)	Workers - inhalation, short-term - local	0.2mg/m ³	0.2
PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC19	Solid, no local extraction, no respiratory protection (RPE)	Workers - inhalation, short-term - local	0.5mg/m ³	0.5
PROC23	Solid, with RPE (90%)	Workers - inhalation, short-term - local	0.4mg/m ³	0.4
PROC24	Solid, with RPE (90%)	Workers - inhalation, short-term - local	0.5mg/m ³	0.5

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.

4. Guidelines for the downstream user to evaluate whether he/she is working within the limits stipulated in the exposure scenario

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).

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Additional suggestions for good practice beyond the REACH chemical safety assessment

Local extraction is not necessary, but is advisable under good practice.
General ventilation is good practice if there is no local extraction.