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

SODIUM HYDROXIDE PEARLS FD/R/BAG 25

Version 3.0 Print Date 29.08.2012

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1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name	:	SODIUM HYDROXIDE PEARLS FD/R/BAG 25
Substance name	:	sodium hydroxide
Index-No.	:	011-002-00-6
CAS-No.	:	1310-73-2
EC-No.	:	215-185-5
Registration number	:	01-2119457892-27-xxxx

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

Use of the Substance/Mixture	:	Used as:, Reagent, pH-regulating agents, Catalyst, Etching agent, Cleaning agent, Chemical intermediate, Typical uses include: production of organic and inorganic chemicals, formulation of chemicals, production and whitening of paper pulp, production of aluminium and other metals, food industry, water treatment, production of textiles and professional end use of formulated products., Identified use: See table in front of appendix for a complete overview of identified uses.
Uses advised against	:	At this moment we have not identified any uses advised against

1.3. Details of the supplier of the safety data sheet

Company	:	Brenntag Nordic A/S Borupvang 5 B DK 2750 Ballerup
Telephone	:	+45 43 29 28 00
Telefax	:	+45 43 29 27 00
E-mail address	:	SDS.DK@brenntag-nordic.com
Responsible/issuing person	:	Environment & Quality

1.4. Emergency telephone number

Emergency telephone number	:	In case of personal injury call: Denmark: 82 12 12 12 Giftlinien, Bispebjerg Hospital Finland: Poison Information Centre: (09) 471 977 (direct) or (09) 47 11 (exchange), open 24h/day Norway: 22 59 13 00 Giftinformasjonen (døgnåpent) Sweden: +46-8-331231 Giftinformationscentralen (24 hour service) Outside these countries: Please call your local emergency services

2. Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

REGULATION (EC) No 1272/2008			
Hazard class	**Hazard category**	**Target Organs**	**Hazard statements**
Corrosive to metals	Category 1	---	H290
Skin corrosion/irritation	Category 1A	---	H314

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

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Directive 67/548/EEC or 1999/45/EC	
Hazard symbol / Category of danger	**Risk phrases**
Corrosive (C)	R35

For the full text of the R-phrases mentioned in this Section, see Section 16.

Most important adverse effects

Human Health : See section 11 for toxicological information.

Physical and chemical hazards : See section 9 for physicochemical information.

Potential environmental effects : See section 12 for environmental information.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008

Hazard symbols :

Signal word : Danger

Hazard statements : H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.

Precautionary statements

Prevention	:	P234	Keep only in original container.
		P260	Do not breathe dust.
		P280	Wear protective gloves/ eye protection/ face protection.
Response	:	P301 + P330 + P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
		P303 + P361 + P353	IF ON SKIN (or hair): Remove/ 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.

Hazardous components which must be listed on the label:

• sodium hydroxide

2.3. Other hazards

For Results of PBT and vPvB assessment see section 12.5.

3. Composition/information on ingredients

3.1. Substances

Hazardous components	Amount [%]	Classification (REGULATION (EC) No 1272/2008)		Classification (67/548/EEC)
		Hazard class / Hazard category	Hazard statements	
sodium hydroxide Index-No. : 011-002-00-6 CAS-No. : 1310-73-2 EC-No. : 215-185-5 Registration : 01-2119457892-27-xxxx	<= 100	Met. Corr.1 Skin Corr.1A	H290 H314	C; R35

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

4. First aid measures

4.1. Description of first aid measures

General advice	: Take off contaminated clothing and shoes immediately.
If inhaled	: In case of accident by inhalation: remove casualty to fresh air and keep at rest. If breathing is irregular or stopped, administer artificial respiration. Call a physician immediately.
In case of skin contact	: Wash off immediately with plenty of water for at least 15 minutes. Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
In case of eye contact	: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician immediately.
If swallowed	: Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a physician immediately. If a person vomits when lying on his back, place him in the recovery position.

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

Symptoms	: See Section 11 for more detailed information on health effects and symptoms.
Effects	: See Section 11 for more detailed information on health effects and symptoms.

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

Treatment	: Treat symptomatically. No further information available.

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. The product itself does not burn.
Unsuitable extinguishing media	: No information available.

5.2. Special hazards arising from the substance or mixture

Specific hazards during firefighting	:	Forms slippery/greasy layers with water.

5.3. Advice for firefighters

Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus.Wear appropriate body protection (full protective suit)
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Use personal protective equipment. Keep away unprotected persons. Avoid dust formation. Avoid contact with the skin and the eyes. Do not breathe dust. For personal protection see section 8.

6.2. Environmental precautions

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

6.3. Methods and materials for containment and cleaning up

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

6.4. Reference to other sections

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

7. Handling and storage

7.1. Precautions for safe handling

Advice on safe handling	:	Handle in accordance with good industrial hygiene and safety practice. Keep container tightly closed. Use personal protective equipment. Provide sufficient air exchange and/or exhaust in work rooms. Avoid contact with the skin and the eyes. Do not breathe dust. Emergency eye wash fountains and emergency showers should be available in the immediate vicinity.
Hygiene measures	:	Keep away from food, drink and animal feedingstuffs. Smoking, eating and drinking should be prohibited in the application area. Wash hands before breaks and at the end of workday. Take off contaminated clothing and shoes immediately.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Keep in an area equipped with alkali resistant flooring. Store in original container.
Advice on protection against fire and explosion	:	The product is not flammable. Normal measures for preventive fire protection.
Further information on storage conditions	:	Keep tightly closed in a dry and cool place. Product is hygroscopic.
Advice on common storage	:	Keep away from food, drink and animal feedingstuffs. Do not store together with acids and ammonium salts. Materials to avoid: Organic peroxides

7.3. Specific end uses

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

8. Exposure controls/personal protection

8.1. Control parameters

Derived No Effect Level (DNEL)		
Workers, Inhalation Short-term exposition	:	1 mg/m3
Population, Inhalation Long-term exposition	:	1 mg/m3

Other Occupational Exposure Limit Values

(Additional) Information : Contains no substances with occupational exposure limit values.

Component: sodium hydroxide	CAS-No. 1310-73-2
Other Occupational Exposure Limit Values	

GV (DK), Ceiling Limit Value:
2 mg/m3

8.2. Exposure controls

Engineering measures
Refer to protective measures listed in sections 7 and 8.
Emergency eye wash fountains and emergency showers should be available in the immediate vicinity.

Personal protective equipment
Respiratory protection

Advice : Required if dust is released
Recommended Filter type:
Particle filter:P2
Particle filter:P3

Hand protection

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

Eye protection

Advice	:	Tightly fitting safety goggles

Skin and body protection

Advice	:	impervious clothing

Environmental exposure controls

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

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Form	:	solid
Colour	:	white
Odour	:	odourless
Odour Threshold	:	no data available
pH	:	> 14 (100 g/l; 20 °C)
Melting point/range	:	323 °C (1013 hPa)
Boiling point/boiling range	:	1.388 °C (1013 hPa)
Flash point	:	not applicable
Evaporation rate	:	negligible
Flammability (solid, gas)	:	The product is not flammable.
Upper explosion limit	:	not applicable
Lower explosion limit	:	not applicable
Vapour pressure	:	not applicable
Relative vapour density	:	not applicable
Density	:	2,13 g/cm3

Water solubility	:	1000 g/l (25 °C)
		3420 g/l (100 °C)
Solubility in other solvents	:	139 g/l (Ethanol; 20 °C)
		238 g/l (methanol; 20 °C)
Partition coefficient: n-octanol/water	:	no data available
Ignition temperature	:	not applicable
Thermal decomposition	:	Currently we do not have any information from our supplier about this.
Viscosity, dynamic	:	not applicable
Explosivity	:	Product is not explosive.
Oxidizing properties	:	no data available

9.2. Other information

No further information available.

10. Stability and reactivity

10.1. Reactivity

Advice : Reacts with acids.
Gives off hydrogen by reaction with base metals (zinc, aluminium).

10.2. Chemical stability

Advice : Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions : Gives off hydrogen by reaction with base metals (zinc, aluminium). Reacts exothermic with water Reacts exothermic with acids.

10.4. Conditions to avoid

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

hygroscopic.

10.5. Incompatible materials

Materials to avoid : Materials to avoid: Acids, Light metals, Water, Alcohols

10.6. Hazardous decomposition products

Hazardous decomposition products : No information available.

11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity
Oral
If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach. Cause serious burns with severe pains, vomiting, pains in the stomach, possibly chock and damaged kidneys. The burn may occur even if only small amounts have been swallowed.
Inhalation
Please find this information in the listing of the component/components below in the MSDS. Inhalation may cause pain in respiratory system, sneezing, coughing and difficulty in breathing. Risk for pulmonary edema by high concentration.
Dermal
Please find this information in the listing of the component/components below in the MSDS.
Irritation
Skin
May cause serious corrosive damage with deep slow-healing ulcer. Even dilute solution burns. First the skin feels slippery-later pain,

blistering & ulcer may occur.

Eyes

Splashes in the eyes may cause painful burns, which may result in permanent damage to the eyes.

Sensitisation

No sensitizing effect known.

CMR effects

CMR Properties

Carcinogenicity	:	Please find this information in the listing of the component/components below in the MSDS.
Mutagenicity	:	Please find this information in the listing of the component/components below in the MSDS.
Teratogenicity	:	no data available
Reproductive toxicity	:	Please find this information in the listing of the component/components below in the MSDS.

Specific Target Organ Toxicity

Single exposure

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

Repeated exposure

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

Other toxic properties

Aspiration toxicity

No aspiration toxicity classification

Component: sodium hydroxide	**CAS-No. 1310-73-2**

Acute toxicity

Oral

no data available

Dermal

no data available

Sensitisation

Patch test on human volunteers did not demonstrate sensitization properties.

CMR effects

CMR Properties

Carcinogenicity	:	No experimental references for cancerogenity available.
Mutagenicity	:	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects
Reproductive toxicity	:	Not expected to be impair fertility.

Specific Target Organ Toxicity

Single exposure

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

Repeated exposure

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

Other toxic properties

Aspiration toxicity

No aspiration toxicity classification

12. Ecological information

12.1. Toxicity

Component: sodium hydroxide		CAS-No. 1310-73-2
Acute toxicity		
Fish		
LC50	:	125 mg/l (Gambusia affinis; 96 h)
LC50	:	145 mg/l (Poecilia reticulata; 24 h)
Toxicity to daphnia and other aquatic invertebrates.		
EC50	:	76 mg/l (Daphnia magna; 24 h)
Bacteria		
EC50	:	22 mg/l (Photobacterium phosphoreum; 15 min)

12.2. Persistence and degradability

Component: sodium hydroxide		CAS-No. 1310-73-2
Persistence and degradability		
Persistence		
Result	:	no data available
Biodegradability		
Result	:	The methods for determining biodegradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Component: sodium hydroxide	CAS-No. 1310-73-2
Bioaccumulation	

Result : Does not bioaccumulate.

12.4. Mobility in soil

Component: sodium hydroxide	CAS-No. 1310-73-2
Mobility	

: The product is mobile in water enviroment.

12.5. Results of PBT and vPvB assessment

Component: sodium hydroxide	CAS-No. 1310-73-2
Results of PBT and vPvB assessment	

Result : no data available

12.6. Other adverse effects

Additional ecological information

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

13. Disposal considerations

13.1. Waste treatment methods

Product : Disposal together with normal waste is not allowed. Special disposal required according to local regulations. Do not let product enter drains. Contact waste disposal services.

Contaminated packaging	:	Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning. Packagings that cannot be cleaned are to be disposed of in the same manner as the product.
European Waste Catalogue Number	:	No waste code according to the European Waste Catalogue can be assigned for this product, as the intended use dictates the assignment. The waste code is established in consultation with the regional waste disposer.

14. Transport information

14.1. UN number

1823

14.2. UN proper shipping name

ADR	:	SODIUM HYDROXIDE, SOLID
RID	:	SODIUM HYDROXIDE, SOLID
IMDG	:	SODIUM HYDROXIDE, SOLID

14.3. Transport hazard class(es)

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

14.4. Packaging group

ADR	:	II
RID	:	II
IMDG	:	II

14.5. Environmental hazards

Labeling according to 5.2.1.8 ADR	:	no
Labeling according to 5.2.1.8 RID	:	no
Labeling according to 5.2.1.6.3 IMDG	:	no
Classification as environmentally hazardous according to 2.9.3 IMDG	:	no

Classified as “P” according to 2.10 IMDG : no

14.6. Special precautions for user

Not applicable.

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

IMDG : Not applicable.

15. Regulatory information

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

Other regulations : Only persons, who are thoroughly instructed in the dangerous properties and the necessary safety precautions of the substance, are allowed to work with it.
; As a principal rule, persons under 18 years are not allowed to work with this substance.

Notification status

sodium hydroxide:

Regulatory List	Notification	Notification number
EINECS	YES	215-185-5

15.2. Chemical Safety Assessment

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

16. Other information

Full text of R-phrases referred to under sections 2 and 3.

R35	Causes severe burns.

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

H290	May be corrosive to metals.
H314	Causes severe skin burns and eye damage.

Further information

Other information : Restricted to professional users. Attention - Avoid exposure -

obtain special instructions before use.The information provided in this Safety Data Sheet is correct to our knowledge at the date of its revision. The information given only describes the products with regard to safety arrangements and is not to be considered as a warranty or quality specification and does not constitute a legal relationship.
The information contained in this Safety Data Sheet relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text

|| Indicates updated section.

No.	Short title	Main User Group (SU)	Sector of Use (SU)	Product Category (PC)	Process Category (PROC)	Environmental Release Category (ERC)	Article Category (AC)	Specified
1	Industrial use	3	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 10, 13, 15	2, 4, 6a, 6b, 7	NA	ES065
2	Professional use	22	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 10, 11, 13, 15	8a, 8b, 8d, 9a	NA	ES067
3	Consumer use	21	NA	20, 35, 39	NA	8a, 8b, 8d, 9a	NA	ES075

1. Short title of Exposure Scenario 1: Industrial use		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC2: Formulation of preparations (mixtures) ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC6b: Industrial use of reactive processing aids ERC7: Industrial use of substances in closed systems	
2.1 Contributing scenario controlling environmental exposure for: ERC2, ERC4, ERC6a, ERC6b, ERC7		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Continuous exposure	8 hours/day
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Application Area	Industrial use
	Water	Regular control of the pH value during introduction into open waters is required. In general discharges should be carried out such that pH changes in receiving surface waters are minimised. In general most aquatic organisms can tolerate pH values in the range of 6-9. This is also reflected in the description of standard OECD tests with aquatic organisms. Risk management measures related to the environment aim to avoid discharging the substance into municipal wastewater or to surface water, in case such discharges are expected to cause significant pH changes.
Conditions and measures related	Disposal methods	Waste should be reused or discharged to the

to external treatment of waste for disposal		industrial wastewater and further neutralized if needed.

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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Physical Form (at time of use)	Solid, low dustiness
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	200 days/year
Technical conditions and measures to control dispersion from source towards the worker	Use closed systems or covering of open containers (e.g. screens) Transport over pipes, technical barrel filling/emptying of barrel with automatic systems (suction pumps etc.) Use of pliers, grip arms with long handles with manual use to avoid direct contact and exposure by splashes (no working over one's head)	
Organisational measures to prevent /limit releases, dispersion and exposure	Replacing, where appropriated, manual processes by automated and/or closed processes. This would avoid irritating mists, sprayings and subsequent potential splashes. Workers in the risky process/areas identified should be trained a) to avoid to work without respiratory protection and b) to understand the corrosive properties and, especially, the respiratory inhalation effects and c) to follow the safety procedures instructed by the employer. The employer has also to ascertain that the required PPE is available	
Conditions and measures related to personal protection, hygiene and health evaluation	In case of dust or aerosol formation: use respiratory protection with approved filter (P2) Wear chemically resistant gloves. material: butyl-rubber, PVC, polychloroprene with natural latex liner, material thickness: 0.5 mm, breakthrough time: >480 min material: nitrile-rubber, fluorinated rubber, material thickness: 0.35-0.4 mm, breakthrough time: > 480 min If splashes are likely to occur: wear tightly fitting safety goggles, face–shield Wear suitable protective clothing, aprons, shield and suits Rubber or plastic boots	

3. Exposure estimation and reference to its source

Environment

The aquatic effect and risk assessment only deals with the effect on organisms/ecosystems due to possible pH changes related to OH- discharges, as the toxicity of the metal ion is expected to be insignificant compared to the (potential) pH effect, The high water solubility and very low vapour pressure indicates that the substance will be found predominantly in water., When the risk management measures related to the environment are implemented, there is no exposure to the activated sludge of a sewage treatment plant and there is no exposure to the receiving surface water.
The sediment compartment is not considered, because it is not relevant for the substance., If emitted to the aquatic compartment, sorption to sediment particles will be negligible.

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

Workers

Used ECETOC TRA model.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19, PROC23, PROC24	liquid, no LEV, no respiratory protection (RPE)	worker inhalation, acute - local	0,17mg/m³	---
PROC1, PROC2	solid, no LEV, no respiratory protection (RPE)	worker inhalation, acute - local	0,01mg/m³	---
PROC3, PROC15	solid, no LEV, no respiratory protection (RPE)	worker inhalation, acute - local	0,1mg/m³	---
PROC4, PROC5, PROC11, PROC14	solid, no respiratory protection (RPE)	worker inhalation, acute - local	0,2mg/m³	---
PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC19	solid, no LEV, no respiratory protection (RPE)	worker inhalation, acute - local	0,5mg/m³	---
PROC23	solid, with RPE (90%)	worker inhalation, acute - local	0,4mg/m³	---
PROC24	solid, with RPE (90%)	worker inhalation, acute - local	0,5mg/m³	---

This substance is corrosive., For the handling of corrosive substances and formulations, immediate dermal contacts occur only occasionally and it is assumed that repeated daily dermal exposure can be neglected., Dermal exposure

to the substance was not quantified., The substance is not expected to be systemically available in the body under normal handling and use conditions, Systemic effects of NaOH after dermal or inhalation exposure are not expected to occur., Based on workplace measurements and following the proposed risk management measures controlling worker and professional exposure, the inhalation exposure is below the DNEL.

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

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL (given that the processes and activities in question are covered by the PROCs listed above) as given below
If measured data are not available, the DU may make use of an appropriate scaling tool such as ECETOC TRA.
Important note: By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Local exhaust ventilation is not required but good practice.
General ventilation is good practice unless local exhaust ventilation

1. Short title of Exposure Scenario 2: Professional use		
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring 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 controlling environmental exposure for: ERC8a, ERC8b, ERC8d, ERC9a		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Continuous exposure	8 hours/day
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Application Area	Professional use
	Water	Regular control of the pH value during introduction into open waters is required. In general discharges should be carried out such that pH changes in receiving surface waters are minimised. In general most aquatic organisms can tolerate pH values in the range of 6-9. This is also reflected in the description of standard OECD tests with aquatic organisms. Risk management measures related to the environment aim to avoid discharging the substance into municipal wastewater or to surface water, in case such discharges are expected to cause significant pH changes.
Conditions and measures related to external treatment of waste for disposal	Disposal methods	Waste should be reused or discharged to the industrial wastewater and further neutralized if needed.

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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Physical Form (at time of use)	Solid, low dustiness
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	200 days/year
Technical conditions and measures to control dispersion from source towards the worker	Use of pliers, grip arms with long handles with manual use to avoid direct contact and exposure by splashes (no working over one's head) Where possible use of specific dispensers and pumps specifically designed to prevent splashes/spills/exposure to occur.	
Organisational measures to prevent /limit releases, dispersion and exposure	Replacing, where appropriated, manual processes by automated and/or closed processes. This would avoid irritating mists, sprayings and subsequent potential splashes. Workers in the risky process/areas identified should be trained a) to avoid to work without respiratory protection and b) to understand the corrosive properties and, especially, the respiratory inhalation effects and c) to follow the safety procedures instructed by the employer. The employer has also to ascertain that the required PPE is available	
Conditions and measures related to personal protection, hygiene and health evaluation	In case of dust or aerosol formation: use respiratory protection with approved filter (P2) Wear chemically resistant gloves. material: butyl-rubber, PVC, polychloroprene with natural latex liner, material thickness: 0.5 mm, breakthrough time: >480 min material: nitrile-rubber, fluorinated rubber, material thickness: 0.35-0.4 mm, breakthrough time: > 480 min If splashes are likely to occur: wear tightly fitting safety goggles, face–shield Wear suitable protective clothing, aprons, shield and suits Rubber or plastic boots	

3. Exposure estimation and reference to its source

Environment

The aquatic effect and risk assessment only deals with the effect on organisms/ecosystems due to possible pH changes related to OH- discharges, as the toxicity of the metal ion is expected to be insignificant compared to the (potential) pH effect, The high water solubility and very low vapour pressure indicates that the substance will be found predominantly in water., When the risk management measures related to the environment are implemented, there is no exposure to the activated sludge of a sewage treatment plant and there is no exposure to the receiving surface water.
The sediment compartment is not considered, because it is not relevant for the substance., If emitted to the aquatic compartment, sorption to sediment particles will be negligible.
Significant emissions to air are not expected due to the very low vapour pressure of the substance., If emitted to air as a water-based aerosol, the substance will be rapidly neutralised as a result of its reaction with CO2 (or acids)
Significant emissions to the terrestrial environment are not expected., The sludge application route is not relevant for the emission to agricultural soil, as no sorption of the substance to particulate matter will occur in STPs/WWTPs., If

emitted to soil, sorption to soil particles will be negligible., Depending on the buffer capacity of the soil, OH- will be neutralised in the soil pore water or the pH may increase.
Bioaccumulation will not occur.

Workers

Used ECETOC TRA model.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19, PROC23, PROC24	liquid, no LEV, no respiratory protection (RPE)	worker inhalation, acute - local	0,17mg/m³	---
PROC1, PROC2	solid, no LEV, no respiratory protection (RPE)	worker inhalation, acute - local	0,01mg/m³	---
PROC3, PROC15	solid, no LEV, no respiratory protection (RPE)	worker inhalation, acute - local	0,1mg/m³	---
PROC4, PROC5, PROC11, PROC14	solid, no respiratory protection (RPE)	worker inhalation, acute - local	0,2mg/m³	---
PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC19	solid, no LEV, no respiratory protection (RPE)	worker inhalation, acute - local	0,5mg/m³	---
PROC23	solid, with RPE (90%)	worker inhalation, acute - local	0,4mg/m³	---
PROC24	solid, with RPE (90%)	worker inhalation, acute - local	0,5mg/m³	---

This substance is corrosive., For the handling of corrosive substances and formulations, immediate dermal contacts occur only occasionally and it is assumed that repeated daily dermal exposure can be neglected., Dermal exposure to the substance was not quantified., The substance is not expected to be systemically available in the body under normal handling and use conditions, Systemic effects of NaOH after dermal or inhalation exposure are not expected to occur., Based on workplace measurements and following the proposed risk management measures controlling worker and professional exposure, the inhalation exposure is below the DNEL.

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

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL (given that the processes and activities in question are covered by the PROCs listed above) as given below
If measured data are not available, the DU may make use of an appropriate scaling tool such as ECETOC TRA.
Important note: By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Local exhaust ventilation is not required but good practice.
General ventilation is good practice unless local exhaust ventilation

1. Short title of Exposure Scenario 3: Consumer use		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents PC35: Washing and cleaning products (including solvent based products) PC39: Cosmetics, personal care products	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC9a: Wide dispersive indoor use of substances in closed systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8d, ERC9a		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	There are no specific risk management measures related to environment.	
Conditions and measures related to external treatment of waste for disposal	Disposal methods	This material and its container must be disposed of in a safe way (e.g. by returning to a public recycling facility)., If container is empty, trash as regular municipal waste., Batteries should be recycled as much as possible (e.g. by returning to a public recycling facility)., Recovery of the substance from alkaline batteries includes emptying the electrolyte, collection and neutralization.
2.2 Contributing scenario controlling consumer exposure for: PC20, PC35, PC39		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Physical Form (at time of use)	Solid, low dustiness
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	It is required to use resistant labelling-package to avoid its auto-damage and loss of the label integrity, under normal use and storage of the product. The lack of quality of the package provokes the physical loss of information on hazards and use instructions. It is advisable to deliver only in very viscous preparations. It is advisable to delivery only in small amounts.

		For use in batteries, it is required to use completely sealed articles with a long service life maintenance. It is required that improved use instructions, and product information should always be provided to the consumers. This clearly can efficiently reduce the risk of misuse. For reducing the number of accidents in which (young) children or elderly people are involved, it should be advisable to use these products in the absence of children or other potential sensitive groups. Do not apply product into ventilator openings or slots. Keep out of the reach of children.
	Consumer Measures	In case of dust or aerosol formation: use respiratory protection with approved filter (P2) Wear impervious chemical resistant protective gloves. If splashes are likely to occur: wear tightly fitting safety goggles, face–shield

3. Exposure estimation and reference to its source

Environment

Consumer uses relate to already diluted products which will further be neutralized quickly in the sewer, well before reaching a WWTP or surface water.

Consumers

ConsExpo and SrayExpo

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC20, PC35, PC39	Assessed only for the most critical use, (use of the substance in a spray oven cleaner)	consumer inhalation, acute - local	0,3 - 1,6mg/m³	< 1

The calculated short-term exposure is slightly higher than the long term DNEL for inhalation, but smaller than the short term occupational exposure limit., The substance will be rapidly neutralised as a result of its reaction with CO2 (or other acids), Consumer exposure to the substance in batteries is zero because batteries are sealed articles with a long service life maintenance.

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

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL

(given that the processes and activities in question are covered by the PCs listed above) as given below
If measured data are not available, the DU may make use of an appropriate scaling tool such as ConsEXpo software.
Important note: By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2).