

SODIUM HYDROXIDE 5-51%

Code : 16124

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

1.1. Product identifier

Chemical description : Sodium hydroxide , Caustic soda , solution (5-51%).
 Type of product : Mixture.
 Reach registration number : 01-2119457892-27

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

Identified use(s) : See table on the front page of the annex.
 Use(s) advised against : This product is not recommended for any industrial, professional or consumer use other than identified in table on the front page of the annex.
 Not for use in ornamental articles, in tricks and jokes and in games (in accordance with Annex XVII to Regulation (EC) No 1907/2006) (3. Liquid substances or mixtures, which are fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: (a) hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F, (b) hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10, (c) hazard class 4.1, (d) hazard class 5.1).

1.3. Details of the supplier of the safety data sheet

Company identification : BRENNTAG N.V. - Nijverheidslaan 38 - BE-8540 DEERLIJK
 TEL: +32(0)56/77.69.44 - FAX: +32(0)56/77/57/11
 E-MAIL: info@brenntag.be - Website: www.brenntag.be

BRENNTAG Nederland B.V. - Donker Duyvisweg 44 - NL-3316 BM DORDRECHT
 TEL: +31(0)78/65.44.944 - FAX: +31(0)78/65.44.919
 E-MAIL: info@brenntag.nl - Website: www.brenntag.nl

1.4. Emergency telephone number

Emergency phone number : Belgium : Antipoison Center - Brussels
 TEL: +32(0)70/245.245

The Netherlands : National Poisoning Information Center - Bilthoven
 TEL: +31(0)30/274.88.88 (Only for the purpose of informing medical personnel in cases of acute intoxications)

SECTION 2. Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

- * Corrosive to metals - Category 1 - Warning (Met. Corr. 1; H290)
 Skin corrosion - Category 1A - Danger (Skin Corr. 1A; H314)
 Serious eye damage - Category 1 - Danger (Eye Dam. 1; H318)

2.2. Label elements

Label in accordance with Regulation (EC) No 1272/2008

- Dangerous ingredient(s) : Sodium hydroxide
- Hazard pictogram(s)



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

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SECTION 2. Hazards identification (continued)

- Precautionary statements
 - Prevention : P260 - Do not breathe dust/fume/gas/mist/vapours/spray. P280 - Wear protective gloves/protective clothing/eye protection/face protection.
 - Response : P303+P361+P353 - IF ON SKIN (or hair) : Remove 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/...
 - Disposal considerations : P501 - Dispose of this material and its container to hazardous or special waste collection point.

2.3. Other hazards

- Physical/chemical hazards : Product reacts violently and explosive when contact with organic substances, reducing substances, metals and when contamination with dust (exotherm reaction).
- Hazards for the health : A health dangerous concentration in the air will not or very slowly be reached by evaporation of this substance at app. 20°C; by spraying much faster.
- Hazards for the environment : Product causes a strong rise of the pH-value of water and soil. This product is no substance or contains no PBT or vPvB (in accordance with Annex XIII).
- Hazards for the safety : Risk of explosion by many reactions.

SECTION 3. Composition/information on ingredients

3.2. Mixtures

Name component(s)	Weight %	CAS nr	EINECS nr	Index nr	Reach nr	CLASSIFICATION
* Sodium hydroxide	: 5 -51 %	1310-73-2	215-185-5	011-002-00-6	01-2119457892-27	Met. Corr. 1; H290 Skin Corr. 1A; H314
* Potassium hydroxide	: 0.5 < 1 %	1310-58-3	215-181-3	019-002-00-8	01-2119487136-33	Met. Corr. 1; H290 Acute Tox. 4 (oral); H302 Skin Corr. 1A; H314

Note: SCL applicable

The full text of the (EU)H-statements is in section 16.

SECTION 4. First aid measures

4.1. Description of first aid measures

- General : In case of doubt or persistent symptoms, call a physician.
Never give anything by mouth to an unconscious person.
- First Aid Measures
 - Inhalation : Remove victim into fresh air.
Allow the affected person to rest in semi-sitting position.
If not breathing, give artificial respiration.
Seek medical attention immediately.
 - Skin Contact : Remove contaminated clothing and shoes while rinsing.
Rinse skin immediately with mild soap and plenty of water. (at least 20') (shower if necessary).
Immediately call a POISON CENTER or doctor/physician.
 - Eye Contact : Rinse immediately thoroughly and long (at least 15 min.) with plenty of water.
Remove contact lenses after a few minutes rinse.
Immediately call a POISON CENTER or doctor/physician.
Keep rinsing or dripping the eye during transport.

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SECTION 4. First aid measures (continued)

- Ingestion : DO NOT INDUCE VOMITING. Rinse mouth.
Give victim plenty of water to drink.
Take the patient IMMEDIATELY to the hospital.

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

See section 11.

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

For specialist advice doctors should contact the NVIC or the Belgian Poison center.

SECTION 5. Firefighting measures

5.1. Extinguishing media

Extinguishing Media

- Suitable : Extinguishing powder , Foam , Water spray .
- Unsuitable : Heavy water stream , Carbon dioxide (CO2) .

5.2. Special hazards arising from the substance or mixture

Special Exposure Hazards : Fire may liberate toxic and stinging vapours.

5.3. Advice for firefighters

- Special Protective Equipment for Firefighters : Use self-contained breathing apparatus and wear protective clothes when in close proximity to fire.
- Special Procedures : Apply water spray or fog to cool nearby equipment. Avoid fire-fighting water to enter environment.

SECTION 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal Precautions : Evacuate all personnel immediately and ventilate area.
Avoid breathing vapour and contact with skin, eyes and clothing. Wear recommended personal protective equipment. (See section 8)

6.2. Environmental precautions

Environmental Precautions : Shut off leaks if without risks.
Dike in the spilled product as much as possible with inert material.
Prevent entry of product in public water, sewers or soil.
Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for Cleaning Up : Collect the spillage in closable, corrosion resistant, suitable disposal containers.
Dilute spilled liquid immediately with plenty of water - neutralise with acid.
Rinse abundantly with water.

6.4. Reference to other sections

For personal protection, see section 8.
For the removal of the waste product, see section 13.

SECTION 7. Handling and storage

7.1. Precautions for safe handling

Handling : AVOID FOG TRANSFORMATION ! AVOID EVERY CONTACT !!
Avoid breathing vapour and contact with skin, eyes and clothing. Wear recommended personal protective equipment. (See section 8)
When diluting: add the basic solution in water, never the other way around.

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SECTION 7. Handling and storage (continued)

When dissolving or diluting the product in water, heat and mist may develop.
When using, do not eat, drink or smoke.
Emergency eye wash fountains and showers should be available in the immediate vicinity of any potential exposure.

7.2. Conditions for safe storage, including any incompatibilities

- Storage : Keep only in the original, safely locked container in a cool and well ventilated place.
All dangerous products should be placed on a drip tray or should be barreled.
Keep away from : Oxidizing agents , Acids .
- Packaging Material : Stainless steel , Nickel , Polyethylene , Polypropylene , PVC.
- Insuitable Packaging Material : Several metals (Aluminium , Magnesium , Copper , Zinc (+ Alloys)), Polyester .

7.3. Specific end use(s)

For identified uses, see subsection 1.2 and/or exposure scenarios.

SECTION 8. Exposure controls/personal protection

8.1. Control parameters

- * Occupational Exposure Limits : For harmful components :
Sodium hydroxide : Limit value (BE) : 2 mg/m³ (2014) (M)
Potassium hydroxide : Short time value (BE) : 2 mg/m³ (2014) (M)
Potassium hydroxide : ACGIH (TWA 8h) : 2 mg/m³
(M) The mention "M" means that the exposition above the limit value causes irritation or that there is a danger for acute poisoning. The work procedure has to be designed somehow or other that the exposition doesn't exceed the limit value. During a control, the sample period should be so short as possible to carry out a reliable measurement. The mesure result is then related to the considered period.
- Biological limit values : They will be included when available.
- * DNELs : For harmful components :
 - Sodium hydroxide : Worker, long-term - local effects, inhalation : 1,0 mg/m²
 - Sodium hydroxide : Consumer, long-term - local effects, inhalation : 1,0 mg/m³
 - Potassium hydroxide : Worker, long-term - local effects, inhalation : 1 mg/m³
- * PNECs : For harmful components :
 - Sodium hydroxide : Not applicable
 - Potassium hydroxide : Not applicable

8.2. Exposure controls

- Engineering Measures : Ventilation , Local exhaust .
- Personal Protection Equipment
- Respiratory protection : CE-approved gas respirator (Filter type B/P2).
 - Skin protection : Corrosion-proof protective clothing.
 - Hand protection : Suitable material for safety gloves (EN 374):
The suitability of the gloves and the breakthrough time for a specific workplace should be discussed with the producers of the protective gloves.
 - material : Nitril rubber
 - thickness : 0,35 mm
 - breakthrough time : > 480'
 - Eye/Face protection : Closed safety glasses or face shield.
- Environmental exposure controls : See sections 6, 7, 12 and 13.

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SECTION 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

See technical data sheet for detailed information.

Physical State (20°C)	: Liquid .
Form/Colour	: Clear , Colourless .
Odour	: Odourless .
Odour threshold	: Not applicable.
pH value	: > 14
Melting/Freezing point	: -17 °C (10%) 12 °C (50%)
Boiling Point/Range (1013 hPa)	: 111 - 145 °C (25-50%)
Flash point	: Not applicable.
Fire hazard	: Not applicable.
Evaporation rate	: No data available.
Explosion limits in air	: Not applicable.
Vapour pressure (20°C)	: 0,1 -1,4 kPa (10-50%)
Relative vapour density (air=1)	: No data available.
Relative density of saturated vapour/air mixture (air=1)	: No data available.
* Relative density (water=1)	: 1,3 -1,5 (25-50%)
* Density (20°C)	: 1,0538 - 1,525 kg/l (5-50%)
Solubility in water	: Complete solubility .
Soluble in	: Ethanol , Methanol , Glycerol .
Log P Octanol/Water (20°C)	: Inorganic
Auto-ignition temperature	: Not applicable.
Minimum ignition energy	: Not applicable.
Decomposition temperature	: No data available.
* Viscosity (20°C)	: 12 - 120 mPa.s (29-51%)
Explosive properties	: No chemical groups associated with explosive properties .
Oxidizing properties	: No chemical groups associated with oxidizing properties .

SECTION 10. Stability and reactivity

10.1. Reactivity

Reactivity	: Reacts violently with: Halogenated hydrocarbons , Ammonium salts , Acids , Water . Corrosive to metals.
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10.2. Chemical stability

Stability	: Stable at normal circumstances .
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10.3. Possibility of hazardous reactions

Hazardous reactions	: Exothermic reaction with: Water , Acids . Contact with metallic substances may release inflammable hydrogen gas. Reacts with Ammonium salts -> Creation of: Ammonia . Can react with sugar residues to form Carbon monoxide.
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10.4. Conditions to avoid

Conditions to avoid	: Contact with water.
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10.5. Incompatible materials

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SECTION 10. Stability and reactivity (continued)

Materials to avoid : Halogenated hydrocarbons , Ammonium salts , Acids , Aluminium , Magnesium , Copper , Zinc , Wool , Lether , Polyester .

10.6. Hazardous decomposition products

Hazardous Decomposition Products : Ammonia , Hydrogen .

SECTION 11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity

- * - Inhalation : Symptoms include: Sore throat , Cough , Shortness of breath .
For harmful components :
• Sodium hydroxide : LC50 (Rat, inhalation, 4 h) : No data available.
• Potassium hydroxide : LC50 (Rat, inhalation, 4 h) : No data available.
- * - Skin contact : Symptoms include: Redness , Pain , Severe burns .
For harmful components :
• Sodium hydroxide : LD50 (Rabbit, dermal) : No data available.
• Potassium hydroxide : LD50 (Rabbit, dermal) : No data available.
- * - Ingestion : Symptoms include: Sore throat , Abdominal cramps , Vomiting , Diarrhea .
For harmful components :
• Sodium hydroxide : LD50 (Rat, oral) : No data available.
• Potassium hydroxide : LD50 (Rat, oral) : 333 mg/kg (OECD Guideline 425)

Skin corrosion/irritation

: Causes severe burns.
Skin contact can damage eczema.

Serious eye damage/irritation

: May cause diminished visual capacity to complete blindness.
Causes serious eye damage.

Aspiration hazard

: Symptoms of lung oedema mostly reveal after a few hours, intensified by physical effort.
The product may affect the upper and lower airways, causing infections and impaired lung function.

Respiratory or skin sensitisation

: Not sensitive .

Carcinogenicity

: Not listed as carcinogenic .

Mutagenicity

: Not listed as mutagenic .

Reproductive toxicity

: Not listed for reproductive toxicity .

Specific target organ toxicity - single exposure

: To human : Listed not for organ toxicity .

Specific target organ toxicity - repeated exposure

: To human : Listed not for organ toxicity .
For animals : No effects known.

SECTION 12. Ecological information

12.1. Toxicity

- * Ecotoxicity : For harmful components :
• Sodium hydroxide : LC50 (Fish, 96 h) : 35-189 mg/l
• Sodium hydroxide : EC50 (Algae, 72 h) : No data available.
• Sodium hydroxide : EC50 (Daphnia magna, 48 h) : 40,4 mg/l (Ceriodaphnia sp.)
• Potassium hydroxide : LC50 (Fish, 96 h) : 80 mg/l (Gambusia affinis) (TLm (= median tolerance limit))
• Potassium hydroxide : EC50 (Algae, 72 h) : No data available.
• Potassium hydroxide : EC50 (Daphnia magna, 48 h) : No data available.

12.2. Persistence and degradability

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SECTION 12. Ecological information (continued)

- * Persistence and degradability : For harmful components :
 • Sodium hydroxide : Persistence and degradability : Inorganic .
 • Potassium hydroxide : Persistence and degradability : Inorganic .

12.3. Bioaccumulative potential

- * Bioaccumulation : For harmful components :
 • Sodium hydroxide : Bioaccumulation : Bioaccumulation not expected .
 • Potassium hydroxide : Bioaccumulation : Not applicable.

12.4. Mobility in soil

- * Mobility : For harmful components :
 • Sodium hydroxide : Mobility : High potential for mobility in soil.
 • Potassium hydroxide : Mobility : No data available.

12.5. Results of PBT and vPvB assessment

- * Evaluation : For harmful components :
 • Sodium hydroxide : PBT/vPvB : No
 • Potassium hydroxide : PBT/vPvB : No

12.6. Other adverse effects

- Photochemical ozone creation potential : No data available .
 Ozone depletion potential : None .
 Endocrine disrupting potential : No data available .
 Global warming potential : No data available .

SECTION 13. Disposal considerations

13.1. Waste treatment methods

- Waste from residues/Unused products : The product has to be destroyed according to national or local legislation, by a company specialised in handling hazardous waste products.
- European list of waste products : XXXXXX - European waste product code. This code is assigned on the basis of the most current applications and can not be representative for pollutions which are arisen at the effective use of the product. The producer of the waste has to evaluate its process himself and has to grant the appropriate waste coding. See Decision 2001/118/EC.
- Removal contaminated packaging : Packing is to be used exclusively for the packing of this product.
 After use, empty and close the packing very carefully.
 In case of returned packing, the empty packing can be offered back to the supplier.

SECTION 14. Transport information

14.1. UN number

- UN Number : 1824

14.2. UN proper shipping name

- ADR/RID Name : UN 1824 Sodium hydroxide solution, 8, II, (E)
 ADN Name : UN 1824 Sodium hydroxide solution , 8, II
 IMDG Name : UN 1824 Sodium hydroxide, solution , 8, II
 IATA Name : UN 1824 Sodium hydroxide, solution , 8, II

14.3. Transport hazard classe(s)

- Class : 8

14.4. Packing group

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SECTION 14. Transport information (continued)

Packaging Group : II

14.5. Environmental hazards

Environmentally hazard : No

Marine pollutant : No

14.6. Special precautions for user

Danger number : 80

Hazard Label(s) : 8

EmS-N° : F-A S-B

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

Type ship : No data available.

Pollution category : No data available.

SECTION 15. Regulatory information

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

Inventories : Australian inventory (AICS): Listed in inventory.
Canadian inventory (DSL): Listed in inventory.
Chinese inventory (IECS): Listed in inventory.
European inventory (EINECS): Listed in inventory.
Korean inventory (KECI): Listed in inventory.
Philippine inventory (PICCS): Listed in inventory.
Inventory of the United States (TSCA): Listed in inventory.

NFPA n° : 3-0-1

Relevant EU Rule(s) : Directive 98/24/EC of the Council of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work
Decision 2001/118/EC of the Commission of 16 January 2001 amending Decision 2000/532/EC as regards the list of wastes
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
Regulation (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (Reach)

The restrictions in Annex XVII to Regulation (EC) No 1907/2006 must be observed.

National regulations

- Germany : WGK : 1

* - Netherlands : Water damaging : C
Decontamination exertion : 2

15.2. Chemical Safety Assessment

A chemical safety assessment has been carried out for the material.

SECTION 16. Other information

This safety data sheet has been drawn up in accordance with Regulation (EC) No 1907/2006.

This safety data sheet is exclusively made for industrial/professional use.

* Has changed compared to previous revision.

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SECTION 16. Other information (continued)

- * Changes : General revision
- * Sources of used key data : The information contained herein is based on the present state of our knowledge (Producer(s)) Chemical cards , ...)
See also on the webaddress:
<http://apps.echa.europa.eu/registered/registered-sub.aspx#search>
- (EU)H-statement(s) : H290 - May be corrosive to metals.
H314 - Causes severe skin burns and eye damage.
- * Classification procedure : Met. Corr. 1; H290 - Based on test data (producer of component)
Skin Corr. 1A; H314 - Additivity method
Eye Dam. 1; H318 - Additivity method
- * List of abbreviations and acronyms : ACGIH : American Conference of Governmental Industrial Hygienists
Acute Tox. 4, oral : Acute toxicity, oral - Category 4
ADN (Accord européen relatif au transport international des marchandises Dangereuses par voie de Navigation interieur) : European agreement concerning the international carriage of dangerous goods by inland waterways
ADR (Accord européen relatif au transport international des marchandises Dangereuses par Route) : European agreement concerning the international carriage of dangerous goods by road
DNEL (Derived No Effect Level) : an estimated safe exposure level
EC50 : median Effective Concentration
EmS (Emergency Schedule) : the first code refers to the relevant fire schedule and the second code refers to the relevant spillage schedule
Eye Dam. 1 : Serious eye damage - Category 1
IARC (International Agency for Research on Cancer)
IATA (International Air Transport Association) : provisions concerning the international carriage of dangerous goods by air
IMDG (International Maritime Dangerous Goods code)
LC50 : median Lethal Concentration
LD50 : median Lethal Dose
MR (Molar Ratio)
Met. Corr. 1 : Corrosive to metals - Category 1
NFPA (National Fire Protection Association) or fire diamant
NOEC (No Observed Effect Concentration)
NVIC : National Poisoning Information Center
OECD : Organisation for Economic Cooperation and Development
PBT : persistent, bioaccumulative and toxic
PNEC (Predicted No Effect Concentration) : concentration below which exposure to a substance is not expected to cause adverse effects
REACH : Registration, Evaluation, Authorisation and restriction of Chemicals
RID (Règlement concernant le transport International ferroviaire des marchandises Dangereuses) : Regulation concerning the International carriage of Dangerous goods by rail
SCL (Specific Concentration Limits)
Skin Corr. 1A : Skin corrosion - Category 1A
TLm : median tolerance limit
TWA (Time-Weighted Average) : the average exposure over a specified period
WGK (Wassergefährdungsklasse) : a German classification of substances that indicate the environmental hazard for surface water
vPvB : very persistent and very bioaccumulative

This information is to our knowledge correct and complete on the date of issue of this safety data sheet. The information only concerns the product and does not give any guarantee for the quality and the completeness of the properties of the product, or in case of mixing or using in any other process. It remains the responsibility of the user to assure himself that the information is suitable and complete concerning the special use he makes of the product.

BRENTAG denies all responsibility for loss or damage resulting from the use of these data.

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End of document

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

Sodium hydroxide

Version 1.1

Print Date 30.01.2013

Revision Date 30.01.2013

No.	Short title	Main User Group (SU)	Sector of Use (SU)	Product Category (PC)	Process Category (PROC)	Environmental Release Category (ERC)	Article Category (AC)	Specified
1	Manufacture of substance - liquid	3	8	NA	1, 2, 3, 4, 8a, 8b, 9	1	NA	ES035
2	Manufacture of 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	Professional use	22	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 10, 11, 13, 15	8a, 8b, 8d, 9a	NA	ES067
5	Consumer use	21	NA	20, 35, 39	NA	8a, 8b, 8d, 9a	NA	ES075

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

Sodium hydroxide

Version 1.1

Print Date 30.01.2013

Revision Date 30.01.2013

1. Short title of Exposure Scenario 1: Manufacture of substance - liquid

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products)
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Environmental Release Categories	ERC1: Manufacture of substances

2.1 Contributing scenario controlling environmental exposure for: ERC1

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
Other given operational conditions affecting environmental exposure	Continuous exposure	
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 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, PROC8a, PROC8b, PROC9

Product characteristics	Concentration of the	Concentration of substance in product : 0% - 50%
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	Substance in Mixture/Article	
	Physical Form (at 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 towards the worker	Application Area	Industrial use
	Use closed systems or covering of open containers (e.g. screens) Transport over pipes, technical barrel filling/emptying of barrel with automatic systems (suction pumps etc.) Use of pliers, grip arms with long handles with manual use to avoid direct contact and exposure by splashes (no working over one's head)	
Organisational measures to prevent /limit releases, dispersion and exposure	Application Area	Industrial use
	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	Application Area	Industrial use
	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 wear tightly fitting safety goggles, face-shield Wear suitable protective clothing, aprons, shield and suits If splashes are likely to occur: 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

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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

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

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9	Modeled exposure data, very low vapour pressure, Without local exhaust ventilation, without respiratory protection	Inhalation worker exposure	0,17mg/m ³	0,17
PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9	Measured exposure data, worst-case	worker inhalation, acute - local	0,33mg/m ³	0,33
PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9	Measured exposure data, worst-case	Worker - inhalative, long-term - local	0,14mg/m ³	0,14

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.

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

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1. Short title of Exposure Scenario 2: Manufacture of substance - solid

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products)
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Environmental Release Categories	ERC1: Manufacture of substances

2.1 Contributing scenario controlling environmental exposure for: ERC1

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Other given operational conditions affecting environmental exposure	Continuous exposure	
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.

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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of	solid

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	use)	
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 towards the worker	Application Area	Industrial use
	Use closed systems or covering of open containers (e.g. screens) Transport over pipes, technical barrel filling/emptying of barrel with automatic systems (suction pumps etc.) Use of pliers, grip arms with long handles with manual use to avoid direct contact and exposure by splashes (no working over one's head)	
Organisational measures to prevent /limit releases, dispersion and exposure	Application Area	Industrial use
	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	Application Area	Industrial use
	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 wear tightly fitting safety goggles, face-shield Wear suitable protective clothing, aprons, shield and suits If splashes are likely to occur: 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.

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Workers

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

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC2	Modeled exposure data, Low dustiness, no LEV, no respiratory protection (RPE)	Inhalation worker exposure	0,01mg/m ³	0,01
PROC3, PROC9	Modeled exposure data, Low dustiness, no LEV, no respiratory protection (RPE)	Inhalation worker exposure	0,1mg/m ³	0,1
PROC4, PROC8a	Modeled exposure data, Low dustiness, no LEV, no respiratory protection (RPE)	Inhalation worker exposure	0,5mg/m ³	0,5
PROC9	Measured exposure data, worst-case	worker inhalation, acute - local	0,26mg/m ³	0,26

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.

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

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1. Short title of Exposure Scenario 3: Industrial use

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent
Environmental Release Categories	ERC2: Formulation of preparations 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).
Other given operational conditions affecting environmental exposure	Continuous exposure	
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

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		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, PROC7, 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	Application Area	Industrial use
	Use closed systems or covering of open containers (e.g. screens) Transport over pipes, technical barrel filling/emptying of barrel with automatic systems (suction pumps etc.) Use of pliers, grip arms with long handles with manual use to avoid direct contact and exposure by splashes (no working over one's head)	
Organisational measures to prevent /limit releases, dispersion and exposure	Application Area	Industrial use
	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	Application Area	Industrial use
	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

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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, PROC13, PROC14, PROC15, PROC19, PROC23, PROC24	liquid, no LEV, no respiratory protection (RPE)	worker inhalation, acute - local	0,17mg/m ³	---
PROC1, PROC2	solid, no LEV, no respiratory protection (RPE)	worker inhalation, acute - local	0,01mg/m ³	---
PROC3, PROC15	solid, no LEV, no respiratory protection (RPE)	worker inhalation, acute - local	0,1mg/m ³	---
PROC4, PROC5, PROC14	solid, no respiratory protection (RPE)	worker inhalation, acute - local	0,2mg/m ³	---
PROC8a, PROC8b, PROC9, PROC10, PROC13,	solid, no LEV, no respiratory protection (RPE)	worker inhalation, acute - local	0,5mg/m ³	---

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PROC19				
PROC23	solid, with RPE (90%)	worker inhalation, acute - local	0,4mg/m ³	---
PROC24	solid, with RPE (90%)	worker inhalation, acute - local	0,5mg/m ³	---

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

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1. Short title of Exposure Scenario 4: 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).
Other given operational conditions affecting environmental exposure	Continuous exposure	
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	Disposal methods	Waste should be reused or discharged to the

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to external treatment of waste for disposal		industrial wastewater and further neutralized if needed.
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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	Application Area	Professional use
	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	Application Area	Professional use
	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	Application Area	Professional use
	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

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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, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19, PROC23, PROC24	liquid, no LEV, no respiratory protection (RPE)	worker inhalation, acute - local	0,17mg/m ³	---
PROC1, PROC2	solid, no LEV, no respiratory protection (RPE)	worker inhalation, acute - local	0,01mg/m ³	---
PROC3, PROC15	solid, no LEV, no respiratory protection (RPE)	worker inhalation, acute - local	0,1mg/m ³	---
PROC4, PROC5, PROC11, PROC14	solid, no respiratory protection (RPE)	worker inhalation, acute - local	0,2mg/m ³	---
PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC19	solid, no LEV, no respiratory protection (RPE)	worker inhalation, acute - local	0,5mg/m ³	---
PROC23	solid, with RPE (90%)	worker inhalation, acute - local	0,4mg/m ³	---
PROC24	solid, with RPE (90%)	worker inhalation, acute -	0,5mg/m ³	---

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		local	
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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

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1. Short title of Exposure Scenario 5: 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, neutralization 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

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		provokes the physical loss of information on hazards and use instructions.
	Consumer Measures	In case of dust or aerosol formation: use respiratory protection with approved filter (P2)

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/m ³	< 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).

COMPANY INFORMATION DISTRIBUTOR

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activities	Distribution and export of chemicals and raw materials	
VAT number	BE0405317567	NL001375945B01
recall procedure available	Yes	
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QUALITY SYSTEMS		
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