We create chemistry

Safety data sheet

BASF safety data sheet. This is a translation of the country-specific safety data sheet into a language other than that required by law. This document does not replace the safety data sheet provided according to Regulation (EC) No 1907/2006.
Date / Revised: 02.10.2025 Version: 4.0
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Product: **Sodium hypochlorite solution**
(ID no. 30042344/SDS_GEN_DE/EN)
Date of print 19.10.2025

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

1.1. Product identifier

Sodium hypochlorite solution

UFI: 66JU-3FRD-A00T-1AUP

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

Relevant identified uses: Chemical
Recommended use: process chemical, oxidizing agents, Bleaching agents

For the detailed identified uses of the product see appendix of the safety data sheet.

1.3. Details of the supplier of the safety data sheet

Company:
BASF SE
67056 Ludwigshafen
GERMANY
Division Monomers

Telephone: +49 621 60 42737
E-mail address: pss.monomers@basf.com

1.4. Emergency telephone number

International emergency number:
Telephone: +49 180 2273-112

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

For the classification of the mixture the following methods have been applied: extrapolation on the concentration levels of the hazardous substances, on basis of test results and after evaluation of experts. The methodologies used are mentioned at the respective test results.

According to Regulation (EC) No 1272/2008 [CLP]

Met. Corr. 1	H290 May be corrosive to metals.
Skin Corr. 1B	H314 Causes severe skin burns and eye damage.
Eye Dam. 1	H318 Causes serious eye damage.
Aquatic Acute 1	H400 Very toxic to aquatic life.
Aquatic Chronic 2	H411 Toxic to aquatic life with long lasting effects.
M-factor acute: 10	

For the classifications not written out in full in this section the full text can be found in section 16.

2.2. Label elements

According to Regulation (EC) No 1272/2008 [CLP]

Pictogram:

Signal Word:

Danger

Hazard Statement:

H290	May be corrosive to metals.
H314	Causes severe skin burns and eye damage.
H411	Toxic to aquatic life with long lasting effects.
H400	Very toxic to aquatic life.

Precautionary Statements (Prevention):

P280	Wear protective gloves, protective clothing and eye protection or face protection.
P273	Avoid release to the environment.
P260	Do not breathe dust or mist.
P264	Wash contaminated body parts thoroughly after handling.
P234	Keep only in original packaging.

Precautionary Statements (Response):

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 or physician.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P301 + P330 + P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

P391	Collect spillage.
P390	Absorb spillage to prevent material damage.

Precautionary Statements (Storage):

P405	Store locked up.
P406	Store in corrosive resistant container with a resistant inner liner.

Precautionary Statements (Disposal):

P501	Dispose of contents and container to hazardous or special waste collection point.

Labeling of special preparations (GHS):

EUH031: Contact with acids liberates toxic gas.

Hazard determining component(s) for labelling: sodium hypochlorite, solution ... % Cl active

2.3. Other hazards

According to Regulation (EC) No 1272/2008 [CLP]

No specific dangers known, if the regulations/notes for storage and handling are considered. If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.
The product does not contain a substance above legal limits fulfilling the PBT (persistent/bioaccumulative/toxic) criteria or the vPvB (very persistent/very bioaccumulative) criteria.
Product does not contain a substance above legal limits included in the list established in accordance with Article 59(1) of Regulation (EC) No 1907/2006 for having endocrine disrupting properties or is identified to have endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

SECTION 3: Composition/Information on Ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Chemical nature

sodium hypochlorite, solution ... % Cl active (Content (W/W): >= 13 % - <= 16 %)NaOCl
CAS 7681-52-9 EINECS 231-668-3

dissolved in:Water

Regulatory relevant ingredients

sodium hypochlorite, solution ... % Cl active

Content (W/W): >= 10 % - < 20 % CAS Number: 7681-52-9 EC-Number: 231-668-3 REACH registration number: 01-2119488154-34 INDEX-Number: 017-011-00-1	Met. Corr. 1 Skin Corr. 1B Eye Dam. 1 STOT SE 3 (irr. to respiratory syst.) Aquatic Acute 1 Aquatic Chronic 1 M-factor acute: 10 M-factor chronic: 1 H290, H335, H314, H400, H410 EUH031 <u>Specific concentration limit:</u> >= 5 %

sodium hydroxide

Content (W/W): > 0 % - < 1 % CAS Number: 1310-73-2 EC-Number: 215-185-5 REACH registration number: 01-2119457892-27 INDEX-Number: 011-002-00-6	Met. Corr. 1 Skin Corr. 1A Eye Dam. 1 H290, H314 <u>Specific concentration limit:</u> Skin Irrit. 2: 0,5 - < 2 % Eye Irrit. 2: 0,5 - < 2 % Skin Corr. 1A: >= 5 % Skin Corr. 1B: 2 - < 5 %

For the classifications not written out in full in this section, including the hazard classes and the hazard statements, the full text is listed in section 16.

SECTION 4: First-Aid Measures

4.1. Description of first aid measures

First aid personnel should pay attention to their own safety. Immediately remove contaminated clothing. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position).

If inhaled:
Inhale corticosteroid dose aerosol. Keep patient calm, remove to fresh air, seek medical attention.

On skin contact:
Immediately wash thoroughly with plenty of water, apply sterile dressings, consult a skin specialist.

On contact with eyes:
Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

On ingestion:
Immediately rinse mouth and then drink 200 - 300 ml water, do not induce vomiting, seek medical attention.

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

Symptoms: Information, i.e. additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11.

Hazards: No hazard is expected under intended use and appropriate handling.

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

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote, administer corticosteroid dose aerosol to prevent pulmonary odema.

SECTION 5: Fire-Fighting Measures

5.1. Extinguishing media

Suitable extinguishing media:
water spray

Unsuitable extinguishing media for safety reasons:
water jet

5.2. Special hazards arising from the substance or mixture

Advice: Vapors and/or decomposition products are irritant and/or toxic. Substance/product may act as an oxidizer.

Endangering substances: chlorine, sodium hydroxide
Advice: The substances/groups of substances mentioned can be released if the product is involved in a fire.

5.3. Advice for fire-fighters

Special protective equipment:
Wear a self-contained breathing apparatus.

Further information:
If exposed to fire, keep containers cool by spraying with water. Product itself is non-combustible; fire extinguishing method of surrounding areas must be considered.

SECTION 6: Accidental Release Measures

Soiled textiles/cleaning rags made of natural fibres (e.g. of pure wool or of pure cotton) are capable of ignition and should not be used and/or must be desposed of in a safe manner.

6.1. Personal precautions, protective equipment and emergency procedures

Avoid inhalation. Avoid contact with the skin, eyes and clothing. Contact with natural fibres (e.g. of pure wool or of pure cotton) should be avoided because of possible ignition.

6.2. Environmental precautions

Do not empty into drains.

6.3. Methods and material for containment and cleaning up

For residues: Sweep/shovel up. Dispose of absorbed material in accordance with regulations.

6.4. Reference to other sections

Information regarding exposure controls/personal protection and disposal considerations can be found in section 8 and 13.

SECTION 7: Handling and Storage

7.1. Precautions for safe handling

Pressure relief device necessary.

Protection against fire and explosion:
The substance/product is non-combustible.

7.2. Conditions for safe storage, including any incompatibilities

Segregate from acids.

Suitable materials for containers: High density polyethylene (HDPE), Bromobutyl rubber (BIIR) Vulcoferran 2208 (Steuler KCH), Bromobutyl rubber (BIIR) Vulcoferran 2208 T (Steuler KCH), Bromobutyl rubber (BIIR) HAW-W08 (HAW Linings), Bromobutyl rubber (BIIR) Chemoline 4, Chemoline RT (TIP TOP Elbe), Bromobutyl rubber (BIIR) Vulcoferran 2206 (Steuler KHC), Bromobutyl rubber (BIIR) Vulcoferran 2209 T (Steuler KHC), chlorsulfonated polyethylene / polyvinylchloride (CSM/PVC), Chemoline 8 (TIP TOP Elbe)
, chlorsulfonated polyethylene (CSM), Hypalon
Unsuitable materials for containers: HAW-W12 (Hypalon, identical to Vulcoferran 2512, supplier HAW Linings GmbH), Compound based on HR004 / HR006 (supplier: Ragep), Aluminium, Iron, steel, copper, alloys containing copper.
Further information on storage conditions: Keep in a cool, well-ventilated place. Protect from the effects of light. Keep away from heat.

Storage class according to TRGS 510 (originally VCI, Germany): (8B) Non-combustible corrosive substances.

7.3. Specific end use(s)

See exposure scenario(s) in the attachment to this safety data sheet.

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters

Components with occupational exposure limits

No substance specific occupational exposure limits known.

Components with PNEC

7681-52-9: sodium hypochlorite, solution ... % Cl active
freshwater: 0,00021 mg/l
marine water: 0,000042 mg/l
intermittent release: 0,00026 mg/l
sediment (freshwater):
Exposure of sediment is not expected
sediment (marine water):
Exposure of sediment is not expected
soil:
Exposure of soil is not expected
STP: 4,69 mg/l
oral (secondary poisoning): 11,1 mg/kg

1310-73-2: sodium hydroxide
freshwater:
According to EU risk assessment risks are negligible
marine water:
According to EU risk assessment risks are negligible
intermittent release:
According to EU risk assessment risks are negligible
sediment (freshwater):
According to EU risk assessment risks are negligible
sediment (marine water):
According to EU risk assessment risks are negligible
soil:
According to EU risk assessment risks are negligible
STP:
According to EU risk assessment risks are negligible

Components with DNEL

7681-52-9: sodium hypochlorite, solution ... % Cl active
worker: Short-term exposure - systemic and local effects, Inhalation: 3,1 mg/m3

worker: Long-term exposure - systemic and local effects, Inhalation: 1,55 mg/m3
consumer: Long-term exposure - systemic and local effects, Inhalation: 1,55 mg/m3
consumer: Long-term exposure- systemic effects, oral: 0,26 mg/kg

1310-73-2: sodium hydroxide
worker: Long-term exposure - local effects, Inhalation: 1,0 mg/m3

8.2. Exposure controls

Personal protective equipment

Respiratory protection:
Wear respiratory protection if ventilation is inadequate. Self-contained breathing apparatus.

Hand protection:
Chemical resistant protective gloves (EN ISO 374-1)
Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN ISO 374-1):
polyvinylchloride (PVC) - 0.7 mm coating thickness
nitrile rubber (NBR) - 0.4 mm coating thickness
chloroprene rubber (CR) - 0.5 mm coating thickness
butyl rubber (butyl) - 0.7 mm coating thickness
fluoroelastomer (FKM) - 0.7 mm coating thickness
Manufacturer's directions for use should be observed because of great diversity of types.
Supplementary note: The specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing.

Eye protection:
Tightly fitting safety goggles (cage goggles) (e.g. EN 166) and face shield.

Body protection:
Protective suit, chemical-protection suit (f.e. according to EN 14605)

General safety and hygiene measures

Take off immediately all contaminated clothing.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

State of matter:	liquid
Form:	solution, liquid
Colour:	yellow to green
Odour:	pungent, of chlorine

Odour threshold:		
	Not determined due to potential health hazard by inhalation.	
Melting point:	-30 - -20 °C	(other)
Boiling point:	100 °C (1.013 mbar) Information applies to the solvent. The substance / product decomposes.	
Flammability:	not flammable	(other)
Lower explosion limit:		
	For liquids not relevant for classification and labelling.	
Upper explosion limit:		
	For liquids not relevant for classification and labelling.	
Flash point:		
	not applicable	
Auto-ignition temperature:		
	not applicable	
Thermal decomposition:	Decomposes on heating.	
pH value:	12 (160 g/l)	(OECD Guideline 122)
Viscosity, dynamic:	3 - 4 mPa.s (20 °C)	(OECD Guideline 114)
Solubility in water:	readily soluble (15 °C)	
Partitioning coefficient n-octanol/water (log Kow):		
	The value has not been determined because the substance is inorganic.	
Vapour pressure:	20 mbar (20 °C)	(measured)
Density:	1,24 - 1,26 g/cm3 (20 °C)	
Relative vapour density (air):		
	not determined	

Particle characteristics

Particle size distribution: The substance / product is marketed or used in a non solid or granular form. -

9.2. Other information

Information with regard to physical hazard classes

Explosives

Explosion hazard: not explosive

Oxidizing properties

Fire promoting properties: not fire-propagating

Other safety characteristics

Miscibility with water:	completely (e.g. >=90%)
Evaporation rate:	Value can be approximated from Henry's Law Constant or vapor pressure.

SECTION 10: Stability and Reactivity

10.1. Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

10.2. Chemical stability

The product is stable if stored and handled as prescribed/indicated.

10.3. Possibility of hazardous reactions

Reacts with acids. Exothermic reaction.

10.4. Conditions to avoid

Avoid extreme temperatures.

10.5. Incompatible materials

Substances to avoid:
acids, metal

10.6. Hazardous decomposition products

Hazardous decomposition products:
chlorine

SECTION 11: Toxicological Information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

Experimental/calculated data:

LD50 rat (oral): > 5.000 mg/kg
The statement for acute oral toxicity was derived from products of similar composition. Literature data.
LD50 rabbit (dermal): > 5.000 mg/kg
The statement for acute dermal toxicity was derived from products of similar composition. Literature data.

Information on: sodium hypochlorite, solution ... % Cl active
Assessment of acute toxicity:
The toxicity of the product is based on its corrosivity.

Irritation

Assessment of irritating effects:

Corrosive! Damages skin and eyes. Risk of serious damage to eyes.

Experimental/calculated data:

Skin corrosion/irritation

rabbit: Corrosive.
The product has not been tested. The statement has been derived from the properties of the individual components.

Serious eye damage/irritation

rabbit: irreversible damage
The product has not been tested. The statement has been derived from the properties of the individual components.

Respiratory/Skin sensitization

Experimental/calculated data:

No data available.

Information on: sodium hypochlorite, solution ... % Cl active
Assessment of sensitization:
Skin sensitizing effects were not observed in animal studies.

Germ cell mutagenicity

Information on: sodium hypochlorite, solution ... % Cl active
Assessment of mutagenicity:
The substance was mutagenic in various test systems with microorganisms and cell cultures; however, these results could not be confirmed in tests with mammals.

Carcinogenicity

Information on: sodium hypochlorite, solution ... % Cl active
Assessment of carcinogenicity:
In long-term studies in rats and mice in which the substance was given by drinking-water, a carcinogenic effect was not observed.

Reproductive toxicity

Information on: sodium hypochlorite, solution ... % Cl active
Assessment of reproduction toxicity:

No data available. The chemical structure does not suggest a specific alert for such an effect.

Specific target organ toxicity (single exposure)

No data available.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

No data available.

Aspiration hazard

Study does not need to be conducted.

Interactive effects

No data available.

11.2. Information on other hazards

Endocrine disrupting properties

Product does not contain a substance above legal limits included in the list established in accordance with Article 59(1) of Regulation (EC) No 1907/2006 for having endocrine disrupting properties or is identified to have endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

SECTION 12: Ecological Information

12.1. Toxicity

Assessment of aquatic toxicity:
Very toxic (acute effect) to aquatic organisms. Very toxic to aquatic life with long lasting effects.

Toxicity to fish:
LC50 (96 h) 0,01 - 0,1 mg/l, Fish
The ecological data given are those of the active ingredient.

Aquatic invertebrates:
EC50 (48 h) 0,01 - 0,1 mg/l, daphnia
The ecological data given are those of the active ingredient.

Microorganisms/Effect on activated sludge:
Toxic limit concentration 0,375 mg/l, activated sludge
Literature data.

Information on:sodium hypochlorite, solution ... % Cl active
Assessment of aquatic toxicity:

Very toxic (acute effect) to aquatic organisms. Depending on local conditions and existing concentrations, disturbances in the biodegradation process of activated sludge are possible.

Information on:sodium hypochlorite, solution ... % Cl active
Aquatic plants:
EC50 (168 h) approx. 0,023 mg/l (other), unspecified algae (other, Flow through.)
Literature data.

No observed effect concentration (168 h) 0,0021 mg/l (other), unspecified algae (other, Flow through.)
Literature data.

12.2. Persistence and degradability

Assessment biodegradation and elimination (H2O):
Inorganic product which cannot be eliminated from water by biological purification processes. The product can be degraded abiotically, e.g. chemical or photolytic processes.

Information on Stability in Water (Hydrolysis):
$t_{1/2}$ 2 h
The action of light on the surface strat in water will induce decomposition.

12.3. Bioaccumulative potential

Bioaccumulation potential:
Accumulation in organisms is not to be expected.

12.4. Mobility in soil

Assessment transport between environmental compartments:
Adsorption in soil: No data available.

12.5. Results of PBT and vPvB assessment

The product does not fulfill the criteria for PBT (Persistent/bioaccumulative/toxic) and vPvB (very persistent/very bioaccumulative).

12.6. Endocrine disrupting properties

Product does not contain a substance above legal limits included in the list established in accordance with Article 59(1) of Regulation (EC) No 1907/2006 for having endocrine disrupting properties or is identified to have endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

12.7. Other adverse effects

The product does not contain substances that are listed in Regulation (EU) 2024/590 on substances that deplete the ozone layer.

Additional information

Adsorbable organically-bound halogen (AOX):
The Substance/product may have a halogenizing effect and therefore contribute to the OBH.

Other ecotoxicological advice:
Because of harmful effects on water organisms should not be introduced into drains. Do not discharge product into the environment without control. Do not discharge substance/product into sewer system. The substance/ product may be toxic to aquatic organisms in effluent treatment plants or surface waters by splitting of reactive substance groups. Very toxic (acute effect) to aquatic organisms.

SECTION 13: Disposal Considerations

13.1. Waste treatment methods

Reduce with sodium sulphite, sodium pyrosulphite or sodium thiosulphate.

Contaminated packaging:
Transport containers should be completely emptied and returned.

SECTION 14: Transport Information

Land transport

ADR

UN number or ID number:	UN1791
UN proper shipping name:	HYPOCHLORITE SOLUTION
Transport hazard class(es):	8, EHSM
Packing group:	II
Environmental hazards:	yes
Special precautions for user:	Tunnel code: E

RID

UN number or ID number:	UN1791
UN proper shipping name:	HYPOCHLORITE SOLUTION
Transport hazard class(es):	8, EHSM

Packing group:	II
Environmental hazards:	yes
Special precautions for user:	None known

Inland waterway transport

ADN

UN number or ID number:	UN1791
UN proper shipping name:	HYPOCHLORITE SOLUTION
Transport hazard class(es):	8, EHSM
Packing group:	II
Environmental hazards:	yes
Special precautions for user:	None known

Transport in inland waterway vessel

Not evaluated

Sea transport

IMDG

UN number or ID number:	UN 1791
UN proper shipping name:	HYPOCHLORITE SOLUTION
Transport hazard class(es):	8, EHSM
Packing group:	II
Environmental hazards:	yes Marine pollutant: YES
Special precautions for user:	EmS: F-A; S-B

Air transport

IATA/ICAO

UN number or ID number:	UN 1791
UN proper shipping name:	HYPOCHLORITE SOLUTION
Transport hazard class(es):	8
Packing group:	II
Environmental hazards:	No Mark as dangerous for the environment is needed
Special precautions for user:	None known

14.1. UN number or ID number
See corresponding entries for “UN number or ID number” for the respective regulations in the tables above.

14.2. UN proper shipping name
See corresponding entries for “UN proper shipping name” for the respective regulations in the tables above.

14.3. Transport hazard class(es)
See corresponding entries for “Transport hazard class(es)” for the respective regulations in the tables above.

14.4. Packing group
See corresponding entries for “Packing group” for the respective regulations in the tables above.

14.5. Environmental hazards
See corresponding entries for “Environmental hazards” for the respective regulations in the tables above.

14.6. Special precautions for user
See corresponding entries for “Special precautions for user” for the respective regulations in the tables above.

14.7. Maritime transport in bulk according to IMO instruments
Maritime transport in bulk is not intended.

SECTION 15: Regulatory Information

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

Prohibitions, Restrictions and Authorizations

Annex XVII of Regulation (EC) No 1907/2006: Number on List: 3, 75

Hazardous Incident Ordinance (Germany):
List entry in regulation: 1.3.1
Classification applies for standard conditions of temperature and pressure.

Directive 2012/18/EU - Control of Major Accident Hazards involving dangerous substances (EU):
List entry in regulation: E1
Classification applies for standard conditions of temperature and pressure.

Water hazard class (§6 AwSV para.4 (Legal binding announcement of the substance in the Federal Gazette)): (2) significantly water polluting.

If other regulatory information applies that is not already provided elsewhere in this safety data sheet, then it is described in this subsection.

15.2. Chemical Safety Assessment

Chemical Safety Assessment performed

SECTION 16: Other Information

Assessment of the hazard classes according to UN GHS criteria (most recent version)

Eye Dam. 1
Skin Corr. 1B
Met. Corr. 1
Aquatic Acute 1
Aquatic Chronic 2

M-factor acute: 10

Full text of the classifications, including the hazard classes and the hazard statements, if mentioned in section 2 or 3:

Met. Corr.	Corrosive to metals
Skin Corr.	Skin corrosion
Eye Dam.	Serious eye damage
Aquatic Acute	Hazardous to the aquatic environment - acute
Aquatic Chronic	Hazardous to the aquatic environment - chronic
STOT SE	Specific target organ toxicity — single exposure
Skin Irrit.	Skin irritation
Eye Irrit.	Eye irritation
H290	May be corrosive to metals.
H314	Causes severe skin burns and eye damage.
H411	Toxic to aquatic life with long lasting effects.
H400	Very toxic to aquatic life.
H335	May cause respiratory irritation.
H410	Very toxic to aquatic life with long lasting effects.
EUH031	Contact with acids liberates toxic gas.

Abbreviations
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road. ADN = The European Agreement concerning the International Carriage of Dangerous Goods by Inland waterways. ATE = Acute Toxicity Estimates. CAO = Cargo Aircraft Only. CAS = Chemical Abstract Service. CLP = Classification, Labelling and Packaging of substances and mixtures. DIN = German national organization for standardization. DNEL = Derived No Effect Level. EC50 = Effective concentration median for 50% of the population. EC = European Community. EN = European Standards. IARC = International Agency for Research on Cancer. IATA = International Air Transport Association. IBC-Code = Intermediate Bulk Container code. IMDG = International Maritime Dangerous Goods Code. ISO = International Organization for Standardization. STEL = Short-Term Exposure Limit. LC50 = Lethal concentration median for 50% of the population. LD50 = Lethal dose median for 50% of the population.

TLV = Threshold Limit Value. MARPOL = The International Convention for the Prevention of Pollution from Ships. NEN = Dutch Norm. NOEC = No Observed Effect Concentration. OEL = Occupational Exposure Limit. OECD = Organization for Economic Cooperation and Development. PBT = Persistent, Bioaccumulative and Toxic. PNEC = Predicted No Effect Level. PPM = Parts per million. RID = The European Agreement concerning the International Carriage of Dangerous Goods by Rail. TWA = Time Weight Average. UN-number = UN number at transport. vPvB = very Persistent and very Bioaccumulative.

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

Annex: Exposure Scenarios

Index

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1. Short title of exposure scenario

Manufacture of substance, Production
IS; IS, SU8; ERC1; PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC1: Manufacture of the substance
Operational conditions	
Annual amount used in the EU	999.999 t

Minimum emission days per year Continuous	360
Emission factor air	0 %
Emission factor water	0 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18.000 m3/d
Dilution factor river	10
Dilution factor coast	100
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - <= 25 %
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2.000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0

Contributing exposure scenario	
Use descriptors covered	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Handle substance within closed system.	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	0,02 mg/m³
Risk Characterization Ratio (RCR)	0,01
	The exposure estimate represents the 90th percentile of

	the exposure distribution.
Assessment method	Qualitative assessment
	Worker - dermal
	Contact is only accidental.
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Chemical production where opportunity for exposure arises PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	

Exposure estimate and reference to its source	
PROC2, PROC3	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,10 mg/m³
Risk Characterization Ratio (RCR)	0,71
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC4	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - systemic
Exposure estimate	1,20 mg/m³
Risk Characterization Ratio (RCR)	0,77
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC9	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	0,91 mg/m³
Risk Characterization Ratio (RCR)	0,59
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC2, PROC3, PROC4, PROC9	
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	360 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection	

and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,25 mg/m³
Risk Characterization Ratio (RCR)	0,81
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

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2. Short title of exposure scenario

Formulation
IS; IS, SU10; ERC2; PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC2: Formulation into mixture
Operational conditions	
Annual amount used in the EU	999.999 t
Minimum emission days per year Continuous	360
Emission factor air	0 %
Emission factor water	0 %

Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18.000 m3/d
Dilution factor river	10
Dilution factor coast	100
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - <= 25 %
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2.000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0

Contributing exposure scenario	
Use descriptors covered	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Handle substance within closed system.	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	0,02 mg/m³
Risk Characterization Ratio (RCR)	0,01
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - dermal
	Contact is only accidental.
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Chemical production where opportunity for exposure arises PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
PROC2, PROC3	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,10 mg/m³
Risk Characterization Ratio (RCR)	0,71

	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC4	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - systemic
Exposure estimate	1,20 mg/m³
Risk Characterization Ratio (RCR)	0,77
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC9	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	0,91 mg/m³
Risk Characterization Ratio (RCR)	0,59
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC2, PROC3, PROC4, PROC9	
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC5: Mixing or blending in batch processes Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves.	

Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,25 mg/m³
Risk Characterization Ratio (RCR)	0,81
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	360 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves.	

Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,25 mg/m³
Risk Characterization Ratio (RCR)	0,81
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC14: Tabletting, compression, extrusion, pelletisation, granulation PROC15: Use a laboratory reagent. Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	

Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
PROC15	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	0,70 mg/m³
Risk Characterization Ratio (RCR)	0,45
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC14	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	0,23 mg/m³
Risk Characterization Ratio (RCR)	0,15
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC14, PROC15	
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

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3. Short title of exposure scenario

Use as an intermediate, (use in industrial settings)
IS; IS, SU8, SU9; ERC6a; PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9; PC19

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC6a: Use of intermediate
Operational conditions	
Annual amount used in the EU	316.500 t
Minimum emission days per year Continuous	360
Emission factor air	0 %
Emission factor water	0 %
Emission factor soil	0 %

Receive Surf. Water (Flow Rate).	18.000 m3/d
Dilution factor river	10
Dilution factor coast	100
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - <= 15 %
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2.000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0

Contributing exposure scenario	
Use descriptors covered	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Handle substance within closed system.	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	0,02 mg/m³
Risk Characterization Ratio (RCR)	0,01
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - dermal
	Contact is only accidental.
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC2: Chemical production or refinery in closed

	continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Chemical production where opportunity for exposure arises PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
PROC2, PROC3	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,10 mg/m³
Risk Characterization Ratio (RCR)	0,71
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC4	

Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - systemic
Exposure estimate	1,20 mg/m³
Risk Characterization Ratio (RCR)	0,77
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC9	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	0,91 mg/m³
Risk Characterization Ratio (RCR)	0,59
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC2, PROC3, PROC4, PROC9	
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	360 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves.	

Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,25 mg/m³
Risk Characterization Ratio (RCR)	0,81
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

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4. Short title of exposure scenario

Use in textile dyeing, bleaching, impregnation and related auxiliaries, Use in Textile finishing
IS; IS, SU5; ERC6b; PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13; PC34

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC6b: Use of reactive processing aid at industrial site (no inclusion into or onto article)
Operational conditions	
Annual amount used in the EU	12.050 t
Minimum emission days per year Continuous	360
Emission factor air	0 %
Emission factor water	0 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18.000 m3/d
Dilution factor river	10
Dilution factor coast	100

Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - <= 15 %
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2.000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0

Contributing exposure scenario	
Use descriptors covered	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Handle substance within closed system.	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	0,02 mg/m³
Risk Characterization Ratio (RCR)	0,01
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - dermal
	Contact is only accidental.
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment

	condition PROC4: Chemical production where opportunity for exposure arises PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
PROC2, PROC3	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,10 mg/m³
Risk Characterization Ratio (RCR)	0,71
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC4	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - systemic
Exposure estimate	1,20 mg/m³
Risk Characterization Ratio (RCR)	0,77

	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC9	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	0,91 mg/m³
Risk Characterization Ratio (RCR)	0,59
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC2, PROC3, PROC4, PROC9	
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC5: Mixing or blending in batch processes Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	

Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,25 mg/m³
Risk Characterization Ratio (RCR)	0,81
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	360 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	

Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,25 mg/m³
Risk Characterization Ratio (RCR)	0,81
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC13: Treatment of articles by dipping and pouring. Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic

Exposure estimate	0,7 mg/m³
Risk Characterization Ratio (RCR)	0,45
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

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5. Short title of exposure scenario

Use in sewage water treatment, Use in process water treatment
IS; IS, SU23, SU0; ERC6b; PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9; PC20, PC37

Control of exposure and risk management measures

Contributing exposure scenario		
Use descriptors covered	ERC6b: Use of reactive processing aid at industrial site (no inclusion into or onto article)	
Operational conditions		
Annual amount used in the EU	15.180 t	
Minimum emission days per year Continuous	360	
Emission factor air	0 %	
Emission factor water	0 %	
Emission factor soil	0 %	
Receive Surf. Water (Flow Rate).	18.000 m3/d	
Dilution factor river	10	
Dilution factor coast	100	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - <= 15 %	
Risk Management Measures		
Type of STP		Municipal STP
Assumed sewage treatment plant flow (m3/d)		2.000 m3/d
Exposure estimate and reference to its source		
Risk Characterization Ratio (RCR)	0	

Contributing exposure scenario	
Use descriptors covered	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Handle substance within closed system.	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	0,02 mg/m³
Risk Characterization Ratio (RCR)	0,01
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - dermal
	Contact is only accidental.
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Chemical production where opportunity for exposure arises PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %

Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
PROC2, PROC3	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,10 mg/m³
Risk Characterization Ratio (RCR)	0,71
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC4	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - systemic
Exposure estimate	1,20 mg/m³
Risk Characterization Ratio (RCR)	0,77
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC9	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	0,91 mg/m³
Risk Characterization Ratio (RCR)	0,59
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC2, PROC3, PROC4, PROC9	

Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC5: Mixing or blending in batch processes Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,25 mg/m³
Risk Characterization Ratio (RCR)	0,81
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	

For scaling see: http://www.advancedreachtool.com

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	360 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,25 mg/m³
Risk Characterization Ratio (RCR)	0,81
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	

For scaling see: http://www.advancedreachtool.com

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6. Short title of exposure scenario

Production of paper
IS; IS, SU6b; ERC6b; PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9; PC26

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC6b: Use of reactive processing aid at industrial site (no inclusion into or onto article)
Operational conditions	
	25.960 t
Minimum emission days per year Continuous	360
Emission factor air	0 %
Emission factor water	0 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18.000 m3/d
Dilution factor river	10
Dilution factor coast	100
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - <= 15 %
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2.000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0

Contributing exposure scenario	
Use descriptors covered	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active

	Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Handle substance within closed system.	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	0,02 mg/m³
Risk Characterization Ratio (RCR)	0,01
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - dermal
	Contact is only accidental.
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Chemical production where opportunity for exposure arises PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with	

substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
PROC2, PROC3	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,10 mg/m³
Risk Characterization Ratio (RCR)	0,71
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC4	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - systemic
Exposure estimate	1,20 mg/m³
Risk Characterization Ratio (RCR)	0,77
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC9	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	0,91 mg/m³
Risk Characterization Ratio (RCR)	0,59
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC2, PROC3, PROC4, PROC9	
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC5: Mixing or blending in batch processes Use domain: industrial

Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,25 mg/m³
Risk Characterization Ratio (RCR)	0,81
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities Use domain: industrial

Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	360 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,25 mg/m³
Risk Characterization Ratio (RCR)	0,81
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

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7. Short title of exposure scenario

Cleaning agents, (use in industrial settings)
IS; IS, SU4; ERC6b; PROC5, PROC7, PROC8a, PROC9, PROC10, PROC13; PC35

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC6b: Use of reactive processing aid at industrial site (no inclusion into or onto article)
Operational conditions	
	22.500 t
Minimum emission days per year Continuous	360
Emission factor air	0 %
Emission factor water	0 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18.000 m3/d
Dilution factor river	10
Dilution factor coast	100
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 5 % - <= 5 %
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2.000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0

Contributing exposure scenario	
Use descriptors covered	PROC5: Mixing or blending in batch processes Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with	

substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,25 mg/m³
Risk Characterization Ratio (RCR)	0,81
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC7: Industrial spraying Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and	

machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,20 mg/m³
Risk Characterization Ratio (RCR)	0,77
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	360 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are	

being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,25 mg/m³
Risk Characterization Ratio (RCR)	0,81
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC10: Roller application or brushing Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs	

followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
PROC9	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	0,91 mg/m³
Risk Characterization Ratio (RCR)	0,59
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC10	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,00 mg/m³
Risk Characterization Ratio (RCR)	0,65
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC9, PROC10	
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC13: Treatment of articles by dipping and pouring. Use domain: industrial
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 25 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Avoid frequent and direct contact with	

substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	0,7 mg/m³
Risk Characterization Ratio (RCR)	0,45
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

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8. Short title of exposure scenario

Use in Cleaning Agents, (use in professional settings)
PW; PW; ERC8a, ERC8b, ERC8d, ERC8e; PROC5, PROC9, PROC10, PROC11, PROC13, PROC15; PC35

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
Operational conditions	
Annual amount for wide disperse uses	999.999 t
Minimum emission days per year Continuous	360

Emission factor air	0 %
Emission factor water	0 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18.000 m3/d
Dilution factor river	10
Dilution factor coast	100
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - <= 10 %
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2.000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0

Contributing exposure scenario	
Use descriptors covered	ERC8b: Widespread use of reactive processing aid (no inclusion into or onto article, indoor)
Operational conditions	
Annual amount for wide disperse uses	999.999 t
Minimum emission days per year Continuous	360
Emission factor air	0 %
Emission factor water	0 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18.000 m3/d
Dilution factor river	10
Dilution factor coast	100
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - <= 10 %
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2.000 m3/d
Exposure estimate and reference to its source	

Risk Characterization Ratio (RCR)	0

Contributing exposure scenario	
Use descriptors covered	ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
Operational conditions	
Annual amount for wide disperse uses	999.999 t
Minimum emission days per year Continuous	360
Emission factor air	0 %
Emission factor water	0 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18.000 m3/d
Dilution factor river	10
Dilution factor coast	100
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - <= 10 %
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2.000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0

Contributing exposure scenario	
Use descriptors covered	ERC8e: Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)
Operational conditions	
Annual amount for wide disperse uses	999.999 t
Minimum emission days per year Continuous	360
Emission factor air	0 %
Emission factor water	0 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18.000 m3/d

Dilution factor river	10
Dilution factor coast	100
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - <= 10 %
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2.000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0

Contributing exposure scenario	
Use descriptors covered	PROC5: Mixing or blending in batch processes PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC15: Use a laboratory reagent. Use domain: professional
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor, Outdoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour) Alternatively: Ensure doors and windows are opened (general ventilation). Provide enhanced ventilation by mechanical means.	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	

Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
PROC5	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,00 mg/m³
Risk Characterization Ratio (RCR)	0,65
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC9	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,10 mg/m³
Risk Characterization Ratio (RCR)	0,71
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC15	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	0,85 mg/m³
Risk Characterization Ratio (RCR)	0,55
	The exposure estimate represents the 90th percentile of the exposure distribution.
PROC5, PROC9, PROC15	
Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring. Use domain: professional
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor, Outdoor
Risk Management Measures	

Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide extract ventilation to points where emissions occur (LEV).	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour) Alternatively: Ensure doors and windows are opened (general ventilation). Provide enhanced ventilation by mechanical means.	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,20 mg/m³
Risk Characterization Ratio (RCR)	0,77
	The exposure estimate represents the 90th percentile of the exposure distribution.

Assessment method	Qualitative assessment
	Worker - all relevant routes
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	
For scaling see: http://www.advancedreachtool.com	

Contributing exposure scenario	
Use descriptors covered	PROC11: Non industrial spraying Use domain: professional
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - < 5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor, Outdoor
Risk Management Measures	
Avoid frequent and direct contact with substance. Ensure minimization of manual phases Regular inspection and maintenance of equipment and machines. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour) Alternatively: Ensure doors and windows are opened (general ventilation). Provide enhanced ventilation by mechanical means.	
Use suitable eye protection. Use suitable chemically resistant gloves. Wear suitable working clothes. Wear suitable respiratory protection.	
Risk Management Measures are based on qualitative risk characterisation., Change gloves, if duration of activity exceeds break through time	
Exposure estimate and reference to its source	
Assessment method	Advanced REACH Tool v1.0
	Worker - inhalation, long-term - local und systemic
Exposure estimate	1,00 mg/m³

Risk Characterization Ratio (RCR)	0,65
	The exposure estimate represents the 90th percentile of the exposure distribution.
Assessment method	Qualitative assessment
	Worker - all relevant routes
Additional good practice advice	
Ensure good work practices are implemented.	
Guidance to Downstream Users	
For scaling see: http://www.advancedreachtool.com	
For scaling see: http://www.advancedreachtool.com	

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9. Short title of exposure scenario

Consumer applications
C; C; ERC8a, ERC8b, ERC8d, ERC8e; PC34, PC35, PC37

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
Operational conditions	
Annual amount for wide disperse uses	999.999 t
Minimum emission days per year Continuous	360
Emission factor air	0 %
Emission factor water	0 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18.000 m3/d
Dilution factor river	10
Dilution factor coast	100
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - <= 10 %
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2.000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0

Contributing exposure scenario	
Use descriptors covered	ERC8b: Widespread use of reactive processing aid (no inclusion into or onto article, indoor)
Operational conditions	
Annual amount for wide disperse uses	999.999 t
Minimum emission days per year Continuous	360
Emission factor air	0 %
Emission factor water	0 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18.000 m3/d
Dilution factor river	10
Dilution factor coast	100
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - <= 10 %
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2.000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0

Contributing exposure scenario	
Use descriptors covered	ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
Operational conditions	
Annual amount for wide disperse uses	999.999 t
Minimum emission days per year Continuous	360
Emission factor air	0 %
Emission factor water	0 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18.000 m3/d
Dilution factor river	10

Dilution factor coast	100
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - <= 10 %
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2.000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0

Contributing exposure scenario	
Use descriptors covered	ERC8e: Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)
Operational conditions	
Annual amount for wide disperse uses	999.999 t
Minimum emission days per year Continuous	360
Emission factor air	0 %
Emission factor water	0 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18.000 m3/d
Dilution factor river	10
Dilution factor coast	100
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - <= 10 %
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2.000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0

Contributing exposure scenario	
Use descriptors covered	C: Consumer uses PC34: Textile dyes, finishing and impregnating products: icluding bleaches and other processing aids, Spray
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active

	Content: >= 0 % - <= 3 % Relevant for inhalative exposure estimates
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	Application duration: < 30 min 4 uses per day Relevant for the spraying process.
Indoor/Outdoor	Indoor
Room size	4 m3
Ventilation rate per hour	0,5
	Amount per use 0,020 kg Relevant for the spraying process.
Risk Management Measures	
Consumer Measures	Do not mix with other products.
Exposure estimate and reference to its source	
PC34	
Assessment method	EASE v2.0
	Consumer- inhalation, long-term - local und systemic
Exposure estimate	0,0017 mg/m³
Risk Characterization Ratio (RCR)	0,0001

Contributing exposure scenario	
Use descriptors covered	C: Consumer uses PC34: Textile dyes, finishing and impregnating products: icluding bleaches and other processing aids, Machine wash, Hand wash
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - <= 0,05 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	Application duration: < 30 min 2 days per week
Indoor/Outdoor	Indoor
Room size	4 m3
Ventilation rate per hour	0,5
Risk Management Measures	
Consumer Measures	Do not mix with other products.
Exposure estimate and reference to its source	
	Consumer - dermal
	The use is assessed to be safe.
	Consumer - inhalation
	Exposure is considered negligible.

Contributing exposure scenario

Use descriptors covered	C: Consumer uses PC35: Washing and Cleaning Products (including solvent based products)., Surface cleaning
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - <= 0,5 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	Application duration: < 30 min 1 uses per day
Indoor/Outdoor	Indoor
Room size	4 m3
Ventilation rate per hour	0,5
Risk Management Measures	
Consumer Measures	Do not mix with other products.
Exposure estimate and reference to its source	
	Consumer - dermal
	The use is assessed to be safe.
	Consumer - inhalation
	Exposure is considered negligible.

Contributing exposure scenario	
Use descriptors covered	C: Consumer uses PC37: Water tretament chemicals. exposure of adults
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - <= 0,0003 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	60 min 1 uses per day Continuous exposure
Indoor/Outdoor	Indoor
	Amount per use 0,0002 g
Exposure estimate and reference to its source	
Assessment method	Other consideration (non-standard tool)
	Consumer - oral, long-term - systemic
Exposure estimate	0,003 mg/kg bw/day
Risk Characterization Ratio (RCR)	0,012
	Consumer - dermal
	Dermal exposure is considered to be not relevant.
	Consumer - inhalation
	Exposure is considered negligible.

Contributing exposure scenario	
Use descriptors covered	C: Consumer uses PC37: Water tretament chemicals. exposure of children
Operational conditions	
Concentration of the substance	sodium hypochlorite, solution ... % Cl active Content: >= 0 % - <= 0,0003 %
Physical state	Liquid, moderate fugacity
Vapour pressure of the substance during use	25 hPa
Duration and Frequency of activity	60 min 1 uses per day Continuous exposure
Exposure estimate and reference to its source	
Assessment method	Other consideration (non-standard tool)
	Consumer - oral, long-term - systemic
Exposure estimate	0,0033 mg/kg bw/day
Risk Characterization Ratio (RCR)	0,013
	Consumer - dermal
	Dermal exposure is considered to be not relevant.
	Consumer - inhalation
	Exposure is considered negligible.

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