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

HYDROGEN PEROXIDE 50

Version 2.1 Print Date 31.10.2025

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

1.1. Product identifier

Trade name	:	HYDROGEN PEROXIDE 50
Substance name	:	hydrogen peroxide solution
Index-No.	:	008-003-00-9
CAS-No.	:	7722-84-1
EC-No.	:	231-765-0
EU REACH-Reg. No.	:	01-2119485845-22-xxxx
UFI	:	MWYF-2084-D00N-1E9P
UFI code notified in	:	Belgium, Germany, Denmark, Estonia, Spain, France, Croatia, Ireland, Iceland, Lithuania, Luxembourg, Latvia, Malta, Netherlands, Norway, Portugal, Sweden

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

Use of the Substance/Mixture	:	Identified use: See table in front of appendix for a complete overview of identified uses., Bleaching with hydrogen peroxide solutions, Manufacture and industrial use of hydrogen peroxide solutions in chemical synthesis or processes and formulation, Environmental and agricultural use of hydrogen peroxide solutions, Only for professional users., Use of hydrogen peroxide solutions for hair bleaching and dyeing and tooth bleaching
Uses advised against	:	At this moment we have not identified any uses advised against
Remarks	:	Before referring to any Exposure Scenario attached to this Safety Data Sheet please check the grade of the product: the Exposure Scenarios presented are not related to all product grade

1.3. Details of the supplier of the safety data sheet

Company	:	Brenntag N.V. Nijverheidslaan 38 BE 8540 Deerlijk
Telephone	:	+32 (0)56 77 6944
Telefax	:	+32 (0)56 77 5711
E-mail address	:	info@brenntag.be
Responsible/issuing person	:	Master Data Administration

Company	:	Brenntag Nederland B.V. Donker Duyvisweg 44 NL 3316 BM Dordrecht
Telephone	:	+31 (0)78 65 44 944
Telefax	:	+31 (0)78 65 44 919
E-mail address	:	info@brenntag.nl
Responsible/issuing person	:	Master Data Administration

1.4. Emergency telephone number

Emergency telephone number	:	Belgium: Antipoison Center - Brussels TEL: +32(0)70 245 245 Netherland: National Poisoning Information Center - Bilthoven TEL: +31(0) 88 755 8000 (Only for the purpose of informing medical personnel in cases of acute intoxications)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

REGULATION (EC) No 1272/2008			
Hazard class	**Hazard category**	**Target Organs**	**Hazard statements**
Acute toxicity (Inhalation)	Category 4	---	H332
Acute toxicity (Oral)	Category 4	---	H302
Skin irritation	Category 2	---	H315
Serious eye damage	Category 1	---	H318
Specific target organ toxicity - single exposure	Category 3	Respiratory system	H335

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

Most important adverse effects

Human Health	:	See section 11 for toxicological information.
Physical and chemical hazards	:	See section 9/10 for physicochemical information.
Potential environmental effects	:	See section 12 for environmental information.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008

Hazard symbols	:		
Signal word	:	Danger	
Hazard statements	:	H302 + H332	Harmful if swallowed or if inhaled.
		H315	Causes skin irritation.
		H318	Causes serious eye damage.
		H335	May cause respiratory irritation.
Precautionary statements			
Prevention	:	P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
		P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response	:	P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
		P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
		P302 + P352	IF ON SKIN: Wash with plenty of water.
		P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

Additional Labelling:

Acquisition, possession or use by the general public is restricted.

Hazardous components which must be listed on the label:

• hydrogen peroxide solution

2.3. Other hazards

The PBT or vPvB criteria of Annex XIII to the REACH Regulation does not apply to inorganic substances.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

With catalysts or at elevated temperatures hydrogen peroxide decomposes to water and oxygen.

SECTION 3: Composition/information on ingredients

3.1. Substances

Chemical nature : Aqueous solution

Hazardous components	Amount [%]	Classification (REGULATION (EC) No 1272/2008)	
		Hazard class / Hazard category	Hazard statements
hydrogen peroxide solution Index-No. : 008-003-00-9 CAS-No. : 7722-84-1 EC-No. : 231-765-0 EU REACH-Reg. No. : 01-2119485845-22-xxxx	>= 49 - <= 49,9	Ox. Liq.1 Acute Tox.4 Inhalation Acute Tox.4 Oral Skin Corr.1A Eye Dam.1 STOT SE3 Aquatic Chronic3 --- specific concentration limit STOT SE 3; H335 >= 35 % Eye Dam. 1; H318 >= 8 % Eye Irrit. 2; H319 5 - < 8 % Ox. Liq. 2; H272 50 - < 70 % Skin Irrit. 2; H315 35 - < 50 % Ox. Liq. 1; H271 >= 70 % Skin Corr. 1A; H314 >= 70 % Skin Corr. 1B; H314 50 - < 70 % Aquatic Chronic 3; H412 >= 63 % --- Acute toxicity estimate Acute oral toxicity: 431 mg/kg Acute inhalation toxicity (dust/mist): 1,5 mg/l Acute dermal toxicity: 2000,01 mg/kg --- Note B	H271 H332 H302 H314 H318 H335 H412

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

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice	: Take off all contaminated clothing immediately. If symptoms occur call a physician.
If inhaled	: Move to fresh air in case of accidental inhalation of vapours. If breathing is irregular or stopped, administer artificial respiration. If unconscious, place in recovery position and seek medical advice. Call a physician immediately.
In case of skin contact	: After contact with skin, wash immediately with plenty of water. If irritation persists, call a physician.
In case of eye contact	: Rinse immediately with plenty of water, also under the eyelids, for at least 10 minutes. Consult an eye specialist immediately. Go to an ophthalmic hospital if possible.
If swallowed	: Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. If a person vomits when lying on his back, place him in the recovery position. Call a physician immediately.

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

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

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

Treatment	: Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Water spray jet
Unsuitable extinguishing media	: High volume water jet, Carbon dioxide (CO2)

5.2. Special hazards arising from the substance or mixture

Specific hazards during firefighting	:	The product itself does not burn. Oxygen released on exothermic decomposition may support combustion in case of surrounding fire. Heating will cause a pressure rise - with risk of bursting

5.3. Advice for firefighters

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

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Use personal protective equipment. Keep away unprotected persons. Ensure adequate ventilation. Avoid contact with skin and eyes. Do not breathe vapours or spray mist.

6.2. Environmental precautions

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

6.3. Methods and materials for containment and cleaning up

Methods and materials for containment and cleaning up	:	Prevent further leakage or spillage if safe to do so. Dilute with plenty of water. Collect spillage with non-combustible absorbent material (e.g. sand, diatomaceous earth, vermiculite, sepiolite). Keep in suitable, closed containers for disposal. Do not keep the container sealed. Risk of closed containers bursting if strongly heated. Flush away residuals with plenty of water.
Further information	:	Treat recovered material as described in the section "Disposal considerations".

6.4. Reference to other sections

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

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling	:	Keep container firmly closed but do not keep it gas-tight. To this a packaging with ventilation cap is to be used. Ensure adequate ventilation. Avoid formation of aerosol. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Emergency eye wash fountains and emergency showers should be available in the immediate vicinity.
Hygiene measures	:	Keep away from food, drink and animal feedingstuffs. Smoking, eating and drinking should be prohibited in the application area. Wash hands before breaks and at the end of workday. Take off all contaminated clothing immediately.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Store in original container. Keep away from direct sunlight.
Advice on protection against fire and explosion	:	The product is not flammable. Heating will cause a pressure rise - with risk of bursting
Fire-fighting class	:	strong oxydativ material
Further information on storage conditions	:	Do not keep the container sealed. Keep in a dry place. Store in cool place. Keep in a well-ventilated place.
Advice on common storage	:	Keep away from food, drink and animal feedingstuffs. Keep away from combustible material.
Suitable packaging materials	:	Stainless steel, PTFE, polyethylene
Unsuitable packaging materials	:	, Copper, Aluminium, Zinc, Iron

7.3. Specific end use(s)

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

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Contains no substances with occupational exposure limit values.

Component:	hydrogen peroxide solution	CAS-No. 7722-84-1
Derived No Effect Level (DNEL)/Derived Minimal Effect Level (DMEL)		

DNEL

Workers, Acute - local effects, Inhalation : 3 mg/m3

DNEL
Workers, Long-term - local effects, Inhalation : 1,4 mg/m3

DNEL
Consumers, Acute - local effects, Inhalation : 1,93 mg/m3

DNEL
Consumers, Long-term - local effects, Inhalation : 0,21 mg/m3

Predicted No Effect Concentration (PNEC)		
Fresh water	:	0,0126 mg/l
Marine water	:	0,0126 mg/l
Intermittent releases	:	0,0138 mg/l
Sewage treatment plant (STP)	:	4,66 mg/l
Fresh water sediment	:	0,047 mg/kg dry weight (d.w.)
Marine sediment	:	0,047 mg/kg dry weight (d.w.)
Soil	:	0,0023 mg/kg dry weight (d.w.)

Other Occupational Exposure Limit Values

Belgium. OELs. Exposure Limit Values to Chemical Substances at Work, Code of Well-being at work, Book VI, Title 1, as amended, Time Weighted Average (TWA):
1 ppm, 1,4 mg/m3

8.2. Exposure controls

Appropriate engineering controls

Refer to protective measures listed in sections 7 and 8.

Personal protective equipment

Respiratory protection

Advice : Required, if exposure limit is exceeded (e.g. OEL).
Recommended Filter type:
ABEK-filter
When aerosol or mist is formed use suitable respiratory protection.
ABEK-P2-filter
Equipment should conform to EN 14387

Hand protection

Advice	:	Protective gloves complying with EN 374. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Protective gloves should be replaced at first signs of wear.
Material	:	butyl-rubber
Break through time	:	>= 8 h
Glove thickness	:	0,7 mm
Guideline	:	DIN EN 374

Material	:	Natural Rubber
Break through time	:	>= 8 h
Glove thickness	:	1,0 mm
Guideline	:	DIN EN 374

Material	:	Nitrile rubber
Break through time	:	>= 8 h
Glove thickness	:	0,33 mm
Guideline	:	DIN EN 374

Eye protection

Advice	:	Tightly fitting safety goggles

Skin and body protection

Protecting Clothes	:	Acid resistant protective clothing.

Environmental exposure controls

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

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Form	:	liquid
Physical state	:	liquid
Colour	:	colourless

Odour	:	pungent
Odour Threshold	:	No data available
Melting point/ range	:	-52,2 °C 50% solution
Boiling point/boiling range	:	ca. 114 °C 50% solution
Flammability (solid, gas)	:	Not applicable
Upper explosion limit / Upper flammability limit	:	Not applicable
Lower explosion limit / Lower flammability limit	:	Not applicable
Flash point	:	Not applicable
Auto-ignition temperature	:	Not applicable
Decomposition temperature	:	To avoid thermal decomposition, do not overheat.
Self-Accelerating decomposition temperature (SADT)	:	No data available
pH	:	1,8 - 2,8 Concentration: 100 %
Viscosity		
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Flow time	:	No data available
Solubility(ies)		
Water solubility	:	completely miscible
Solubility in other solvents	:	No data available
Dissolution Rate	:	No data available
Partition coefficient: n-octanol/water	:	log Pow: -1,57 (20 °C) (calculated)
Dispersion Stability	:	No data available
Vapour pressure	:	2,99 hPa (25 °C) calculated on the pure substance
Relative density	:	No data available

Density	:	ca. 1,196 g/cm3 (20 °C) 50% solution
Bulk density	:	No data available
Relative vapour density	:	No data available
Particle characteristics Particle size	:	Not applicable

9.2 Other information

Explosives	:	Product is not explosive.
Oxidizing properties	:	Oxidizing agents
Flammability (liquids)	:	Will not burn
Molecular weight	:	34,01 g/mol

SECTION 10: Stability and reactivity

10.1. Reactivity

Advice : Reacts with copper, aluminum, zinc and their alloys.

10.2. Chemical stability

Advice : Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions : With catalysts or at elevated temperatures hydrogen peroxide decomposes to water and oxygen.

10.4. Conditions to avoid

Conditions to avoid : Heat, flames and sparks.Keep away from direct sunlight.Generation of gas from decomposition causes pressure in closed systems

Thermal decomposition : To avoid thermal decomposition, do not overheat.

10.5. Incompatible materials

Materials to avoid : Keep away from combustible material. Organic materials, Strong reducing agents, Copper, Aluminium, Zinc, Iron, Acetone, alkalis, Bases, Metal oxides

10.6. Hazardous decomposition products

Hazardous decomposition products : Oxygen

SECTION 11: Toxicological information

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

Data for the product		
Acute toxicity		
Oral		
Acute toxicity estimate	:	862,2 - 879,6 mg/kg) (Calculation method)Classified based on the calculation method according to CLP regulation.
Inhalation		
Acute toxicity estimate	:	3,00 - 3,06 mg/l (4 h; dust/mist) (Calculation method)Classified based on the calculation method according to CLP regulation.
Dermal		
Acute toxicity estimate	:	> 2000 mg/kg) (Calculation method)Not classified based on the calculation method according to CLP regulation.
Irritation		
Skin		
Result	:	Classified based on the calculation method according to CLP regulation.
Eyes		
Result	:	Classified based on the calculation method according to CLP regulation.
Sensitisation		
Result	:	Not classified based on the calculation method according to CLP regulation.
CMR effects		
CMR Properties		
Carcinogenicity	:	Not classified based on the calculation method according to CLP regulation.
Mutagenicity	:	Not classified based on the calculation method according to CLP regulation.
Teratogenicity	:	Not classified based on the calculation method according to CLP regulation.
Reproductive toxicity	:	Not classified based on the calculation method according to CLP regulation.
Specific Target Organ Toxicity		
Single exposure		
Remarks	:	Classified based on the calculation method according to CLP regulation.

Repeated exposure

Remarks : Not classified based on the calculation method according to CLP regulation.

Other toxic properties

Repeated dose toxicity

No data available

Aspiration hazard

Not applicable,

Component: hydrogen peroxide solution CAS-No. 7722-84-1

Acute toxicity

Oral

LD50 : 431 mg/kg (Rat, male and female) (US-EPA method)The toxicological value for the pure substance was calculated on basis of a value for an aqueous solution.

Inhalation

No valid data available.

Dermal

LD50 : > 2000 mg/kg (Rabbit) The toxicological value for the pure substance was calculated on basis of a value for an aqueous solution.

Irritation

Skin

Result : corrosive effects (Rabbit)

Eyes

Result : Causes serious eye damage. (Rabbit)

Sensitisation

Result : not sensitizing (Magnusson & Kligman; Guinea pig)

CMR effects

CMR Properties

Carcinogenicity	:	Not classified due to inconclusive data.
Mutagenicity	:	In vitro tests showed mutagenic effects In vivo tests did not show mutagenic effects
Teratogenicity	:	No data available
Reproductive toxicity	:	Not classified due to lack of data.

Genotoxicity in vitro

Result	:	positive (Chromosome aberration test in vitro; In vitro gene mutation study in mammalian cells; no) (OECD Test Guideline 473) positive (In vitro gene mutation study in mammalian cells; no) (OECD Test Guideline 476) Positive as well as negative results were obtained. (Mutagenicity (Escherichia coli - reverse mutation assay); with and without metabolic activation)

Genotoxicity in vivo

Result	:	negative (In vivo micronucleus test; Mouse, male and female) (Test substance: Hydrogen peroxide solution (35%); intraperitoneal;) (OECD Test Guideline 474)

Specific Target Organ Toxicity

Single exposure

Inhalation	:	Target Organs: Respiratory systemMay cause respiratory irritation.

Repeated exposure

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

Other toxic properties

Repeated dose toxicity

NOEL	:	37 mg/kg (Mouse, female; Test substance: Hydrogen peroxide solution (35%))(Oral; 90 d; Subsequent observation period 6 weeks) (OECD Test Guideline 408), Target Organs: Blood; Symptoms: Depression of body weight, Irritation, Gastrointestinal tract
NOEL	:	26 mg/kg (Mouse, male; Test substance: Hydrogen peroxide solution

(35%))(Oral; 90 d; Subsequent observation period 6 weeks) (OECD Test Guideline 408), Target Organs: Blood; Symptoms: Depression of body weight, Irritation, Gastrointestinal tract

Aspiration hazard

No aspiration toxicity classification,

11.2. Information on other hazards

Data for the product

Endocrine disrupting properties

Assessment Endocrine Disrupting Properties	:	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Component:	**hydrogen peroxide solution**	**CAS-No. 7722-84-1**

Endocrine disrupting properties

Assessment Endocrine Disrupting Properties	:	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 12: Ecological information

12.1. Toxicity

Component:	**hydrogen peroxide solution**	**CAS-No. 7722-84-1**

Acute toxicity

Fish

LC50	:	16,4 mg/l (Pimephales promelas (fathead minnow), mortality; 96 h) (semi-static test; US-EPA)

Toxicity to daphnia and other aquatic invertebrates

LC50	:	2,4 mg/l (Daphnia pulex (Water flea), mortality; 48 h) (semi-static test)

algae

NOEC	:	0,63 mg/l (Skeletonema costatum (marine diatom); 72 h) (static test; End point: Growth rate)
ErC50		1,38 mg/l (Skeletonema costatum (marine diatom); 72 h) (static test; End point: Growth rate)

Bacteria

EC50	:	> 1000 mg/l (activated sludge; 3 h) (static test; OECD Test Guideline 209)
EC50		466 mg/l (activated sludge; 30 min) (static test; OECD Test Guideline 209)

Chronic toxicity

Aquatic invertebrates

NOEC		0,63 mg/l (Daphnia magna (Water flea); 21 d) (End point: Reproduction)

12.2. Persistence and degradability

Component:	**hydrogen peroxide solution**	**CAS-No. 7722-84-1**

Persistence and degradability

Persistence

Result	:	(Related to: Air) The product can be degraded by abiotic (e.g. chemical or photolytic) processes. Decomposition under release of oxygen.

Biodegradability

Result	:	> 99 % (aerobic; sewage, domestic; Related to: O2 consumption; Test substance: 30% solution; Exposure Time: 30 min)(OECD)Readily biodegradable.

12.3. Bioaccumulative potential

Component:	**hydrogen peroxide solution**	**CAS-No. 7722-84-1**

Bioaccumulation		
Result	:	log Kow -1,57 (20 °C) (QSAR)
	:	Does not bioaccumulate.

12.4. Mobility in soil

Component:	hydrogen peroxide solution	CAS-No. 7722-84-1
Mobility		
Water	:	The product is mobile in water enviroment.
Soil	:	Not expected to adsorb on soil.
Air	:	not volatile

12.5. Results of PBT and vPvB assessment

Data for the product		
Results of PBT and vPvB assessment		
Result	:	The PBT or vPvB criteria of Annex XIII to the REACH Regulation does not apply to inorganic substances.

Component:	hydrogen peroxide solution	CAS-No. 7722-84-1
Results of PBT and vPvB assessment		
Result	:	The PBT or vPvB criteria of Annex XIII to the REACH Regulation does not apply to inorganic substances.

12.6. Endocrine disrupting properties

Data for the product		
Assessment Endocrine Disrupting Properties	:	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Component:	hydrogen peroxide solution	CAS-No. 7722-84-1
Assessment Endocrine Disrupting Properties	:	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7. Other adverse effects

Component:	hydrogen peroxide solution	CAS-No. 7722-84-1
Adsorbed organic bound halogens (AOX)		
Result	:	Product does not contain any organic halogens.

Additional ecological information		
Result	:	Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product	:	Disposal together with normal waste is not allowed. Special disposal required according to local regulations. Do not let product enter drains. Contact waste disposal services. This product shall be disposed of or recovered in compliance with Directive 2008/98/EC on waste as lastly amended.
Contaminated packaging	:	Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning. If recycling is not practicable, dispose of in compliance with local regulations.
European Waste Catalogue Number	:	No waste code according to the European Waste Catalogue can be assigned for this product, as the intended use dictates the assignment. The waste code is established in consultation with the regional waste disposer.

SECTION 14: Transport information

14.1. UN number or ID number

2014

14.2. UN proper shipping name

ADR : HYDROGEN PEROXIDE, AQUEOUS SOLUTION
RID : HYDROGEN PEROXIDE, AQUEOUS SOLUTION
IMDG : HYDROGEN PEROXIDE, AQUEOUS SOLUTION

14.3. Transport hazard class(es)

ADR-Class	:	5.1
(Labels; Classification Code; Hazard Identification Number; Tunnel restriction code)		5.1, 8; OC1; 58; (E)
RID-Class	:	5.1

(Labels; Classification Code; Hazard Identification Number)		5.1, 8; OC1; 58
IMDG-Class	:	5.1
(Labels; EmS)		5.1, 8; F-H, S-Q

14.4. Packaging group

ADR : II

RID : II

IMDG : II

14.5. Environmental hazards

Environmentally hazardous according to ADR	:	no
Environmentally hazardous according to RID	:	no
Marine Pollutant according to IMDG-Code	:	no

14.6. Special precautions for user

Not applicable.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

Data for the product

EU. Restricted (Annex I) & Reportable (Annex II) Explosives Precursors, Regulation 2019/1148/EU on Explosives Precursors	:	; Restricted explosives precursors: Acquisition, introduction, possession or use of this product by the general public is restricted by Regulation (EU) 2019/1148. All suspicious transactions, and significant disappearances and thefts should be reported to the relevant national contact point. Please see https://home-affairs.ec.europa.eu/policies/internal-security/counter-terrorism-and-radicalisation/protection/legislation-chemicals-used-home-made-explosives_en
EU. REACH, Annex XVII, Restrictions on manufacture, placing on the market and use of certain dangerous substances, 1907/2006/EC, as	:	Point Nos.: , 75; Listed

amended		Point Nos.: , 3; Listed
EU. Directive 2012/18/EU on major accident hazards involving dangerous substances, Annex I, as amended	:	; The substance/mixture does not fall under this legislation.
Other regulations	:	SDS updated according to Regulation (EU) 2020/878

Component:	**hydrogen peroxide solution**	**CAS-No. 7722-84-1**

EU. Chemicals Subject to Export Notification: Annex 1, Part 1, Regulation 649/2012/EU on export and import of dangerous chemicals, as amended	:	; The substance/mixture does not fall under this legislation.
EU. Restricted (Annex I) & Reportable (Annex II) Explosives Precursors, Regulation 2019/1148/EU on Explosives Precursors	:	Upper limit value for licensing: 35 %; ANNEX I: RESTRICTED EXPLOSIVES PRECURSORS: List of substances which are not to be made available to, or introduced, possessed or used by, members of the general public, whether on their own or in mixtures or substances that include those substances, unless the concentration is equal to or lower than the limit values set out in column 2, and for which suspicious transactions and significant disappearances and thefts are to be reported within 24 hours. Limit value: 12 %; ANNEX I: RESTRICTED EXPLOSIVES PRECURSORS: List of substances which are not to be made available to, or introduced, possessed or used by, members of the general public, whether on their own or in mixtures or substances that include those substances, unless the concentration is equal to or lower than the limit values set out in column 2, and for which suspicious transactions and significant disappearances and thefts are to be reported within 24 hours.
EU. REACH, Annex XVII, Restrictions on manufacture, placing on the market and use of certain dangerous substances, 1907/2006/EC, as amended	:	Point Nos.: , 75; Listed Point Nos.: , 3; Listed

EU. Restricted Substances: Annex III, Regulation 1223/2009/EC on Cosmetic Products, as amended	:	Maximum concentration in ready for use preparation: 6 %; Tooth whitening or bleaching products; See the text of the regulation for applicable exceptions or provisions. Maximum concentration in ready for use preparation: 0,1 %; Oral products (including mouth rinse, tooth paste and tooth whitening or bleaching products); See the text of the regulation for applicable exceptions or provisions. Maximum concentration in ready for use preparation: 4 %; Skin products; See the text of the regulation for applicable exceptions or provisions. Maximum concentration in ready for use preparation: 2 %; Cosmetic products for eyelashes; See the text of the regulation for applicable exceptions or provisions. Maximum concentration in ready for use preparation: 12 %; Hair products; See the text of the regulation for applicable exceptions or provisions. Maximum concentration in ready for use preparation: 2 %; Products for hardening nails; See the text of the regulation for applicable exceptions or provisions.
EU. Directive 2012/18/EU on major accident hazards involving dangerous substances, Annex I, as amended	:	Qualifying quantity for the application of Lower-tier requirements: 50 tonnes; Part 1: Categories of dangerous substances; Oxidising Liquids, Category 1, 2 or 3, or; Oxidising Solids, Category 1, 2 or 3 Qualifying quantity for the application of Upper-tier requirements: 200 tonnes; Part 1: Categories of dangerous substances; Oxidising Liquids, Category 1, 2 or 3, or; Oxidising Solids, Category 1, 2 or 3

Notification status
hydrogen peroxide solution:

Regulatory List	Notification	Notification number
AICS	YES	
DSL	YES	
EINECS	YES	231-765-0
ENCS (JP)	YES	(1)-419
IECSC	YES	
INSQ	YES	
ISHL (JP)	YES	(1)-419
KECI (KR)	YES	97-1-2
KECI (KR)	YES	KE-20204
NZIOC	YES	HSR001326
NZIOC	YES	HSR001450
NZIOC	YES	HSR001449

ONT INV	YES	
PHARM (JP)	YES	
PICCS (PH)	YES	
TCSI	YES	
TH INV	YES	55-1-06014
TH INV	YES	2847.00
TSCA	YES	
VN INVL	YES	

15.2. Chemical safety assessment

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

SECTION 16: Other information

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

H271	May cause fire or explosion; strong oxidizer.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H412	Harmful to aquatic life with long lasting effects.

Full text of the Notes referred to under section 3.

Note B	Some substances (acids, bases, etc.) are placed on the market in aqueous solutions at various concentrations and, therefore, these solutions require different classification and labelling since the hazards vary at different concentrations. In Part 3 entries with Note B have a general designation of the following type: "nitric acid ...%". In this case the supplier must state the percentage concentration of the solution on the label. Unless otherwise stated, it is assumed that the percentage concentration is calculated on a weight/weight basis.

Abbreviations and Acronyms

AU AIICL	Australia. Industrial Chemicals Act (AIIC) List
BCF	bioconcentration factor
BOD	biochemical oxygen demand
CAS	Chemical Abstracts Service
CLP	Classification, Labelling and Packaging
CMR	carcinogenic, mutagenic or toxic to reproduction
COD	chemical oxygen demand
DNEL	derived no-effect level
DSL	Canada. Environmental Protection Act, Domestic Substances List

EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
ENCS (JP)	Japan. Kashin-Hou Law List
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
IECSC	China. Inventory of Existing Chemical Substances
INSQ	Mexico. National Inventory of Chemical Substances
ISHL (JP)	Japan. Inventory of Industrial Safety & Health
KECI (KR)	Korea. Existing Chemicals Inventory
LC50	median lethal concentration
LOAEC	lowest observed adverse effect concentration
LOAEL	lowest observed adverse effect level
LOEL	lowest observed effect level
NDSL	Canada. Environmental Protection Act. Non-Domestic Substances List
NLP	no-longer polymer
NOAEC	no observed adverse effect concentration
NOAEL	no observed adverse effect level
NOEC	no observed effect concentration
NOEL	no observed effect level
NZIOC	New Zealand. Inventory of Chemicals
OECD	Organisation for Economic Cooperation and Development
OEL	occupational exposure limit
ONT INV	Canada. Ontario Inventory List
PBT	persistent, bioaccumulative and toxic
PHARM (JP)	Japan. Pharmacopoeia Listing
PICCS (PH)	Philippines. Inventory of Chemicals and Chemical Substances
PNEC	predicted no-effect concentration
REACH Auth. No.:	REACH Authorisation Number
REACH AuthAppC. No.	REACH Authorisation Application Consultation Number
UK REACH Auth. No.:	UK REACH Authorisation Number
UK REACH AuthAppC. No.	UK REACH Authorisation Application Consultation Number
UK REACH-Reg.No	UK REACH Registration Number
STOT	specific target organ toxicity
SPM	Synthetic Polymer Microparticles
SVHC	substance of very high concern
TCSI	Taiwan. Existing Chemicals Inventory
TH INV	Thailand. Existing Chemicals Inventory from FDA
TSCA	US. Toxic Substances Control Act
UVCB	substance of unknown or variable composition, complex reaction products or biological materials

VN INVL	Vietnam. National Chemical Inventory
vPvB	very persistent and very bioaccumulative

Further information

Key literature references and sources for data	:	Supplier information and data from the "Database of registered substances" of the European Chemicals Agency (ECHA) were used to create this safety data sheet.
Methods used for product classification	:	The classification for human health, physical and chemical hazards and environmental hazards were derived from a combination of calculation methods and if available test data.
Hints for trainings	:	The workers have to be trained regularly on the safe handling of the products based on the information provided in the Safety Data Sheet and the local conditions of the workplace. National regulations for the training of workers in the handling of hazardous materials must be adhered to.
Other information	:	The information provided in this Safety Data Sheet is correct to our knowledge at the date of its revision. The information given only describes the products with regard to safety arrangements and is not to be considered as a warranty or quality specification and does not constitute a legal relationship. The information contained in this Safety Data Sheet relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

|| Indicates updated section.

No.	Short title	Main User Group (SU)	Sector of Use (SU)	Product Category (PC)	Process Category (PROC)	Environmental Release Category (ERC)	Article Category (AC)	Specified
1	Industrial use	3	4, 8, 9, 10, 11, 12, 14, 15, 16, 17	0, 1, 2, 8, 9a, 12, 14, 15, 20, 21, 23, 25, 26, 27, 29, 31, 32, 33, 34, 35, 37, 39	1, 2, 3, 4, 5, 7, 10, 12, 13, 14, 15	1, 2, 4, 6a, 6b, 6c, 6d	NA	ES142
2	Distribution of substance	3	4, 8, 9, 10, 11, 12, 14, 15, 16, 17	0, 1, 8, 12, 14, 15, 21, 25, 27, 29, 31, 32, 34, 35, 37, 39	8a, 8b, 9	1, 2, 4, 6a, 6b, 6c	NA	ES278
3	Use in Cleaning Agents	22	NA	21, 35	4, 10, 11, 13, 19	8a, 8b, 8d, 8e	NA	ES400
4	Use in Cleaning Agents	21	NA	21, 35	NA	8a, 8b, 8d, 8e	NA	ES377
5	Use in laboratories	3	8, 9	NA	15	4	NA	ES16676
6	Use in laboratories	22	8, 9	NA	15	8a	NA	ES16678
7	Use in cosmetics	22	NA	39	19	8b	NA	ES404
8	Use in cosmetics	21	NA	39	NA	8b	NA	ES408
9	Use as a bleach	3	5, 6a, 6b	23, 24, 26, 34	1, 2, 3, 4, 13, 19	4, 6b	NA	ES287
10	Use as a bleach	22	5, 6a, 6b	23, 24, 26, 34	1, 2, 3, 4, 13, 19	8a, 8b, 8e	NA	ES312
11	Use as a bleach	21	5, 6a, 6b	23, 24, 26, 34	NA	8a, 8b, 8e	NA	ES316
12	Use in agrochemicals	3	1, 2, 8	0, 20, 37	1, 2, 3, 4	4, 6b	NA	ES327
13	Use in agrochemicals	22	1, 2, 8	0, 20, 37	1, 2, 3, 4	8a, 8b, 8e, 8d	NA	ES362
14	Use in agrochemicals	21	1, 2, 8	20, 37	NA	8a, 8b, 8d, 8e	NA	ES366

1. Short title of Exposure Scenario 1: Industrial use

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU4: Manufacture of food products SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys) SU11: Manufacture of rubber products SU12: Manufacture of plastics products, including compounding and conversion SU14: Manufacture of basic metals, including alloys SU15: Manufacture of fabricated metal products, except machinery and equipment SU16: Manufacture of computer, electronic and optical products, electrical equipment SU17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Chemical product category	PC0: Other (use UCN codes) PC1: Adhesives, sealants PC2: Adsorbents PC8: Biocidal products (e.g. Disinfectants, pest control) PC9a: Coatings and paints, thinners, paint removers PC12: Fertilizers PC14: Metal surface treatment products, including galvanic and electroplating products PC15: Non-metal-surface treatment products PC20: Products such as ph-regulators, flocculants, pre-cipitants, neutralization agents PC21: Laboratory chemicals PC23: Leather tanning, dye, finishing, impregnation and care products PC25: Metal working fluids PC26: Paper and board dye, finishing and impregnation products: including bleaches and other processing aids PC27: Plant protection products PC29: Pharmaceuticals PC31: Polishes and wax blends PC32: Polymer preparations and compounds PC33: Semiconductors PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids PC35: Washing and cleaning products (including solvent based products) PC37: Water treatment chemicals PC39: Cosmetics, personal care products
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

	PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC7: Industrial spraying PROC10: Roller application or brushing PROC12: Use of blowing agents in manufacture of foam PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent
Environmental Release Categories	ERC1: Manufacture of substances ERC2: Formulation of preparations ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC6b: Industrial use of reactive processing aids ERC6c: Industrial use of monomers for manufacture of thermoplastics ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
Activity	Note: this Exposure Scenario is only relevant for an appropriated use according to the quality grade of the substance delivered

2.1 Contributing scenario controlling environmental exposure for: ERC1

Activity	Manufacture	
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 35% - 90 %
Amount used	Annual site tonnage (tons/year):	75000 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	7.000 m3/d
	Dilution Factor (River)	300
	Dilution Factor (Coastal Areas)	1.000
Other given operational conditions affecting environmental exposure	Number of emission days per year	360
	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0,003 %
	Emission or Release Factor: Soil	0 %
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and	Air	Passing of waste air through activated carbon filters
	Water	Optional pre-treatment of wastewater by steam stripping, must be treated by :, Biological

measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site		wastewater treatment, ozonation or liquid phase carbon adsorption
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste has to be treated as industrial waste and should be incinerated in thermal combustion.
	Highly reactive., Decomposition in the waste and during treatment., Seal and return containers., No environmental emissions are expected.	

2.2 Contributing scenario controlling environmental exposure for: ERC6a

Activity	Chemical synthesis.	
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 35% - 90 %
Amount used	Annual site tonnage (tons/year):	8950 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	10.000 m3/d
	Dilution Factor (River)	40
	Dilution Factor (Coastal Areas)	400
Other given operational conditions affecting environmental exposure	Number of emission days per year	300
	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0,007 %
	Emission or Release Factor: Soil	0 %
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Air	Passing of waste air through activated carbon filters
	Water	Optional pre-treatment of wastewater by steam stripping, must be treated by :, Biological wastewater treatment, ozonation or liquid phase carbon adsorption
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste has to be treated as industrial waste and should be incinerated in thermal combustion.
	Highly reactive., Decomposition in the waste and during treatment., Seal and return containers., No environmental emissions are expected.	

2.3 Contributing scenario controlling environmental exposure for: ERC2, ERC4, ERC6a, ERC6b,

ERC6c, ERC6d		
Activity	Chemical applications	
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 35% - 90 %
Amount used	Annual site tonnage (tons/year):	1010 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Number of emission days per year	300
	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0,005 %
	Emission or Release Factor: Soil	0 %
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Air	Passing of waste air through activated carbon filters
	Water	Optional pre-treatment of wastewater by steam stripping, must be treated by :, Biological wastewater treatment, ozonation or liquid phase carbon adsorption
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste has to be treated as industrial waste and should be incinerated in thermal combustion.
	Highly reactive., Decomposition in the waste and during treatment., Seal and return containers., No environmental emissions are expected.	
2.4 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC10, PROC12, PROC13, PROC14, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 35% - 90 %
	Physical Form (at time of use)	liquid
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	220 days/year
Technical conditions and	Provide extraction ventilation at points where emissions occur.	

measures to control dispersion from source towards the worker	Provide local exhaust ventilation (LEV). (Efficiency: 90 %)(PROC2, PROC3, PROC4, PROC5, PROC7, PROC10, PROC13, PROC14, PROC15)
	Provide local exhaust ventilation (LEV). (Efficiency: 80 %)(PROC12)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear protective gloves/ protective clothing/ eye protection/ face protection. Wash thoroughly after open handling of the product. Remove contaminated clothing and wash it before reuse. Wash off any skin contamination immediately.

3. Exposure estimation and reference to its source

Environment

ERC1, ERC2, ERC6d, ERC6c, ERC4, ERC6a, ERC6b: Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC1	Manufacture	Fresh water	PEC	0,009mg/L	---
ERC6a	Chemical synthesis.	Fresh water	PEC	0,0063mg/L	---
ERC2, ERC4, ERC6a, ERC6b, ERC6c, ERC6d	Chemical applications	Fresh water	PEC	0,0086mg/L	---
ERC1	Manufacture	Marine water	PEC	0,0015mg/L	---
ERC6a	Chemical synthesis.	Marine water	PEC	0,0006mg/L	---
ERC2, ERC4, ERC6a, ERC6b, ERC6c, ERC6d	Chemical applications	Marine water	PEC	0,0008mg/L	---
ERC1	Manufacture	Soil	PEC	0,145µg/kg	---
ERC6a	Chemical synthesis.	Soil	PEC	0,151µg/kg	---
ERC2, ERC4, ERC6a, ERC6b, ERC6c, ERC6d	Chemical applications	Soil	PEC	0,117µg/kg	---
ERC1	Manufacture	Sewage treatment plant (STP)	PEC	0,63mg/L	---
ERC6a	Chemical synthesis.	Sewage treatment plant (STP)	PEC	0,146mg/L	---
ERC2, ERC4, ERC6a, ERC6b, ERC6c, ERC6d	Chemical applications	Sewage treatment plant (STP)	PEC	0,059mg/L	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC10, PROC12, PROC13, PROC14, PROC15: Used ECETOC TRA model.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	(90% w/w)	Inhalation worker	0,014mg/m³	---

		exposure		
PROC2	(90% w/w)	Inhalation worker exposure	0,142mg/m³	---
PROC3	(70% w/w)	Inhalation worker exposure	0,298mg/m³	---
PROC4, PROC5, PROC15	(70% w/w)	Inhalation worker exposure	0,496mg/m³	---
PROC7, PROC14	(60% w/w)	Inhalation worker exposure	0,425mg/m³	---
PROC10	(60% w/w)	Inhalation worker exposure	0,85mg/m³	---
PROC12	(60% w/w)	Inhalation worker exposure	0,34mg/m³	---
PROC13	(60% w/w)	Inhalation worker exposure	0,85mg/m³	---

Good industrial hygiene practice has to be followed if oral exposure is not expected for workers. Workers handling concentrated solutions containing 35% w/w or more are obliged to use appropriate dermal protection.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

These measures involve good personal and housekeeping practices (i.e. regular cleaning), no eating and smoking at the workplace, wearing of standard working clothes and shoes.

1. Short title of Exposure Scenario 2: Distribution of substance	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU4: Manufacture of food products SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys) SU11: Manufacture of rubber products SU12: Manufacture of plastics products, including compounding and conversion SU14: Manufacture of basic metals, including alloys SU15: Manufacture of fabricated metal products, except machinery and equipment SU16: Manufacture of computer, electronic and optical products, electrical equipment SU17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Chemical product category	PC0: Other (use UCN codes) PC1: Adhesives, sealants PC8: Biocidal products (e.g. Disinfectants, pest control) PC12: Fertilizers PC14: Metal surface treatment products, including galvanic and electroplating products PC15: Non-metal-surface treatment products PC21: Laboratory chemicals PC25: Metal working fluids PC27: Plant protection products PC29: Pharmaceuticals PC31: Polishes and wax blends PC32: Polymer preparations and compounds PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids PC35: Washing and cleaning products (including solvent based products) PC37: Water treatment chemicals PC39: Cosmetics, personal care products
Process categories	PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Environmental Release Categories	ERC1: Manufacture of substances ERC2: Formulation of preparations ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC6b: Industrial use of reactive processing aids

	ERC6c: Industrial use of monomers for manufacture of thermoplastics	
Activity	Note: this Exposure Scenario is only relevant for an appropriated use according to the quality grade of the substance delivered	
2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2, ERC4, ERC6a, ERC6b, ERC6c		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 90%.
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Air	Generally closed systems.
	Water	In case of leaks, wash away with plenty of water and flush to industrial wastewater treatment system., Do not release wastewater directly into environment.
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste has to be treated as industrial waste and should be incinerated in thermal combustion.
	Highly reactive., Decomposition in the waste and during treatment., Seal and return containers., No environmental emissions are expected.	
2.2 Contributing scenario controlling worker exposure for: PROC8a, PROC8b, PROC9		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 90%.
	Physical Form (at time of use)	liquid
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	220 days/year
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur.	
	Provide local exhaust ventilation (LEV). (Efficiency: 90 %)(PROC8a, PROC9)	
	Provide local exhaust ventilation (LEV). (Efficiency: 97 %)(PROC8b)	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear protective gloves/ protective clothing/ eye protection/ face protection. Wash thoroughly after open handling of the product. Remove contaminated clothing and wash it before reuse. Wash off any skin contamination immediately.	

3. Exposure estimation and reference to its source

Environment

No environmental emissions are expected.

Workers

PROC8a, PROC8b, PROC9: Used ECETOC TRA model.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC8a	(70% w/w)	Inhalation worker exposure	0,99mg/m³	---
PROC8b	(90% w/w)	Inhalation worker exposure	0,21mg/m³	---
PROC9	(90% w/w)	Inhalation worker exposure	0,71mg/m³	---

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

These measures involve good personal and housekeeping practices (i.e. regular cleaning), no eating and smoking at the workplace, wearing of standard working clothes and shoes.

1. Short title of Exposure Scenario 3: Use in Cleaning Agents		
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	
Chemical product category	PC21: Laboratory chemicals PC35: Washing and cleaning products (including solvent based products)	
Process categories	PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC19: Hand-mixing with intimate contact and only PPE available	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC8e: Wide dispersive outdoor use of reactive substances in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8d, ERC8e		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 12%
Amount used	Regional use tonnage (tons/year):	6210 ton(s)/year
	Annual amount per site	12,42 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0,8 %
	Emission or Release Factor: Soil	0 %
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Air	No specific measures identified.
	Water	Wastewater from professional and private cleaning should be sent to the public sewerage system where it will decompose
Conditions and measures related to external treatment of waste for	Waste treatment	If container is empty, trash as regular municipal waste.

disposal	Disposal methods	Dispose of via regular municipal waste.
	Highly reactive., Decomposition in the waste and during treatment., No environmental emissions are expected.	

2.2 Contributing scenario controlling worker exposure for: PROC4, PROC10, PROC11, PROC13, PROC19

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 12%
	Physical Form (at time of use)	liquid
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	8 hours/day
	Frequency of use	220 days/year
	For a single worker	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur.	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear protective gloves/ protective clothing/ eye protection/ face protection. Wash thoroughly after open handling of the product. Remove contaminated clothing and wash it before reuse. Wash off any skin contamination immediately.	

3. Exposure estimation and reference to its source

Environment

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0037mg/L	---
---	---	Marine water	PEC	0,294µg/L	---
---	---	Soil	PEC	0,111µg/kg	---
---	---	Sewage treatment plant (STP)	PEC	0,0095mg/L	---

Workers

ConsExpo 4.1

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
---	Spray cleaning, (7% w/w)	Inhalation worker exposure	0,002mg/m³	---
---	Cleaning surfaces by wiping, brushing, (7%	Inhalation worker exposure	1,07mg/m³	---

	w/w)			
---	Sanitary cleaner, (12% w/w)	Inhalation worker exposure	1,16mg/m³	---
---	Using cleaner containing H2O2, (7% w/w)	Inhalation worker exposure	1,07mg/m³	---

Some products that are on the market contain more than 12% w/w. It is recommended that consumers use gloves and safety glasses when handling pure or barely diluted products. Good industrial hygiene practice has to be followed if oral exposure is not expected for workers.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

These measures involve good personal and housekeeping practices (i.e. regular cleaning), no eating and smoking at the workplace, wearing of standard working clothes and shoes.

1. Short title of Exposure Scenario 4: Use in Cleaning Agents		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC21: Laboratory chemicals PC35: Washing and cleaning products (including solvent based products)	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC8e: Wide dispersive outdoor use of reactive substances in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8d, ERC8e		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 12%
Amount used	Regional use tonnage (tons/year):	6210 ton(s)/year
	Annual amount per site	12,42 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0,8 %
	Emission or Release Factor: Soil	0 %
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Air	No specific measures identified.
	Water	Wastewater from professional and private cleaning should be sent to the public sewerage system where it will decompose
Conditions and measures related to external treatment of waste for disposal	Waste treatment	If container is empty, trash as regular municipal waste.
	Disposal methods	Dispose of via regular municipal waste.
	Highly reactive., Decomposition in the waste and during treatment., No environmental emissions are expected.	
2.2 Contributing scenario controlling consumer exposure for: PC21, PC35		
Product characteristics	Concentration of the	Covers concentrations up to 12%

	Substance in Mixture/Article	
	Physical Form (at time of use)	liquid
Amount used	Covers concentrations up to	0,11 kg
Frequency and duration of use	Exposure duration per event	20 min
	Frequency of use	365 days/year
	Frequency of use	1 Times per day

3. Exposure estimation and reference to its source

Environment

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0037mg/L	---
---	---	Marine water	PEC	0,294µg/L	---
---	---	Soil	PEC	0,111µg/kg	---
---	---	Sewage treatment plant (STP)	PEC	0,0095mg/L	---

Consumers

ConsExpo 4.1 (Consumer inhalation exposure).

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
---	Spray cleaning, (7% w/w)	Consumer inhalation exposure	0,002mg/m³	---
---	Cleaning surfaces by wiping, brushing, (7% w/w)	Consumer inhalation exposure	1,07mg/m³	---
---	Sanitary cleaner, (16% w/w)	Consumer inhalation exposure	1,16mg/m³	---

Consumers normally do not come into contact with products containing more than 12% w/w of the substance. It is recommended that consumers use gloves and safety glasses when handling pure or barely diluted products. Under normal conditions of use oral exposure to bleaches can be neglected.

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

For further information on the assessment method, see:

http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 5: Use in laboratories	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
Process categories	PROC15: Use as laboratory reagent
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

2.1 Contributing scenario controlling environmental exposure for: ERC4

No exposure assessment presented for the environment

2.2 Contributing scenario controlling worker exposure for: PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 70%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor	
	Assumes use at not more than 20 °C above ambient temperature, unless stated differently.	
Technical conditions and measures to control dispersion from source towards the worker	Handle in a fume cupboard or under extract ventilation. (Efficiency: 90 %)	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear respiratory protection Wear suitable coveralls to prevent exposure to the skin. Wear suitable gloves tested to EN374. Use suitable eye protection.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

PROC15: ECETOC TRA

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC15	Indoor use.	Worker - inhalative, long-term	---	0,1 - 0,5

Qualitative approach used to conclude safe use. Dermal exposure is not considered to be relevant.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

These measures involve good personal and housekeeping practices (i.e. regular cleaning), no eating and smoking at the workplace, wearing of standard working clothes and shoes.

1. Short title of Exposure Scenario 6: Use in laboratories		
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	
Sectors of end-use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals	
Process categories	PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a		
No exposure assessment presented for the environment		
2.2 Contributing scenario controlling worker exposure for: PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 70%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor	
	Assumes use at not more than 20 °C above ambient temperature, unless stated differently.	
Technical conditions and measures to control dispersion from source towards the worker	Handle in a fume cupboard or under extract ventilation. (Efficiency: 90 %)	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear respiratory protection Wear suitable coveralls to prevent exposure to the skin. Wear suitable gloves tested to EN374. Use suitable eye protection.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

PROC15: ECETOC TRA

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC15	Indoor use.	Worker - inhalative, long-term	---	0,1 - 0,5
Qualitative approach used to conclude safe use. Dermal exposure is not considered to be relevant.				

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

These measures involve good personal and housekeeping practices (i.e. regular cleaning), no eating and smoking at the workplace, wearing of standard working clothes and shoes.

1. Short title of Exposure Scenario 7: Use in cosmetics		
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	
Chemical product category	PC39: Cosmetics, personal care products	
Process categories	PROC19: Hand-mixing with intimate contact and only PPE available	
Environmental Release Categories	ERC8b: Wide dispersive indoor use of reactive substances in open systems	
Activity	Use for hair bleaching and dyeing and tooth bleaching, This use is exempted from registration according to Art.2 (5)(6) of the REACH regulation (EC) No 1907/2006. Therefore the conditions and measures described in this Exposure Scenario are only intended for a technical function of the substance	
2.1 Contributing scenario controlling environmental exposure for: ERC8b		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 18%
Amount used	Regional use tonnage (tons/year):	6210 ton(s)/year
	Annual amount per site	12,42 ton(s)/year
Frequency and duration of use	Continuous exposure	365 days/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0,8 %
	Emission or Release Factor: Soil	0 %
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Air	No specific measures identified.
	Water	Wastewater from professional and private cleaning should be sent to the public sewerage system where it will decompose
Conditions and measures related to external treatment of waste for disposal	Disposal methods	If container is empty, trash as regular municipal waste., Dispose of via regular municipal waste.
	Highly reactive., Decomposition in the waste and during treatment., No environmental emissions are expected.	

2.2 Contributing scenario controlling worker exposure for: PROC19

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 18%
Frequency and duration of use	Intermittent use/release	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur.	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear protective gloves/ protective clothing/ eye protection/ face protection. Wash thoroughly after open handling of the product. Remove contaminated clothing and wash it before reuse. Wash off any skin contamination immediately.	

3. Exposure estimation and reference to its source

Environment

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0037mg/L	---
---	---	Marine water	PEC	0,294µg/L	---
---	---	Soil	PEC	0,111µg/kg	---
---	---	Sewage treatment plant (STP)	PEC	0,0095mg/L	---

Workers

Not to be assessed.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

These measures involve good personal and housekeeping practices (i.e. regular cleaning), no eating and smoking at the workplace, wearing of standard working clothes and shoes.

1. Short title of Exposure Scenario 8: Use in cosmetics		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC39: Cosmetics, personal care products	
Environmental Release Categories	ERC8b: Wide dispersive indoor use of reactive substances in open systems	
Activity	Use for hair bleaching and dyeing and tooth bleaching, This use is exempted from registration according to Art.2 (5)(6) of the REACH regulation (EC) No 1907/2006. Therefore the conditions and measures described in this Exposure Scenario are only intended for a technical function of the substance	
2.1 Contributing scenario controlling environmental exposure for: ERC8b		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 18%
Amount used	Regional use tonnage (tons/year):	6210 ton(s)/year
	Annual amount per site	12,42 ton(s)/year
Frequency and duration of use	Continuous exposure	365 days/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0,8 %
	Emission or Release Factor: Soil	0 %
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Air	No specific measures identified.
	Water	Wastewater from professional and private cleaning should be sent to the public sewerage system where it will decompose
Conditions and measures related to external treatment of waste for disposal	Disposal methods	If container is empty, trash as regular municipal waste., Dispose of via regular municipal waste.
	Highly reactive., Decomposition in the waste and during treatment., No environmental emissions are expected.	
2.2 Contributing scenario controlling consumer exposure for: PC39		

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 18%
	Physical Form (at time of use)	liquid
Frequency and duration of use	Intermittent use/release	

3. Exposure estimation and reference to its source

Environment

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0037mg/L	---
---	---	Marine water	PEC	0,294µg/L	---
---	---	Soil	PEC	0,111µg/kg	---
---	---	Sewage treatment plant (STP)	PEC	0,0095mg/L	---

Consumers

No consumer exposure anticipated.

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

Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 9: Use as a bleach		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Sectors of end-use	SU5: Manufacture of textiles, leather, fur SU6a: Manufacture of wood and wood products SU6b: Manufacture of pulp, paper and paper products	
Chemical product category	PC23: Leather tanning, dye, finishing, impregnation and care products PC24: Lubricants, greases, release products PC26: Paper and board dye, finishing and impregnation products: including bleaches and other processing aids PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids	
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC13: Treatment of articles by dipping and pouring PROC19: Hand-mixing with intimate contact and only PPE available	
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC6b: Industrial use of reactive processing aids	
2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC6b		
Activity	Pulp bleaching	
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
Amount used	Regional use tonnage (tons/year):	43600 ton(s)/year
	Annual amount per site	9810 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	17.500 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Number of emission days per year	360
	Emission or Release Factor: Air	0,001 %
	Emission or Release Factor: Water	0,009 %
	Emission or Release Factor: Soil	0,0001 %

Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Air	Optional passing of waste air through activated carbon filters.
	Water	Optional pre-treatment of wastewater by steam stripping, must be treated by :, Biological wastewater treatment, ozonation or liquid phase carbon adsorption
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste has to be treated as industrial waste and should be incinerated in thermal combustion.
	Highly reactive., Seal and return containers., No environmental emissions are expected.	

2.2 Contributing scenario controlling environmental exposure for: ERC4, ERC6b

Activity	Other bleaching	
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
Amount used	Regional use tonnage (tons/year):	2025 ton(s)/year
	Annual amount per site	405 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Number of emission days per year	300
	Emission or Release Factor: Air	0,001 %
	Emission or Release Factor: Water	0,009 %
	Emission or Release Factor: Soil	0 %
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Air	Optional passing of waste air through activated carbon filters.
	Water	Optional pre-treatment of wastewater by steam stripping, must be treated by :, Biological wastewater treatment, ozonation or liquid phase carbon adsorption
Conditions and measures related to external treatment of waste for	Waste treatment	Waste has to be treated as industrial waste and should be incinerated in thermal combustion.

disposal	Highly reactive., Seal and return containers., No environmental emissions are expected.

2.3 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC13, PROC19

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
	Physical Form (at time of use)	liquid
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	220 days/year
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur.	
	Provide local exhaust ventilation (LEV). (Efficiency: 90 %)(PROC2, PROC3, PROC4, PROC13)	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear protective gloves/ protective clothing/ eye protection/ face protection. Wash thoroughly after open handling of the product. Remove contaminated clothing and wash it before reuse. Wash off any skin contamination immediately.	

3. Exposure estimation and reference to its source

Environment

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	Pulp bleaching	Fresh water	PEC	0,0098mg/L	---
---	Pulp bleaching	Marine water	PEC	0,001mg/L	---
---	Pulp bleaching	Soil	PEC	0,154µg/kg	---
---	Pulp bleaching	Sewage treatment plant (STP)	PEC	0,098mg/L	---
---	Other bleaching	Fresh water	PEC	0,004mg/L	---
---	Other bleaching	Marine water	PEC	0,0004mg/L	---
---	Other bleaching	Soil	PEC	0,128µg/kg	---
---	Other bleaching	Sewage treatment plant (STP)	PEC	0,042mg/L	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC13: Used ECETOC TRA model.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	(35% w/w)	Inhalation worker exposure	0,005mg/m³	---

PROC2	(35% w/w)	Inhalation worker exposure	0,05mg/m³	---
PROC3	(35% w/w)	Inhalation worker exposure	0,149mg/m³	---
PROC4	(35% w/w)	Inhalation worker exposure	0,248mg/m³	---
PROC13	(35% w/w)	Inhalation worker exposure	0,496mg/m³	---

Good industrial hygiene practice has to be followed if oral exposure is not expected for workers. Workers handling concentrated solutions containing 35% w/w or more are obliged to use appropriate dermal protection.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

These measures involve good personal and housekeeping practices (i.e. regular cleaning), no eating and smoking at the workplace, wearing of standard working clothes and shoes.

1. Short title of Exposure Scenario 10: Use as a bleach		
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	
Sectors of end-use	SU5: Manufacture of textiles, leather, fur SU6a: Manufacture of wood and wood products SU6b: Manufacture of pulp, paper and paper products	
Chemical product category	PC23: Leather tanning, dye, finishing, impregnation and care products PC24: Lubricants, greases, release products PC26: Paper and board dye, finishing and impregnation products: including bleaches and other processing aids PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids	
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC13: Treatment of articles by dipping and pouring PROC19: Hand-mixing with intimate contact and only PPE available	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8e: Wide dispersive outdoor use of reactive substances in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8e		
Activity	Pulp bleaching	
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
Amount used	Regional use tonnage (tons/year):	43600 ton(s)/year
	Annual amount per site	9810 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	17.500 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
	Other data. Other information	Pulp bleaching:
Other given operational conditions affecting environmental exposure	Number of emission days per year	360
	Emission or Release Factor: Air	0,001 %
	Emission or Release Factor: Water	0,009 %

	Emission or Release Factor: Soil	0 %
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Air	Optional passing of waste air through activated carbon filters.
	Water	Optional pre-treatment of wastewater by steam stripping, must be treated by :, Biological wastewater treatment, ozonation or liquid phase carbon adsorption
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste has to be treated as industrial waste and should be incinerated in thermal combustion.
	Highly reactive., Seal and return containers., No environmental emissions are expected.	

2.2 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8e

Activity	Other bleaching	
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
Amount used	Regional use tonnage (tons/year):	2025 ton(s)/year
	Annual amount per site	405 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Number of emission days per year	300
	Emission or Release Factor: Air	0,01 %
	Emission or Release Factor: Water	0,009 %
	Emission or Release Factor: Soil	0 %
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Air	Optional passing of waste air through activated carbon filters.
	Water	Optional pre-treatment of wastewater by steam stripping, must be treated by :, Biological wastewater treatment, ozonation or liquid phase carbon adsorption

Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste has to be treated as industrial waste and should be incinerated in thermal combustion.
	Highly reactive., Seal and return containers., No environmental emissions are expected.	

2.3 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC13, PROC19

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
	Physical Form (at time of use)	liquid
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	220 days/year
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur.	
	Provide local exhaust ventilation (LEV). (Efficiency: 80 %)(PROC2, PROC3, PROC4, PROC13, PROC19)	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear protective gloves/ protective clothing/ eye protection/ face protection. Wash thoroughly after open handling of the product. Remove contaminated clothing and wash it before reuse. Wash off any skin contamination immediately.	

3. Exposure estimation and reference to its source

Environment

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	Pulp bleaching	Fresh water	PEC	0,0098mg/L	---
---	Pulp bleaching	Marine water	PEC	0,001mg/L	---
---	Pulp bleaching	Soil	PEC	0,154µg/kg	---
---	Pulp bleaching	Sewage treatment plant (STP)	PEC	0,098mg/L	---
---	Other bleaching	Fresh water	PEC	0,004mg/L	---
---	Other bleaching	Marine water	PEC	0,0004mg/L	---
---	Other bleaching	Soil	PEC	0,128µg/kg	---
---	Other bleaching	Sewage treatment plant (STP)	PEC	0,042mg/L	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC13, PROC19: Used ECETOC TRA model.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR

PROC1	(35% w/w)	Inhalation worker exposure	0,005mg/m³	---
PROC2	(35% w/w)	Inhalation worker exposure	0,496mg/m³	---
PROC3	(35% w/w)	Inhalation worker exposure	0,298mg/m³	---
PROC4	(35% w/w)	Inhalation worker exposure	0,992mg/m³	---
PROC13	(35% w/w)	Inhalation worker exposure	0,34mg/m³	---
PROC19	(35% w/w)	Inhalation worker exposure	0,85mg/m³	---

Workers handling concentrated solutions containing 35% w/w or more are obliged to use appropriate dermal protection. Good industrial hygiene practice has to be followed if oral exposure is not expected for workers.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

These measures involve good personal and housekeeping practices (i.e. regular cleaning), no eating and smoking at the workplace, wearing of standard working clothes and shoes.

1. Short title of Exposure Scenario 11: Use as a bleach		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Sectors of end-use	SU5: Manufacture of textiles, leather, fur SU6a: Manufacture of wood and wood products SU6b: Manufacture of pulp, paper and paper products	
Chemical product category	PC23: Leather tanning, dye, finishing, impregnation and care products PC24: Lubricants, greases, release products PC26: Paper and board dye, finishing and impregnation products: including bleaches and other processing aids PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8e: Wide dispersive outdoor use of reactive substances in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8e		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
Amount used	Regional use tonnage (tons/year):	43600 ton(s)/year
	Annual amount per site	9810 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	17.500 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Number of emission days per year	360
	Emission or Release Factor: Air	0,001 %
	Emission or Release Factor: Water	0,009 %
	Emission or Release Factor: Soil	0 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste has to be treated as industrial waste and should be incinerated in thermal combustion.
	Highly reactive., Seal and return containers., No environmental emissions are expected.	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8e		
Activity	Other bleaching	
Product characteristics	Concentration of the	Covers concentrations up to 35%

	Substance in Mixture/Article	
Amount used	Regional use tonnage (tons/year):	2025 ton(s)/year
	Annual amount per site	405 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Number of emission days per year	300
	Emission or Release Factor: Air	0,01 %
	Emission or Release Factor: Water	0,009 %
	Emission or Release Factor: Soil	0 %
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Air	Optional passing of waste air through activated carbon filters.
	Water	Optional pre-treatment of wastewater by steam stripping, must be treated by :, Biological wastewater treatment, ozonation or liquid phase carbon adsorption
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste has to be treated as industrial waste and should be incinerated in thermal combustion.
	Highly reactive., Seal and return containers., No environmental emissions are expected.	
2.3 Contributing scenario controlling consumer exposure for: PC23, PC24, PC26, PC34		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
Amount used	Amount used per event	0,1 l
Frequency and duration of use	Exposure duration per event	10 min
	Frequency of use	4 events/week
3. Exposure estimation and reference to its source		
Environment		

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	Pulp bleaching	Fresh water	PEC	0,0098mg/L	---
---	Pulp bleaching	Marine water	PEC	0,001mg/L	---
---	Pulp bleaching	Soil	PEC	0,154µg/kg	---
---	Pulp bleaching	Sewage treatment plant (STP)	PEC	0,098mg/L	---
---	Other bleaching	Fresh water	PEC	0,004mg/L	---
---	Other bleaching	Marine water	PEC	0,0004mg/L	---
---	Other bleaching	Soil	PEC	0,128µg/kg	---
---	Other bleaching	Sewage treatment plant (STP)	PEC	0,042mg/L	---

Consumers

Based on EU Risk Assessment Report, European Commission 2003

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
---	---	Consumer inhalation exposure	0,13mg/m³	---

Under normal conditions of use oral exposure to bleaches can be neglected. Consumers normally do not come into contact with products containing more than 12% w/w of the substance. Some products that are on the market contain more than 12% w/w. It is recommended that consumers use gloves and safety glasses when handling pure or barely diluted products.

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

If the local conditions deviate significantly from the values in the EU RAR, then further site specific evaluation is required
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

1. Short title of Exposure Scenario 12: Use in agrochemicals		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Sectors of end-use	SU1: Agriculture, forestry, fishery SU2: Mining, (including offshore industries) SU8: Manufacture of bulk, large scale chemicals (including petroleum products)	
Chemical product category	PC0: Other (use UCN codes) PC20: Products such as ph-regulators, flocculants, pre-cipitants, neutralization agents PC37: Water treatment chemicals	
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises	
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC6b: Industrial use of reactive processing aids	
2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC6b		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
Amount used	Regional use tonnage (tons/year):	2645 ton(s)/year
	Annual amount per site	4,93 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,1 %
	Emission or Release Factor: Water	0,05 %
	Emission or Release Factor: Soil	0,8 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	No specific waste treatment required/proposed
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%

	Physical Form (at time of use)	liquid
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur.	
	Provide local exhaust ventilation (LEV). (Efficiency: 90 %)(PROC3, PROC4)	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear protective gloves/ protective clothing/ eye protection/ face protection. Wash thoroughly after open handling of the product. Remove contaminated clothing and wash it before reuse. Wash off any skin contamination immediately.	
	Wear respiratory protection (Efficiency: 90 %)(PROC3, PROC4)	

3. Exposure estimation and reference to its source

Environment

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0085mg/L	---
---	---	Marine water	PEC	0,775µg/L	---
---	---	Soil	PEC	0,113µg/kg	---
---	---	Sewage treatment plant (STP)	PEC	0,088mg/L	---

Workers

PROC1, PROC2, PROC3, PROC4: Used ECETOC TRA model.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	(50% w/w), Indoor use.	Inhalation worker exposure	0,007mg/m³	---
PROC2	(50% w/w), Indoor use.	Inhalation worker exposure	0,708mg/m³	---
PROC3	(50% w/w), Indoor use.	Inhalation worker exposure	0,213mg/m³	---
PROC4	(50% w/w), Indoor use.	Inhalation worker exposure	0,354mg/m³	---
PROC1	(50% w/w), Outdoor use.	Inhalation worker exposure	0,005mg/m³	---
PROC2	(50% w/w), Outdoor use.	Inhalation worker exposure	0,496mg/m³	---
PROC3	(50% w/w), Outdoor use.	Inhalation worker exposure	0,149mg/m³	---
PROC4	(50% w/w), Outdoor use.	Inhalation worker exposure	0,248mg/m³	---

Workers handling concentrated solutions containing 35% w/w or more are obliged to use appropriate dermal protection. Good industrial hygiene practice has to be followed if oral exposure is not expected for workers.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

These measures involve good personal and housekeeping practices (i.e. regular cleaning), no eating and smoking at the workplace, wearing of standard working clothes and shoes.

1. Short title of Exposure Scenario 13: Use in agrochemicals		
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	
Sectors of end-use	SU1: Agriculture, forestry, fishery SU2: Mining, (including offshore industries) SU8: Manufacture of bulk, large scale chemicals (including petroleum products)	
Chemical product category	PC0: Other (use UCN codes) PC20: Products such as ph-regulators, flocculants, pre-cipitants, neutralization agents PC37: Water treatment chemicals	
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8e: Wide dispersive outdoor use of reactive substances in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8d, ERC8e		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
Amount used	Regional use tonnage (tons/year):	2645 ton(s)/year
	Annual amount per site	4,93 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,1 %
	Emission or Release Factor: Water	0,05 %
	Emission or Release Factor: Soil	0,8 %
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
Technical conditions and measures to control dispersion	Provide extraction ventilation at points where emissions occur.	
	Provide local exhaust ventilation (LEV). (Efficiency: 90 %)(PROC3, PROC4)	

from source towards the worker	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear protective gloves/ protective clothing/ eye protection/ face protection. Wash thoroughly after open handling of the product. Remove contaminated clothing and wash it before reuse. Wash off any skin contamination immediately.
	Wear respiratory protection (Efficiency: 90 %)(PROC3, PROC4)

3. Exposure estimation and reference to its source

Environment

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0085mg/L	---
---	---	Marine water	PEC	0,775µg/L	---
---	---	Soil	PEC	0,113µg/kg	---
---	---	Sewage treatment plant (STP)	PEC	0,088mg/L	---

Workers

PROC1, PROC2, PROC3, PROC4: Used ECETOC TRA model.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	(50% w/w)	Inhalation worker exposure	0,007mg/m³	---
PROC2	(50% w/w)	Inhalation worker exposure	0,708mg/m³	---
PROC3	(50% w/w)	Inhalation worker exposure	0,213mg/m³	---
PROC4	(50% w/w)	Inhalation worker exposure	0,354mg/m³	---
PROC1	(50% w/w)	Inhalation worker exposure	0,005mg/m³	---
PROC2	(50% w/w)	Inhalation worker exposure	0,496mg/m³	---
PROC3	(50% w/w)	Inhalation worker exposure	0,149mg/m³	---
PROC4	(50% w/w)	Inhalation worker exposure	0,248mg/m³	---

Good industrial hygiene practice has to be followed if oral exposure is not expected for workers. Workers handling concentrated solutions containing 35% w/w or more are obliged to use appropriate dermal protection.

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

Exposure Scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

These measures involve good personal and housekeeping practices (i.e. regular cleaning), no eating and smoking at the workplace, wearing of standard working clothes and shoes.

1. Short title of Exposure Scenario 14: Use in agrochemicals		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Sectors of end-use	SU1: Agriculture, forestry, fishery SU2: Mining, (including offshore industries) SU8: Manufacture of bulk, large scale chemicals (including petroleum products)	
Chemical product category	PC20: Products such as ph-regulators, flocculants, pre-cipitants, neutralization agents PC37: Water treatment chemicals	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC8e: Wide dispersive outdoor use of reactive substances in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8d, ERC8e		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
Amount used	Regional use tonnage (tons/year):	2645 ton(s)/year
	Annual amount per site	4,93 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	2.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,1 %
	Emission or Release Factor: Water	0,05 %
	Emission or Release Factor: Soil	0,8 %
Conditions and measures related to external treatment of waste for disposal	Waste treatment	No specific waste treatment required/proposed
2.2 Contributing scenario controlling consumer exposure for: , PC20, PC37		
No consumer exposure anticipated		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 50%
3. Exposure estimation and reference to its source		

Environment

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0085mg/L	---
---	---	Marine water	PEC	0,775µg/L	---
---	---	Soil	PEC	0,113µg/kg	---
---	---	Sewage treatment plant (STP)	PEC	0,088mg/L	---

Consumers

No consumer exposure anticipated.

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

Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

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