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

Identification of the substance or preparation

Name of product: Sodium percarbonate

Use of the substance/preparation

Bleaching agent for detergents and in household cleaning products.
Component of bleaching additives for laundry washing.

Company/undertaking identification

Company name:	Zhejiang Jinke Peroxides Co., Ltd.
Street/POB-No.:	Hangzhou Bay Fine Chemical Zone
State/city /postal code:	Shangyu, Zhejiang, China
Telephone:	+86-571-85812066
Tele fax:	+86-571-85812333
Dept. responsible f or information:	Technical Department Telephone: +86-571-85812066, E-mail: kathyxie@jinke-chem.com
Emergency telephone	**Zhejiang Jinke Peroxides Co.,LTD., Telephone: +86-571-85812300**
European Department Responsible for Information:	NetSun EU B.V. REACH Department, Teléfono: +31 (0)10 842 1148, E-Mail reachcompliance@netsun.com

2. Hazards identification

Classification according to directive 67/548/EEC:

O oxidizing

Xn harmful

O; R8	Contact with combustible material may cause fire.
Xn; R22	Harmful if swallowed.
Xi: R41	risk of serious damage to eyes.

Classification according EC regulation 1272/2008 (CLP):

Danger

Hazard Statement (H/EUH)

H272 – May intensify fire; oxidizer

H318 – Causes severe eye damage

H302 – Harmful if swallowed

Precautionary Statement - Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

P220 Keep/Store away from clothing/flammable/ combustible materials.

P280 Wear protective gloves/protective clothing/eye protection.

Precautionary Statement - Response

P370+378 In case of fire: Use water for extinction.

P305+351+338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Precautionary Statement - Storage

P401 Store in a dry place at temperatures not exceeding 40 °C/104 °F.

Precautionary Statement - Disposal

3. Composition/information on ingredients

Chemical characterization (substance)

	C2 H6 Na4 O12 = 2 Na2CO3 * 3 H2O2
CAS-Number:	15630-89-4
EINECS-Number:	239-707-6
RTECS-Number:	FG0750000
REACH registration number	01-2119457268-30-0009
Content	>90%

4. First aid measures

Following inhalation: In case of prolonged exposure, risk of sore throat, nose bleeds and chronic bronchitis.
At high concentrations- may cause caugh.
Slight nose and throat irritation.
Go to a well-ventilated area- keep still and wrapped up.

If necessary seek medical advice.

After skin contact: In case of repeated contact, risk of dermatitis.
Slight irritation.
Rinse with water and soap.
Remove contaminated clothing and shoes.
Consult a doctor if irritation persists.

After eye contact: Severe eye irritation.
In case of contact with eyes, flush with copious amounts of water for at least 15 minutes.
Assure adequate flushing by separating the eyelids with fingers.
Seek medical advice.

After swallowing: Bloating of stomach, nausea, vomiting and diarrhea.
Severe irritation of the mouth, throat, esophagus and stomach.
Rinse mouth with water. Drink water.
Do not induce vomiting.
Seek medical advice.

5. Fire fighting measures

Suitable extinguishing media:

Water.
Do not use any other substances.

Special exposure hazards arising from the substance or preparation itself , its combustion products or from resulting gases:

Not combustible. May decompose slowly if local heating up above 50 °C.
Formation of: Sodium carbonate and hydrogenium peroxide.
Can be released in case of fire: Carbon monoxide and carbon dioxide, NaOx

Special protective equipment for fire-fighters:

Wear self-contained breathing apparatus. Wear suitable protective clothing.
If safe to do so, remove product to a safe area.

Additional information: Hazchem-Code: 1Y
Cool endangered containers with water jetspray. Do not allow fire water to penetrate into surface or ground water.

6. Accidental release measures

Personal precautions: Wear personal protection equipment. Avoid generation of dust. Do not breathe dust. Provide adequate ventilation. Avoid contact with skin and eyes.

Environmental precautions: Do not allow to penetrate into soil, waterbodies or drains.

Methods for cleaning up: Take up dust-free and set down dust-free. Place in appropriate containers for disposal.

7. Handling and storage

Handling

Precautions for safe handling:

Avoid heat- contamination with acids and reduction agents.
Do not spread dust.
Use adequate dust extraction systems.
Avoid any contact with water or humidity.
Avoid contact with wet or hot air.
Keep the product away from acids and bases to avoid decomposition.
Provide emergency on-site eyewash and showers.
Do not return to original container- risk of decomposition.
Clean and dry process pipes and equipment before using the product.

Storage

Requirements for storerooms and containers:

Store in a dry, clean and fresh area (temperature below 35°C), protected from heat, sunlight and humidity.
Avoid contamination with incompatible materials or decomposition catalysts.
Due to decomposition, overpressure may occur in closed containers.
Store in cold, dry, clean, well,ventilated areas away from combustible or incompatible materials and sources of heat.
Tanks, containers or receptacles should be equipped with an adequate ventilation system.
Containers should be used for the product only.
L304 or L316 stainless steel.
High-density polyethylene.
Polypropylene.
PVC
Glass.
Consult if any other material.

Information about storage in one common storage facility:

Do not store together with highly inflammable or combustible materials.

Storage class: 5.1 A= Oxidising substances

8. Exposure controls / Personal protection equipment

Exposure limit values

Exposure limits not established for the product.

As a guideline the next values may be used:

Constituent	Specific control parameters
Particles (insoluble or poorly soluble) Not Otherwise Specified: respirable particulate.	8-hour TWA limit: 4 mg/m3
Particles (insoluble or poorly soluble) Not Otherwise Specified: inhalable particulate	8-hour TWA limit: 10 mg/m3

DN(M)EL/PNEC

DN(M)ELs for workers

Exposure pattern	Route	Descriptors	DNEL (appropriate unit)	Most sensitive endpoint
Acute– systemic effects	dermal (mg/kg bw /day)	None	Not applicable	
	Inhalation (mg/m3)	None	Not applicable	
Acute - local effects	Dermal (mg/cm2)	DNEL	12.8	Skin and eye irritation/ corrosion
	Inhalation (mg/m3)	DNEL	Not applicable	
Long-term–systemic effects	Dermal (mg/kg bw /day)	None	Not applicable	
	Inhalation (mg/m3)	None	Not applicable	
Long-term– local effects	Dermal (mg/cm2)	DNEL	12.8	Skin and eye irritation/ corrosion
	Inhalation (mg/m3)	DNEL	Not applicable	

DN(M)ELs for the general population

Exposure pattern	Route	Descriptors	DNEL (appropriate unit)	Most sensitive endpoint
Acute– systemic effects	dermal (mg/kg bw /day)	None	Not applicable	
	Inhalation (mg/m3)	None	Not applicable	
	Oral (mg/kg bw /day)	None	Not applicable	
Acute - local effects	Dermal (mg/cm2)	DNEL	6.4	Skin and eye irritation/ corrosion
	Inhalation (mg/m3)	DNEL	Not applicable	
	Dermal (mg/kg bw /day)	None	Not applicable	

	Inhalation (mg/m3)	None	Not applicable	
	Oral (mg/kg bw /day)	None	Not applicable	
Long-term– local effects	Dermal (mg/cm2)	DNEL	6.4	Skin and eye irritation/ corrosion
	Inhalation (mg/m3)	DNEL	Not applicable	

PNECs

PNEC aqua (freshwater) = 0.035 mg/ L
PNEC aqua (marine water) = 0.035 mg/ L
PNEC aqua (intermittent releases) = 0.035 mg/ L
PNEC STP = 16.24 mg/ L

Exposure controls

Appropriate engineering controls	Provide emergency on-site eyewash and showers.
Hand protection	Wear suitable gloves.
Gloves material	PVC gloves.
Eye protection	Safety goggles.
Skin protection	Wear suitable protective clothing.
Environmental exposure controls	See Annex

9. Physical and chemical properties

Appearance

Physical state:	solid
Colour:	White.
Odour:	Odourless.

Important health, safety and environmental information

Melting point / melting range	Decomposes at high temperatures.
Self-accelerating decomposition temperature	>60 ºC
Relative density:	2.01 - 2.16 at 20 ºC
pH in water solution:	10 at 20 ºC, solution at 1,5 %
Solubility in water:	at 20 °C: 150 g/L
Oxidising properties	Oxidising
Vapour pressure	Negligible

Additional information

Molecular weight: 154,01 g/mol

10. Stability and reactivity

Reactivity:	Reactive and oxidizing agent.
Chemical stability:	Stable at room temperature.
Conditions to avoid:	Moisture, warmness. Protect from light.
Possibility of hazardous reactions	Metals, metallic ions, alkalis, reducing agents and organic matter (such as alcohol or terpenes) may produce self-accelerated thermal decomposition.
Materials to avoid:	Avoid acids, alkalis and reducing agents. Avoid decomposition catalysts (the majority of metals and their salts). Avoid combustible, flammable and organic materials.
Hazardous decomposition products:	
	May decompose slowly if local heating up above 50 °C. Formation of: Sodium carbonate and hydrogenium peroxide. Can be released in case of fire: Carbon monoxide and carbon dioxide, NaOx
Additional information:	Product is stable under normal conditions.

11. Toxicological information

Information on toxicological effects:

Inhalation:	Inhaled sodium percarbonate will dissociate into sodium carbonate and hydrogen peroxide in the respiratory tract. Acute inhalation toxicity: LC50, 4h, Rat = > 170 mg/m3 Hydrogen Peroxide Acute inhalation toxicity: LC50, , Rat = 1200 mg/m3 Sodium carbonate.
Ingestion:	Big quantities may cause vomiting and diarrhoea. Acute oral toxicity: LD50,-, Rat = 1034 mg/kg/bw
Skin contact:	Acute dermal toxicity.: LD50, 24h, Rabbit = >2000mg/kg/bw
Eye contact:	Severity irritating (rabbit).
Sensitisation:	Not sensitising.
Carcinogenicity:	No data available. Not recognised as carcinogenic by Research Agencies: (IARC, NTP, OSHA, ACGIH).
Mutagenicity:	The product contains a peroxygen group. In vitro- it gives a positive result in mutagenicity tests. In the presence of metabolic systems, there is no mutagenic effect.
Reproductive toxicity:	Not recognised as reprotoxic by Research Agencies. No data available.

12. Ecological information

Ecotoxicity

Toxicity:	The product is toxic for aquatic organisms. Nevertheless, the risk to the environment is limited due to the product properties: - No bioaccumulative product, -Abiotic degradation, -Toxicity of degradation products is low. In the aquatic environment, Sodium Percarbonate rapidly degrades leading to the formation of Sodium Carbonate and Hydrogen Peroxide and the latter also decomposes into oxygen and water. Acute toxicity to fish: LC50, 96h, Pimephales promelas = 70.7 mg/l Acute toxicity to acuatic invertebrates: EC50, 48h, Daphnia pulex = 4.9 mg/l
Persistence and degradability:	Biodegradability does not apply to inorganic compounds.
Bioaccumulative potential:	When sodium percarbonate is dissolved in water, it dissociates to sodium carbonate and hydrogen peroxide. The sodium ion and carbonate ion will not accumulate in living tissues (OECD, 2003). Hydrogen peroxide is reactive and a short-lived polar substance and no bioaccumulation is expected (European Commission, 2003b, OECD, 1999).
Mobility in soil:	For solid sodium percarbonate no transport to the air is expected because of the negligible vapour pressure. When sodium percarbonate is dissolved in water, it dissociates to sodium carbonate and hydrogen peroxide rather easily. The high water solubility and low vapour pressure indicate that sodium carbonate will be found predominantly in the aquatic environment. Volatilisation of hydrogen peroxide from surface waters and moist soil is expected to be very low, while it is expected to be highly mobile in soil. It can be concluded that the aquatic compartment is the main compartment for sodium carbonate and hydrogen peroxide.
Results of PBT and vPvB assessment	This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).
Water Hazard Class:	1 = mild water pollutant (WGK catalog number 1364)

Details of elimination

Further details:	Methods for the determination of biodegradability are not applicable to inorganic substances.

Additional ecological information

General information:	Do not allow to enter ground water, sewage or drains.

13. Disposal considerations

Product

Waste key number 0613 = Wastes from inorganic chemical processes not otherwise specified

Recommendation: Special waste. Dispose of waste according to applicable legislation.

Contaminated packaging

Recommendation: Dispose of waste according to applicable legislation. Handle contaminated packaging in thesame way as the substance itself.
Cleaned containers may be recycled.

14. Transport information

Overland transport (ADR/RID)

Warning board:	ADR/RID: Kemmler-number 50, UN number 3378
Product designation:	UN 3378, SODIUM CARBONATE PEROXYHYDRATE
ADR/RID	Class 5.1, Code: O2
Packaging group	III
Label	5.1
Limited quantities	LQ11
EQ	E2
Contaminated packaging: Instructions	P002 IBC08
Contaminated packaging: Special provisions	B4
Special provisions f or packing together	MP10
Portable Tanks: Instructions	T3 BK1 BK2
Portable Tanks: Special provisions	TP33
Tank coding	SGAV
Tunnel restriction code:	E

Transport by sea (IMDG)

UN number:	3378
Proper shipping name:	SODIUM CARBONATE PEROXYHYDRATE
IMDG:	Class 5.1, Code -
Packing Group:	III
EmS:	F-A, S-Q
Special prov isions	-
Limited quantities	1 kg
EQ	E2
Contaminated packaging: Instructions	P002
Contaminated packaging: Provisions	-
IBC: Instructions	IBC08
IBC: Provisions	B2, B4
Tank instructions: IMO	-

Tank instructions: UN	T3, BK2
Tank instructions Provisions	TP33
Stowage and segregation	Category A. Keep as dry as reasonably practicable. "Separated from" Permanganates. "Away from" any sources of heat.
Properties and observ ations	White crystals or powder. Soluble in water. Mixtures with combustible material are readily ignited. Decomposes in contact with water and acids, forming hydrogen peroxide. Risk of decomposition when exposed to continuous heat (exothermic decomposition >= 60). When involved in a fire or exposed to high temperatures, it may decompose, yielding oxygen and steam. Irritating to skin, eyes and mucous membranes. Harmful if swallowed.
Marine Pollutant	No

Air transport (IATA)

UN/ID number:	3378
Proper shipping name:	SODIUM CARBONATE PEROXYHYDRATE
ICAO/IATA:	Class 5.1
Hazard	Oxidizer
PG	III
EQ	E2
Passenger Ltd.Qty .:	Y508 - Maximum quantity: 2.5 kg
Passenger:	508 - Maximum quantity: 5 kg
Cargo:	512 - Maximum quantity: 25 kg
ERG	5L

15. Regulatory information

National regulations

National regulations - Great Britain

Hazchem-Code: 1Y

National regulations - Germany

Storage class: 5.1 A= Oxidising substances

Water Hazard Class: 1 = mild water pollutant (WGK catalog number 1364)

Inf ormations on working limitations:

Observe employment restrictions concerning young persons.

Observe employment restrictions for expectant or nursing mothers.

National regulations - EC member states

Volatile organic compounds (VOC):

0 % by weight

National regulations - USA

TSCA Inventory: listed

TSCA HPVC: not listed

Hazard rating systems

NFPA Hazard Rating:
Health: 2 (Moderate)
Fire: 0 (Minimal)
Reactivity: 2 (Moderate)

HMIS Version III Rating:
Health: 2 (Moderate)
Flammability: 0 (Minimal)
Physical Hazard: 2 (Moderate)
Personal Protection: X = Consult your supervisor

Chemical safety assessment

Yes

16. Other information

List of relevant R, H and EUH phrases

H272-May intensify fire; oxidiser.

H302-Harmful if swallowed.

H318-Causes serious eye damage.

R22-Harmful if swallowed.

R41-Risk of serious damage to eyes.

R8-Contact with combustible material may cause fire.

Recommended restrictions on use

The product's foreseen or recommended applications are:

Bleaching agent for detergents and in household cleaning products.

Component of bleaching additives for laundry washing.

Sources of key data used to compile the data sheet

Contact person: Zhejiang Jinke Peroxides Co.,Ltd.

Modifications in last revision

Trade names

Adaptation to Council Regulation 1272/2008 (GHS)

Group that issues data sheet

Contact person: see chapter 1, department responsible for information.

The information in this data sheet has been established to our best knowledge and was up-to-date at time of revision.
It does not represent a guarantee for the properties of the product described in terms of the legal warranty regulations.

Annex

Summarised exposure scenarios for sodium percarbonate

Summary of exposure scenario 1: Formulation of mixture containing sodium percarbonate

1. Short title of exposure scenario 1	
Formulation of mixtures containing sodium percarbonate	
2. Description of activities and processes covered in the exposure scenario 1	
Sector of use (SU)	SU 3 (Industrial uses) SU 10 (Formulation [mixing] of preparations and/or repackaging [excluding alloys])
Product category (PC)	PC 8, 14, 15, 20, 25, 34, 35, 36, 37, 39
Process category (PROC)	PROC 1 (Use in closed, continuous process, no likelihood of exposure) PROC 2 (Use in closed, continuous process with occasional controlled exposure) PROC 3 (Use in closed batch process [synthesis or formulation]) PROC 4 (Use in batch and other process [synthesis] where opportunity for exposure arises) PROC 5 (Mixing or blending in batch process for formulation of preparations and articles[multistage and/or significant contact]) PROC 8a (Transfer of substance or preparation [charging/discharging] from/to vessels/large containers at non-dedicated facilities) PROC 8b (Transfer of substance or preparation [charging/discharging] from/to vessels/large containers at dedicated facilities) PROC 9 (Transfer of substance or preparation into small containers [dedicated filling line, including weighing]) PROC 14 (Production of preparations or articles by tabletting, compression, extrusion, pelletisation)
Article category (AC)	Not applicable
Environmental release category (ERC)	ERC 2 (Formulation of preparations) ERC 6b (Industrial use of reactive processing aid) ERC 7 (Industrial use of substances in closed systems)
3. Operational conditions	

3. 1 Duration and frequency of use for which the exposure scenario ensures control of risk	
Duration of exposure at workplace:	8 hours/day
Frequency of exposure at workplace:	220 days/year for each worker (EC, 2008b, p. 8)
Annual amount used per site:	<15,000 tonnes/year (a specific assessment of environmental concentrations has to be performed for sites using more sodium percarbonate per year)
Emission days per site:	300 days/year
4. 1 Physical form of product in which the substance is contained	
Solid	
4.2 Concentration of substance in preparation or article	
Formulated mixtures may contain up to 25% sodium percarbonate.	
4.3 Amount used per time or per activity for which the risk management measures (RMMs), in combination with other operational conditions of use ensure control of risk	
RMM and other operational conditions of use ensure control of risk at any given time and for any given throughput during the manufacture of sodium percarbonate.	
5. Other operational conditions determining exposure, e.g. temperature, capacity of receiving environment (water flow; room size x ventilation rate), emission or release factors to the relevant compartments	
Wastewater generated during formulation should be treated on-site or sent to a municipal wastewater treatment plant. A dilution by a factor of 10 is taken into account in the generic calculation of PECs. Waste gases should be cleaned by passing through dust filters or wet scrubbers.	
6. RMMs that, in combination with the operational conditions of use, ensure control of risk related to the different target groups	
6.1 RMMs related to workers	
Technical measures	Good general and local exhaust ventilation with an efficiency of 90% is recommended for formulation.
Organisational measures	Procedural and/or control technologies are required to minimise emissions and the resulting exposure during cleaning and maintenance procedures or if there is a risk of the occupational exposure limit being exceeded.
Respiratory protection	Wearing a P2 dust mask with an efficiency of 90% is required in situations with elevated airborne dust concentrations occur, such as during filter change.

Hand protection	Wearing of permeation resistant gloves with suitable materials for safety gloves is required. Suitable materials are PVC, Neoprene, Natural rubber
Eye protection	Wearing of eye/face protection is required. Chemical goggles should be consistent with EN 166 or equivalent.
Skin and body protection	Wearing of suitable protective clothing is required.
Hygiene measures	Keep away from foodstuffs, drinks and tobacco. Wash hands before breaks and at end of work. Keep work clothes separate. Take off immediately all contaminated clothing. Wash thoroughly after open handling of the product.
6.2 Environment related measures; type and efficiency of single options or combination of options on exposure to be quantified; options to be phrased as instructive guidance	
Organisational measures	Procedural and/or control technologies are required to minimise emissions and the resulting exposure during cleaning and maintenance procedures.
Abatement measures wastewater	Wastewater is treated in chemical/biological on-site or municipal wastewater treatment plants.
Abatement measures waste air	Waste air has to be cleaned by passing through dust filters or wet scrubbers.
Soil	All relevant soil surfaces in the facility have to be covered to avoid drainage of substance into soil.
7. Waste related measures needed to ensure control of risk at the different life cycle stages of the substances (including preparations or articles at the end of service life)	
Type of waste	Solid waste (e.g. dust filters).
Disposal technique	Contaminated packaging material is decontaminated and deposited or incinerated. Solid waste substance is transferred into wastewater.
Fraction released to environment during waste treatment	Reasonable worst case emission fraction for wastewater is 2% of annual tonnage, i.e. 300 tonnes/year
8. Prediction of exposure resulting from the conditions described above (entries 3 - 6) and the substance properties. Data are given as measured data or as generated with ECETOC TRA.	
Workers (oral)	No significant oral exposure due to good hygiene practice.
Workers (dermal) PROC 1	Calculated with ECETOC TRA 0.34 mg/kg bw/day, 0.1 mg/cm^2

PROC 2	1.37 mg/kg bw/day, 0.2 mg/cm^2
PROC 3	0.34 mg/kg bw/day, 0.1 mg/cm^2
PROC 4	6.86 mg/kg bw/day, 1 mg/cm^2
PROC 5	13.71 mg/kg bw/day, 2 mg/cm^2
PROC 8a	13.71 mg/kg bw/day, 1 mg/cm^2
PROC 8b	6.86 mg/kg bw/day, 1 mg/cm^2
PROC 9	6.86 mg/kg bw/day, 1 mg/cm^2
PROC 14	3.43 mg/kg bw/day, 0.5 mg/cm^2
Workers (inhalation)	Calculated with ECETOC TRA
PROC 1	0.01 mg/m^3
PROC 2	0.01 mg/m^3
PROC 3	0.1 mg/m^3
PROC 4	0.5 mg/m^3
PROC 5	0.5 mg/m^3
PROC 8a	0.5 mg/m^3
PROC 8b	0.1 mg/m^3
PROC 9	0.1 mg/m^3
PROC 14	0.1 mg/m^3
Consumer	Not applicable
Environment	The assessment of potential environmental risks is based on hydrogen peroxide which is the adverse agent released by the dissociation of sodium percarbonate in water. The generic environmental exposure scenario (15,000 tonnes/year, 300 release days, 2% release to wastewater, onsite treatment in biological WWTP with 2,000 m^3/day capacity, dilution capacity of 10) results in PECs given below. If no onsite treatment is performed and wastewater is not disposed of via the public sewer system, the conditions have to be such that the PNEC aquatic for freshwater and marine water (0.035 mg/L sodium percarbonate or 0.01 mg/L hydrogen peroxide) is respected.
Air	Not applicable

Freshwater	0.0031 mg/L (hydrogen peroxide)
Seawater	0.0031 mg/L (hydrogen peroxide)
Freshwater sediment	Not applicable
Marine sediment	Not applicable
Soil	Not applicable
STP	1 mg/L (hydrogen peroxide)
Humans via the environment	Not applicable

Summary of exposure scenario 2: Industrial and professional use of cleaning products and other mixtures containing sodium percarbonate

1. Short title of exposure scenario 2	
Industrial and professional use of cleaning products and other mixtures containing sodium percarbonate	
2. Description of activities and processes covered in the exposure scenario 2	
Sector of use (SU)	SU 1 (Agriculture, forestry, fishery) SU 5 (Manufacture of textiles, leather, fur) SU 22 (Professional uses: Public domain)
Product category (PC)	PC 8, 14, 15, 20, 25, 34, 35, 36, 37, 39
Process category (PROC)	PROC 2 (Use in closed, continuous process with occasional controlled exposure) PROC 4 (Use in batch and other process [synthesis] where opportunity for exposure arises) PROC 8a (Transfer of substance or preparation [charging/discharging] from/to vessels/large containers at non-dedicated facilities) PROC 8b (Transfer of substance or preparation [charging/discharging] from/to vessels/large containers at dedicated facilities) PROC 15 (Use as laboratory agent) Exposure to hydrogen peroxide in solutions: PROC 10 (Roller application or brushing) PROC 11 (Non-industrial spraying)

	PROC 13 (Treatment of articles by dipping and pouring) PROC 19 (Hand-mixing with intimate contact and only PPE available)
Article category (AC)	Not applicable
Environmental release category (ERC)	ERC 8a (Wide dispersive indoor use of processing aids in open systems) ERC 8b (Wide dispersive indoor use of reactive substances in open systems) ERC 8e (Wide dispersive outdoor use of reactive substances in open systems)
3. Operational conditions	
3. 1 Duration and frequency of use for which the exposure scenario ensures control of risk	
Duration of exposure at workplace:	8 hours/day
Frequency of exposure at workplace:	220 days/year for each worker (EC, 2008b, p. 8)
Annual amount used per site:	Wide dispersive use; total EU tonnage is 250,000 tonnes/year
Emission days per site:	360 days/year
4. 1 Physical form of product in which the substance is contained	
Solid	
4.2 Concentration of substance in preparation or article	
Formulated mixtures may contain up to 25% sodium percarbonate; some bleaching products may contain higher amounts of sodium percarbonate.	
4.3 Amount used per time or per activity for which the risk management measures (RMMs), in combination with other operational conditions of use ensure control of risk	
RMM and other operational conditions of use ensure control of risk at any given time and for any given throughput during the manufacture of sodium percarbonate.	
5. Other operational conditions determining exposure, e.g. temperature, capacity of receiving environment (water flow; room size x ventilation rate), emission or release factors to the relevant compartments	
The release fraction for wastewater is 100%. Wastewater generated during identified use is sent to an on-site or municipal wastewater treatment plant. A wastewater flow of 2000 m^3/day and a dilution by a factor of 10 is taken into account in the generic calculation of PECs.	
6. RMMs that, in combination with the operational conditions of use, ensure control of risk related to the different	

target groups	
6.1 RMMs related to workers	
Technical measures	Local exhaust ventilation with an efficiency of 90% may be present.
Organisational measures	Procedural and/or control technologies are required to minimise emissions and the resulting exposure during cleaning and maintenance procedures or if there is a risk of the occupational exposure limit being exceeded.
Respiratory protection	Respiratory protection with an efficiency of 90% is necessary when aqueous solutions of sodium percarbonate are used for non-industrial spraying.
Hand protection	Wearing of permeation resistant gloves with suitable materials for safety gloves is recommended. Suitable materials are PVC, Neoprene, Natural rubber
Eye protection	Wearing of eye/face protection is recommended. Chemical goggles should be consistent with EN 166 or equivalent.
Skin and body protection	Wearing of suitable protective clothing is recommended.
Hygiene measures	Keep away from foodstuffs, drinks and tobacco. Wash hands before breaks and at end of work. Keep work clothes separate. Take off immediately all contaminated clothing. Wash thoroughly after open handling of the product.
6.2 Environment related measures; type and efficiency of single options or combination of options on exposure to be quantified; options to be phrased as instructive guidance	
Organisational measures	Procedural and/or control technologies are required to minimise emissions and the resulting exposure during cleaning and maintenance procedures.
Abatement measures wastewater	Wastewater is treated in chemical/biological on-site or municipal wastewater treatment plants.
Abatement measures waste air	No specific treatment of waste air is taken into account.
Soil	All relevant soil surfaces in the facility have to be covered to avoid drainage of substance into soil.
7. Waste related measures needed to ensure control of risk at the different life cycle stages of the substances (including preparations or articles at the end of service life)	
Type of waste	Packaging material.
Disposal technique	Contaminated packaging material is disposed of properly.
Fraction released to environment during waste	Reasonable worst case emission fraction for wastewater is 100% of annual

treatment	tonnage, i.e. 250,000 tonnes/year
8. Prediction of exposure resulting from the conditions described above (entries 3 - 6) and the substance properties. Data are given as measured data or as generated with ECETOC TRA.	
Workers (oral)	No significant oral exposure due to good hygiene practice.
Workers (dermal)	Calculated with ECETOC TRA
PROC 2	1.37 mg/kg bw/day, 0.2 mg/cm^2
PROC 4	6.86 mg/kg bw/day, 1 mg/cm^2
PROC 8a	13.71 mg/kg bw/day, 1 mg/cm^2
PROC 8b	6.86 mg/kg bw/day, 1 mg/cm^2
PROC 15	0.34 mg/kg bw/day, 0.1 mg/cm^2
PROC 19	141 mg/kg bw/day, 5 mg/cm^2
Professionals (dermal)	Calculated with ECETOC TRA
PROC 8a	13.71 mg/kg bw/day, 1 mg/cm^2
PROC 8b	6.86 mg/kg bw/day, 1 mg/cm^2
PROC 9	6.86 mg/kg bw/day, 1 mg/cm^2
PROC 19	141 mg/kg bw/day, 5 mg/cm^2
PROC 10 (solution H_2O_2)	27.4 mg/kg bw/day, 2 mg/cm^2
PROC 11 (solution H_2O_2)	107 mg/kg bw/day, 5 mg/cm^2
PROC 13 (solution H_2O_2)	13.71 mg/kg bw/day, 2 mg/cm^2
PROC 19 (solution H_2O_2)	141 mg/kg bw/day, 5 mg/cm^2
Workers (inhalation)	Calculated with ECETOC TRA
PROC 2	0.01 mg/m^3
PROC 4	0.5 mg/m^3
PROC 8a	0.5 mg/m^3
PROC 8b	0.1 mg/m^3
PROC 19	0.1 mg/m^3
Professionals (inhalation)	Calculated with ECETOC TRA

PROC 8a	0.5 mg/m^3
PROC 8b	0.5 mg/m^3
PROC 9	0.5 mg/m^3
PROC 19	0.5 mg/m^3
Use of aqueous solution	Predicted airborne concentrations of hydrogen peroxide
PROC 10 (solution H_2O_2)	1.24 mg/m^3 (maximum PCS concentration in solution about 12% w/w)
PROC 11 (solution H_2O_2)	1.35 mg/m^3 (maximum PCS concentration in solution about 33% w/w)
PROC 13 (solution H_2O_2)	1.34 mg/m^3 (maximum PCS concentration in solution about 19% w/w)
PROC 19 (solution H_2O_2)	1.24 mg/m^3 (maximum PCS concentration in solution about 12% w/w)
Consumer	Not applicable
Environment	The assessment of potential environmental risks is based on hydrogen peroxide which is the adverse agent released by the dissociation of sodium percarbonate in water. The generic environmental exposure scenario (50 tonnes/year, 365 release days, 100% release to wastewater, onsite treatment in biological WWTP with 2,000 m^3/day capacity, dilution capacity of 10) results in PECs given below:
Air	Not applicable
Freshwater	0.0004 mg/L (hydrogen peroxide)
Seawater	0.0004 mg/L (hydrogen peroxide)
Freshwater sediment	Not applicable
Marine sediment	Not applicable
Soil	Not applicable
STP	0.004 mg/L (hydrogen peroxide)
Humans via the environment	Not applicable

Summary of exposure scenario 3: Private use of cleaning products and other mixtures containing sodium percarbonate

1. Short title of exposure scenario 3
Private use of cleaning products and other mixtures containing sodium percarbonate

2. Description of activities and processes covered in the exposure scenario 3	
Sector of use (SU)	SU 21 (Consumer uses: Private households)
Product category (PC)	PC 8 (Biocidal products [e.g. disinfectants, pest control]) PC 35 (Washing and cleaning products) PC 36 (Water softener) PC 37 (Water treatment chemicals) PC 39 (Cosmetics, personal care products)
Process category (PROC)	Not applicable
Article category (AC)	Not applicable
Environmental release category (ERC)	ERC 8a (Wide dispersive indoor use of processing aids in open systems) ERC 8b (Wide dispersive indoor use of reactive substances in open systems)
3. Operational conditions	
3. 1 Duration and frequency of use for which the exposure scenario ensures control of risk	
Duration of exposure:	Laundry detergents: 1 minute transfer, 20 minutes use phase Bleaches: 10 minutes use phase
Frequency of exposure:	Laundry detergents: 3 times a day Bleaches: once a day
Use amount per event:	Laundry detergents: 290 g/event Bleaches: 70 g/event
Emission days:	360 days/year
4. 1 Physical form of product in which the substance is contained	
Solid	
4.2 Concentration of substance in preparation or article	
Formulated mixtures may contain up to 25% sodium percarbonate; some bleaching products may contain higher amounts of sodium percarbonate.	
4.3 Amount used per time or per activity for which the risk management measures (RMMs), in combination with other operational conditions of use ensure control of risk	

Not applicable	
5. Other operational conditions determining exposure, e.g. temperature, capacity of receiving environment (water flow; room size x ventilation rate), emission or release factors to the relevant compartments	
The release fraction for wastewater is 100%. Wastewater generated during identified use is sent to an on-site or municipal wastewater treatment plant. A wastewater flow of 2000 m^3/day and a dilution by a factor of 10 is taken into account in the generic calculation of PECs.	
6. RMMs that, in combination with the operational conditions of use, ensure control of risk related to the different target groups	
6.1 RMMs related to consumers	
Technical measures	Not applicable
Organisational measures	Keep out of the reach of children.
Respiratory protection	Not applicable
Hand protection	Not applicable
Eye protection	The use of eye protection is recommended to avoid contact of the eyes with the undiluted product.
Skin and body protection	Not applicable
Hygiene measures	Keep away from foodstuffs, drinks and tobacco. Wash hands thoroughly after open handling of the product.
6.2 Environment related measures; type and efficiency of single options or combination of options on exposure to be quantified; options to be phrased as instructive guidance	
Organisational measures	Not applicable
Abatement measures wastewater	Wastewater is treated in chemical/biological municipal wastewater treatment plants.
Abatement measures waste air	Not applicable
Soil	No measures
7. Waste related measures needed to ensure control of risk at the different life cycle stages of the substances (including preparations or articles at the end of service life)	
Type of waste	Packaging material.
Disposal technique	Contaminated packaging material is disposed of properly.

Fraction released to environment during waste treatment	Reasonable worst case emission fraction for wastewater is 100% of annual tonnage, i.e. 250,000 tonnes/year
8. Prediction of exposure resulting from the conditions described above (entries 3 - 6) and the substance properties. Data are given as measured data or as generated with ECETOC TRA.	
Consumer (dermal)	Calculated using generic algorithms of EU TGD
Transfer laundry detergent	1.5 mg/kg bw/day, 0.19 mg/cm^2
Transfer bleach	6 mg/kg bw/day, 0.75 mg/cm^2
Manual washing	2.64 mg/kg bw/day, 0.08 mg/cm^2
Consumer (inhalation)	Not relevant according to AISE (2009)
	Approximately 0.0003 mg dust formed during transfer (HERA 2002)
Environment	The assessment of potential environmental risks is based on hydrogen peroxide which is the adverse agent released by the dissociation of sodium percarbonate in water. The generic environmental exposure scenario (50 tonnes/year, 365 release days, 100% release to wastewater, onsite treatment in biological WWTP with 2,000 m^3/day capacity, dilution capacity of 10) results in PECs given below:
Air	Not applicable
Freshwater	0.0004 mg/L (hydrogen peroxide)
Seawater	0.0004 mg/L (hydrogen peroxide)
Freshwater sediment	Not applicable
Marine sediment	Not applicable
Soil	Not applicable
STP	0.004 mg/L (hydrogen peroxide)
Humans via the environment	Not applicable