



Product : SODIUM CARBONATE  
REACH Registration Number : 01-2119485498-19-0018  
Issue Number : 02 Revision 01  
Issue Date : 01-04-2011  
Supercedes : Issue No. 02, dated 10-01-2011  
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## 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1 Product Identifier

Product Name : SODIUM CARBONATE  
Chemical Name : Sodium carbonate  
Alternative Name : Disodium carbonate, soda ash  
Chemical Formula : Na<sub>2</sub>CO<sub>3</sub>  
CAS Number : 497-19-8  
EC Number : 207-838-8  
Index Number : 011-005-00-2

### 1.2 Relevant identified uses

: glass production; intermediate in chemicals production; water treatment chemicals; washing and cleaning products; other industrial, professional and consumer uses. Exposure scenarios covering uses can be found in the Annex

#### 1.2.1 Uses advised against

: none identified

### 1.3 Company Details

Company Name : Tata Chemicals Europe  
Address : Winnington Lane  
: Mond House  
: Northwich  
: Cheshire  
: CW8 4DT  
  
Telephone : +44 (0)1606 724000  
: +44 (0)1606 781353  
: www.tatachemicals.com/europe  
: msds-tce@tatachemicals.com

### 1.4 Emergency Telephone Number

Emergency Number (24 hours) : +44 (0)1606 781000

## 2. HAZARDS IDENTIFICATION

### 2.1 Classification of the substance

#### 2.1.1 Classification according to Regulation (EC) 1272/2008 [CLP/GHS]

Classification: Eye Irritant 2

#### 2.1.2 Classification according to Directive 67/548/EEC

Classification: Irritating to eyes

### 2.2 Labelling

#### 2.2.1 Labelling according to Regulation (EC) 1272/2008 [CLP/GHS]

Hazard Pictograms:



Signal Word : Warning

Hazard Statements  
H319 : Causes serious eye irritation

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*Precautionary Statements:*

P264 : Wash hands and face thoroughly after handling  
P280 : Wear protective gloves/protective clothing/eye protection/face protection  
P305 + P351 + P338 : IF IN EYES, rinse cautiously with water for several minutes, remove contact lenses, if present and easy to do. Continue rinsing  
P337 + P313 : If eye irritation persists: Get medical advice/attention

### 2.2.2 Labelling according to Directive 67/548/EEC



*Symbol* : Xi - irritant

*Risk Phrases:*

R36 : Irritating to eyes

*Safety Phrases:*

S2 : Keep out of the reach of children  
S22 : Do not breathe dust  
S24 : Avoid contact with skin

### 2.3 Other hazards

- The substance does not meet the criteria for PBT or vPvB according to Annex XIII of the REACH Regulation EC 1907/2006 (an inorganic substance)
- No other hazards identified

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Substance

Main constituent	Formula	Purity %w/w (typical)	CAS Number	EC Number
Sodium carbonate	Na <sub>2</sub> CO <sub>3</sub>	>99.0	497-19-8	207-838-8

#### IMPURITIES

No impurities relevant for classification and labelling

## 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

#### General advice

- No known delayed effects

#### Following inhalation

- Remove to fresh air, keep warm and at rest
- If symptoms persist, seek medical attention

#### Following skin contact

- Remove contaminated clothing and wash before re-use
- Wash off with soap and water
- If symptoms persist, seek medical attention

#### Following eye contact

- Remove contact lenses if present
- Irrigate eye thoroughly with eye wash solution or clean water for at least 15 minutes



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- Eyelids should be held away from the eyeball to ensure thorough rinsing
- If eye irritation persists seek medical attention

#### After ingestion

- DO NOT induce vomiting
- Wash out mouth with water and give plenty of water to drink (at least 300 ml.)
- Obtain medical advice if necessary.

## 5. FIRE-FIGHTING MEASURES

### 5.1 Extinguishing Media

#### 5.1.1 Suitable extinguishing media

- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

#### 5.1.2 Unsuitable extinguishing media

- None

### 5.2 Special hazards arising from the substance or mixture

- None

### 5.3 Advice for firefighters

- No special precautions required

## 6. ACCIDENTAL RELEASE MEASURES

### 6.1 Personal Precautions

#### 6.1.1 For non-emergency personnel

- Keep dust levels to a minimum
- Wear suitable protective equipment ( see Section 8)

### 6.2 Environmental Precautions

- Prevent uncontrolled discharges into the environment (rivers, water courses, sewers etc.)
- Avoid any mixture with an acid into sewer/drains (CO<sub>2</sub> gas formation)

### 6.3 Methods for containment and clean up

- In all cases avoid dust formation
- Use vacuum suction, or shovel into bags
- Collect as much as possible in a suitable clean container, preferably for re-use, otherwise for disposal (See Section 13)

### 6.4 Reference to other sections

- For more information on exposure controls/personal protection or disposal considerations, please see section 8 and 13

## 7. HANDLING AND STORAGE

### 7.1 Precautions for Safe Handling

#### 7.1.1 Protective measures

- Keep dust levels to a minimum
- Ensure adequate ventilation
- Wear protective equipment (see Section 8.2)
- Keep away incompatible materials

#### 7.1.2 Advice on general occupational hygiene

- Good personal and housekeeping practices to be used
- No drinking, eating or smoking at the workplace

### 7.2 Conditions for safe storage, including any incompatibilities

- Store in a dry place



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- Store in original, closed and correctly labelled container
- Store away from incompatible materials

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control Parameters

#### 8.1.1 Occupational Exposure Standards

- Not listed by H&SE (Guidance Note EH40) or ACGIH
- Recommended Limits: WEL 10mg/m<sup>3</sup> (total dust) (8hr TWA)  
4mg/m<sup>3</sup> (respirable dust) (8hr TWA)

#### 8.1.2 DNEL's/PNEC

Exposure route of relevance	DNELs (local effects)			
	Workers		General population	
	Long term	Acute	Long term	Acute
Inhalation	10 mg/m <sup>3</sup>			

PNEC :

The lowest L(E)C<sub>50</sub> value is > 100 mg/l (48-h EC<sub>50</sub> is 200 mg/l in daphnids (*Ceriodaphnia* sp)). Therefore sodium carbonate need not be classified according to Directive 67/548/EEC and EU Classification, Labelling and Packaging of Substances and Mixtures (CLP) Regulation (EC) No. 1272/2008

**Environmental Classification is not warranted**

### 8.2 Exposure Controls

#### 8.2.1 Appropriate engineering controls

- provide appropriate exhaust ventilation at places where dust is formed
- apply technical measures to comply with the occupational exposure limits

#### 8.2.2 Personal protection

##### 8.2.2.1 Eye/face protection

- wear eye/face protection rated to protect eyes against dust (EN166) eg. safety eye shields with dust protection, goggles or face visor

##### 8.2.2.2 Hand protection

- wear suitable chemical resistant protective gloves, that comply with the specification of EC Directive 89/686/EEC and the related standard EN374. Suitable materials, Neoprene or natural rubber

##### 8.2.2.3 Skin/body protection

- dust impervious protective suit
- rubber or plastic safety boots

##### 8.2.2.4 Respiratory protection

- in the case of high dust levels wear suitable respiratory protective equipment eg. dust mask or respirator, that conform to national/international standard, EN143. Recommended filter type P2

### 8.3 Environmental Exposure Controls

- contain any spillage
- avoid discharges to the environment
- dispose of any rinse water in accordance with local and national regulations

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on Basic Physical and Chemical Properties



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Appearance	: white powder
Odour	: odourless
Odour threshold	: no information available
pH	: >11 (saturated solution, study result, OECD Guideline105)
Melting/freezing point	: 851°C (published data)
Boiling point	: not applicable (melting point >300°C)
Flash point	: not applicable (inorganic substance)
Evaporation rate	: not applicable (melting point >300°C)
Flammability	: non-flammable (study result, EU Method A.10))
Upper flammability limit	: non-flammable
Lower flammability limit	: non-flammable
Vapour pressure	: not applicable (inorganic substance, vapour pressure negligible)
Vapour Density	: not applicable
Relative density	: 2.52 @ 20°C (study result, EU Method A.3)
Water solubility	: 212.5 g/l @20°C (study result, OECD Guideline 105)
Partition coefficient	: not applicable (inorganic substance)
Auto-ignition temperature	: non-flammable
Decomposition temperature	: not information available
Viscosity	: not applicable (solid)
Explosive properties	: non-explosive (void of chemical groups associated with explosive properties)
Oxidising properties	: non-oxidising (based on the chemical structure of the substance and the oxidation state of the constituent element)

## 10. STABILITY AND REACTIVITY

### 10.1 [Reactivity](#)

- Decomposes by reaction with strong acids to evolve carbon dioxide

### 10.2 [Chemical Stability](#)

- Stable under recommended storage conditions (see Section 7)

### 10.3 [Possibility of hazardous reactions](#)

- None

### 10.4 [Conditions to Avoid](#)

- Contact with acids unless under controlled conditions
- Exposure to moisture

### 10.5 [Incompatible materials](#)

- Finely divided aluminium

### 10.6 [Hazardous decomposition products](#)

- None

## 11. TOXICOLOGICAL INFORMATION

### 11.1 [Information on Toxicological Effects](#)



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Toxicity endpoints	Details of the effects assessment
<b>Acute toxicity</b>	<p>Oral : LD<sub>50</sub> , rat 2800 mg/kg bw            Dermal : LD<sub>50</sub> , rabbit &gt;2000 mg/kg bw Method: EPA 16 CFR 1500.40            Inhalation : LC<sub>50</sub> , rat 2300 mg/m<sup>3</sup> air Method: based on OECD Guideline 403</p> <p>Values exceed the cut off limit of 2000mg/kg established by EU Directive 67/548/EEC and EU Classification, Labelling and Packaging of Substances and Mixtures (CLP) Regulation (EC) No. 1272/2008</p> <p><b>Classification for acute toxicity: is not warranted</b></p>
<b>Irritation/ corrosion</b>	<p>Eye irritation : irritating Method: OECD Guideline 405            Skin irritation : not irritating Method: OECD Guideline 404            Respiratory irritation : not irritating Based on available data</p> <p><b>Classification for Eye irritancy : Xi, R36 (irritating to eyes) according to Directive 67/548/EEC</b>  <b>: Category 2, H319 (causes serious eye irritation) according to CLP Regulation (EC) 1272/2008</b></p> <p><b>Classification for Skin irritancy : is not warranted</b>  <b>Classification for Respiratory irritancy : is not warranted</b></p>
<b>Sensitisation</b>	<p>No data available on the sensitisation of sodium carbonate.            Sodium carbonate is considered not to have any sensitising properties, based on the physiological role of both its constituent ions and its long-term historical and wide dispersive use in industrial processes and consumer products.</p> <p><b>Classification for sensitisation: is not warranted</b></p>
<b>Repeated dose toxicity</b>	<p>Oral : Sodium carbonate dissociates into ions that are present physiologically in relatively high levels in vertebrates. Therefore, repeated dose toxicity studies are considered (scientifically) unnecessary, in accordance with column 2 of REACH Annex VIII and IX. Furthermore, sodium carbonate is used as a food additive, which confirms that the substance has a low Repeated dose toxicity.</p> <p>Dermal : Sodium carbonate dissociates into ions that are present physiologically in relatively high levels in vertebrates. Therefore, repeated dose toxicity studies are considered (scientifically) unnecessary, in accordance with Column 2 of REACH Annex VIII and IX</p> <p>Inhalation : Sodium carbonate dissociates into ions that are present physiologically in relatively high levels in vertebrates. Therefore, repeated dose toxicity studies are considered (scientifically) not necessary, In accordance with column 2 of REACH Annex VIII and IX.</p> <p><b>Classification for repeated dose toxicity: is not warranted</b></p>
<b>Mutagenicity</b>	<p>In vitro – The available <i>in vitro</i> tests (SOS chromotest with sodium carbonate and Ames test with sodium bicarbonate) were negative. Furthermore sodium bicarbonate is naturally present in cells and both the structure of sodium bicarbonate and sodium carbonate do not indicate a genotoxic potential. Therefore, there is no reason to evaluate the potential genotoxicity of sodium carbonate further and no genotoxic effects are expected.</p> <p><b>Classification for mutagenicity is not warranted</b></p>



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Toxicity endpoints	Details of the effects assessment
<b>Carcinogenicity</b>	<p>No data available for carcinogenicity of sodium carbonate. Although the substance has a wide and varied use, there are no indications that it can induce hyperplasia, pre-neoplastic lesions or is mutagenic. Therefore, a carcinogenicity study is considered unnecessary</p> <p><b>Classification for carcinogenicity is not warranted</b></p>
<b>Reproductive toxicity</b>	<p>Fertility : No data available</p> <p>Developmental toxicity : In accordance with Section 1 of REACH Annex XI, testing does not appear scientifically necessary, as the substance will usually not reach the foetus or the male and female reproductive organs when exposed orally, dermally or by inhalation, as it does not become available systemically. As such, it is considered not useful to perform a reproduction study</p> <p><b>Classification for reproductive toxicity according to Regulation (EC) 1272/2008 is not required</b></p>

## 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity

#### 12.1.1 Acute/short term toxicity to fish

- LC<sub>50</sub> (96h) for freshwater fish : 300 mg/l

#### 12.1.2 Chronic/long term toxicity to fish

- Study scientifically unjustified, sodium carbonate dissociates readily into sodium and carbonate ions in an aquatic environment. Both ions originally exist in nature, and their concentrations in surface water are dependent on various factors, such as geological parameters, weathering and human activities. Therefore, there is a continuous source of both ions into the environment and have been measured extensively in aquatic ecosystems

#### 12.1.3 Acute/short term toxicity to aquatic invertebrates

- EC<sub>50</sub> (48h) for freshwater invertebrates : 200-227 mg/l

#### 12.1.4 Chronic/long term toxicity to aquatic invertebrates

- Study scientifically unjustified, sodium carbonate dissociates readily into sodium and carbonate ions in an aquatic environment. Both ions originally exist in nature, and their concentrations in surface water are dependent on various factors, such as geological parameters, weathering and human activities. Therefore, there is a continuous source of both ions into the environment and have been measured extensively in aquatic ecosystems

#### 12.1.5 Acute toxicity to algae and aquatic plants

- Study scientifically unjustified, sodium carbonate dissociates readily into sodium and carbonate ions in an aquatic environment. Both ions originally exist in nature, and their concentrations in surface water are dependent on various factors, such as geological parameters, weathering and human activities. Therefore, there is a continuous source of both ions into the environment and have been measured extensively in aquatic ecosystems

#### 12.1.6 Toxicity to soil macro-organisms

- In accordance with REACH Annex XI a study is not required as in water sodium carbonate is dissociated into sodium and carbonate ions, both of which will not adsorb on particulate matter. Furthermore, exposure of the soil compartment is unlikely

#### 12.1.7 Toxicity to terrestrial plants

- In accordance with REACH Annex XI a study is not required as in water sodium carbonate is dissociated into sodium and carbonate ions, both of which will not adsorb on particulate matter. Furthermore, exposure of the soil compartment is unlikely



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## 12.2 Persistence and degradeability

- In water : Not applicable (quickly dissociates)
- In soil : Not applicable (inorganic substance)
- In sediment : Not applicable (inorganic substance)

## 12.3 Bioaccumulative Potential

- Not bioaccumulative (inorganic substance that in water dissociates into sodium and carbonate ions, which do not accumulate in living tissues)

## 12.4 Mobility in Soil

- If sodium carbonate is emitted to soil it can escape to atmosphere as carbon dioxide, precipitate as a metal carbonate, form complexes or stay in solution

## 12.5 Results of PBT and vPvB Assessment

- According to Annex XIII of REACH Regulation inorganic substances do not require assessment

## 12.6 Other Adverse Effects

- No other adverse effects are identified

# 13. DISPOSAL CONSIDERATIONS

## 13.1 Waste Treatment Methods

- If recycling or re-use is not practicable, dispose of in compliance with local or national regulations
- Neutralise with acid under controlled conditions
- Dilute with plenty of water

Packaging:

- Where possible, recycling is preferred to disposal or incineration
- Clean container with water, dispose of rinse water in accordance with local or national regulations
- Must be incinerated in a registered incineration plant with permit from the local authorities

# 14. TRANSPORT INFORMATION

Sodium carbonate is not classified as hazardous for transport

## 14.1 UN Number

- Not regulated

## 14.2 UN proper shipping name

- Not regulated

## 14.3 Transport hazard class

- Land Transport	: ADR/RID	Not restricted
- Inland Waterway Transport	: ADN	Not regulated
- Sea Transport	: IMO/IMDG	Not regulated
- Air Transport	: ICAO-TI/IATA-DGR	Not regulated

# 15. REGULATORY INFORMATION

## 15.1 Safety, health and environmental regulations

- Water hazard class : WGK 1, VwVwS (Germany)
- TSCA Inventory : Listed

## 15.2 Chemical safety assessment

- A Chemical Safety Assessment/Report (CSA/CSR) has been undertaken on sodium carbonate

# 16. OTHER INFORMATION

## 16.1 Indication of changes

Section 1 – change of company name, logo and contact details

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## 16.2 Abbreviations and acronyms

WEL : Workplace exposure limit  
ACGIH : American Conference of Industrial Hygiene  
TWA : Time Weighted Average  
DNEL : Derived no effect level  
NOEC : No Observed Effect Concentration  
PBT : Persistent, Bioaccumulative, Toxic  
vPvB : very Persistent, very Bioaccumulative  
PNEC : Predicted No Effect Concentration  
ADR : European Agreement Concerning the International Carriage of Dangerous Goods by Road  
RID : International Rule for Transport of Dangerous Substances by Rail  
ADN : European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterway  
IMO/IMDG : International Maritime Organization/International Maritime Dangerous Goods Code  
ICAO/IATA : International Civil Aviation Organization/International Air Transport Association  
OECD : Organisation of Economic Co-operation and Development  
SIDS : Screening Information Data Set

## 16.3 Key literature references and sources of data

Data is taken from the Chemical safety report (CSR) and/or OECD SIDS report for sodium carbonate

## 16.4 Further Information

16.4.1 The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products or in the case of processing, the information on this safety data sheet is not necessarily valid.

To our best present knowledge the information given is correct and complete as of the date of this document and is given in good faith but without warranty, either expressed or implied, nor do we accept any liability in relation to this information or its use. This version of the SDS supercedes all previous versions.

16.4.2 Any tradenames referenced in this document are registered trademarks of Tata Chemicals Europe Limited

## ANNEX TO EXTENDED SAFETY DATA SHEET (eSDS):

Page 11-13 Exposure Scenario 1 (ES.1) - Soda ash - Manufacturing of sodium carbonate  
Page 14-16 Exposure Scenario 2 (ES.2) - Soda ash - Glass production  
Page 17-19 Exposure Scenario 3 (ES.3) - Soda ash - Formulation  
Page 20-25 Exposure Scenario 4 (ES.4) - Soda ash - Other industrial and professional use  
Page 26-28 Exposure Scenario 5 (ES.5) - Soda ash - Consumer use



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**Exposure Scenario for communication:  
 ES 1: Manufacturing of sodium carbonate**

**0. General information**

ES identifier ES 1  
 Version no 01  
 Revision date 28.10.2010  
 EC # 207-838-8  
 CAS # 497-19-8

**1. Use descriptors**

Manufacturing of sodium carbonate

**Market sector:** SU 3 (Industrial uses)  
**Sector of use:** SU 8 (Manufacture of bulk, large scale chemicals)

**Environment:** (Environmental Release Category) Manufacture of substances ERC 1

**Worker (Process Category -Phrase)**

Use in closed process, no likelihood of exposure	PROC 1
Use in closed, continuous process with occasional controlled exposure	PROC 2
Use in closed batch process (synthesis or formulation)	PROC 3
Use in batch and other process (synthesis) where opportunity for exposure arises	PROC 4
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	PROC 8a
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC 8b
Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC 9
Potentially closed processing operations with minerals/metals at elevated temperature	PROC 22

**Processes, tasks, activities covered**

Manufacturing, maintenance, loading, packaging, sampling and monitoring.

**2. Conditions of use affecting exposure**

**2.0 Default Product Characteristics**

Physical form of product/article	Solid
Volatility	Not relevant
Dustiness	Medium (PROCs 1, 2, 3, 4, 8a, 8b, 9) Low (PROC 22)

**2.1. Control of environmental exposure:**

Manufacture of substances – ERC 1



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<b>Amounts used</b>		
Annual site tonnage (tonnes/year): up to 1 500 000.		
<b>Frequency and duration of use</b>		
Continuous		
<b>Other given operational conditions affecting environmental exposure</b>		
Not applicable.		
<b>Technical and organizational conditions and measures</b>		
See section 8 of Safety data sheet.		
<b>Conditions and measures related to municipal sewage treatment plant</b>		
Wastewater streams from sodium carbonate production sites contain inorganic substances and are therefore not treated in sewage treatment plants.		
<b>Conditions and measures related to external treatment of waste</b>		
In Chapter 2.3.5 of the Reference Document on Best Available Techniques for the Manufacture of Large Volume Inorganic Chemicals - Solids and Others Industry (EC, 2007) two types of solid waste, generated during the manufacturing of sodium carbonate, are discussed. Both types of solid waste originate from raw materials and the concentration of sodium carbonate in the solid waste is negligible. For this reason specific waste related measures are not needed.		
<b>Additional good practice advice beyond the REACH CSR (Chemical Safety Report)</b>		
See sections 6 and 13 of Safety Data Sheet		
<b>2.2. Control of workers exposure</b>		
Valid for PROCs 1, 2, 3, 4, 8a, 8b, 9, 22.		
<b>Amounts used, frequency and duration of use</b>		
Amounts used	Not Relevant Parameter does not influence exposure estimations for this ES	
Frequency and duration of use	Daily 8h/day	
<b>Technical and organizational conditions and measures</b>		
See section 8 of Safety Data Sheet. Ensure workers are trained to minimize exposures.		
<b>Additional good practice advice beyond the REACH CSR (Chemical Safety Report)</b>		
See sections 7 and 8 of Safety Data Sheet		
<b>3. Exposure estimation and reference to its source</b>		
<b>3.1 Environment exposure estimation and reference to its source</b>		
The table below gives the summary of the environment exposure estimation made in the Chemical Safety Report, referring to Document on Best Available Techniques for the Manufacture of Large Volume Inorganic Chemicals - Solids and Others Industry.		
<b>Compartments</b>	<b>Measured release (kg/d)</b>	<b>Explanation / source of measured data</b>
Aquatic	Negligible	Reference Document on Best Available Techniques (EC, 2007)
Air (direct)	2.2 - 118	
Soil (direct only)	Negligible	Reference Document on Best Available Techniques (EC, 2007)



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### 3.2 Workers exposure estimation and reference to its source

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

#### Production of sodium carbonate: long-term exposure concentrations to workers

Routes of exposure	Exposure concentrations (mg/m <sup>3</sup> )	Explanation / source of measured data (Characteristics, Duration, Frequency, OC and RMM described above)
<b>Modeled exposure data</b>		
Dermal exposure	Not relevant	No assessment for dermal exposure because of no local skin effects and no systemic availability after dermal contact.
Inhalation exposure	0.01	ECETOC TRA V2. PROC 1
	0.5	ECETOC TRA V2. PROC 2
	1	ECETOC TRA V2. PROC 3
	5	ECETOC TRA V2. PROC 4
	5	ECETOC TRA V2. PROC 8a
	5	ECETOC TRA V2. PROC 8b
	5	ECETOC TRA V2. PROC 9
	1	ECETOC TRA V2. PROC 22
<b>Measured exposure data</b>		
Inhalation exposure	7.9	An extensive set (in total: 698 observations) of worker exposure data from 4 sites that manufacture sodium carbonate. Measurements are representative for a workday of 8 hours.

### 4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

#### 4.1 Environment.

Not Applicable: this scenario does not concern DU.

#### 4.2 Health.

Not Applicable: this scenario does not concern DU.



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Substance: Sodium Carbonate ; EC : 207-838-8 ; CAS : 497-19-8

Exposure Scenario for communication:

ES 2: Glass production

## 0. General information

ES identifier	ES 2
Version no	01
Revision date	28.10.2010
EC #	207-838-8
CAS #	497-19-8

## 1. Use descriptors

Glass Production

**Market sector:** SU 3 (Industrial uses)  
**Sector of use:** SU 3 (Industrial uses)

**Environment:** (Environmental Release Category) Industrial use resulting in manufacture of another substance (use of intermediates) ERC 6a

### Worker (Process Category -Phrase)

Use in closed process, no likelihood of exposure	PROC 1
Use in closed, continuous process with occasional controlled exposure	PROC 2
Use in closed batch process (synthesis or formulation)	PROC 3
Use in batch and other process (synthesis) where opportunity for exposure arises	PROC 4
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	PROC 8a
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC 8b
Potentially closed processing operations with minerals/metals at elevated temperature	PROC 22
Open processing and transfer operations with minerals/metals at elevated temperature	PROC 23
Handling of solid inorganic substances at ambient temperature.	PROC 26

### Processes, tasks, activities covered

Manufacturing, maintenance, loading, packaging, sampling and monitoring.

## 2. Conditions of use affecting exposure

### 2.0 Default Product Characteristics

Physical form of product/article	Solid
Volatility	Not relevant



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Dustiness	Medium (PROCs 1, 2, 3, 4, 8a, 8b, 26) High (PROCs 22 and 23)
<b>Mixture Article Concentration</b>	
For PROCs 1, 2, 3, 4, 8a, 8b and 26 the neat substance is taken into account, because the neat substance is transferred to the process. Percentage of 5-25% sodium carbonate in the mixture during the melting process is assumed.	
<b>2.1. Control of environmental exposure:</b>	
Use as intermediate: industrial use resulting in manufacture of another substance.	
<b>Amounts used</b>	
Up to 200 000 tonnes/year.	
<b>Frequency and duration of use</b>	
Continuous.	
<b>Other given operational conditions affecting environmental exposure</b>	
The impact of glass manufacturing on the environment has been described extensively in the Reference Document on Best Available Techniques in the Glass Manufacturing Industry (EC, 2001). The document was established in the context of the EU Directive on Integrated Pollution Prevention and Control (Directive 96/61/EC).	
<b>Technical and organizational conditions and measures</b>	
See section 8 of Safety Data Sheet. In case of dust formation, use filter to reduce atmospheric emissions.	
<b>Conditions and measures related to municipal sewage treatment plant</b>	
Wastewater streams of the glass industry do not contain sodium carbonate as it is stored in covered silos and not linked to internal sewage systems. For this reason an emission assessment for the sewage treatment plant is not needed for the industrial end use of sodium carbonate in the glass industry.	
<b>Conditions and measures related to external treatment of waste</b>	
No specific waste related measures are to be defined.	
<b>Additional good practice advice beyond the REACH CSA</b>	
See sections 6 and 13 of Safety Data Sheet	
<b>2.2. Control of workers exposure</b>	
Valid for PROCs 1, 2, 3, 4, 8a, 8b, 9, 22, 26.	
<b>Amounts used, frequency and duration of use</b>	
Amounts used	Not Relevant Parameter does not influence exposure estimations for this ES
Frequency and duration of use	Daily 8h/day
<b>Technical and organisational conditions and measures</b>	
See section 8 of Safety Data Sheet	
<b>Additional good practice advice beyond the REACH CSR (Chemical Safety Report)</b>	
See sections 7 and 8 of Safety Data Sheet	
<b>3. Exposure estimation and reference to its source</b>	
<b>3.1 Environment exposure estimation and reference to its source</b>	



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The table below gives the summary of the environment exposure estimation made in the Chemical Safety Report, referring to Document on Best Available Techniques in the Glass Manufacturing Industry (EC, 2001).

Compartments	Measured release (kg/d)	Explanation / source of measured data
Aquatic	Negligible	Reference Document on Best Available Techniques (EC, 2001)
Air (direct)	Negligible	Reference Document on Best Available Techniques (EC, 2001)
Soil (direct only)	Negligible	Reference Document on Best Available Techniques (EC, 2001)

### 3.2 Workers exposure estimation and reference to its source

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

#### Glass production: long-term exposure concentrations to workers

Routes of exposure	Estimated exposure concentrations (mg/m <sup>3</sup> )	Explanation / source of measured data (Characteristics, Duration, Frequency, OC and RMM described above)
Dermal exposure	Not relevant	No assessment for dermal exposure because of no local skin effects and no systemic availability after dermal contact.
Inhalation exposure	0.01	ECETOC TRA V2. PROC 1
	0.5	ECETOC TRA V2. PROC 2
	1	ECETOC TRA V2. PROC 3
	5	ECETOC TRA V2. PROC 4
	5	ECETOC TRA V2. PROC 8a
	5	ECETOC TRA V2. PROC 8b
	1	ECETOC TRA V2. PROC 22a
	1	ECETOC TRA V2. PROC 23a

PROC26 is not foreseen in ECETOC TRA but it involves activities which are described by PROC 8a and 8b. Therefore the calculation with PROC 8a and 8b covers PROC 26.

## 4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

### 4.1 Environment.

Predicted exposures are not expected to exceed the DNEL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

### 4.2 Health.

Predicted exposures are not expected to exceed the DNEL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.



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Substance: Sodium Carbonate ; EC : 207-838-8 ; CAS : 497-19-8

Exposure Scenario for communication:  
ES 3: Formulation

## 0. General information

ES identifier	ES 3
Version no	01
Revision date	28.10.2010
EC #	207-838-8
CAS #	497-19-8

## 1. Use descriptors

Formulation

**Market sector:** SU 3 (Industrial uses)

**Sector of use:** SU 10 (Formulation [mixing] of preparations and/or re-packaging (excluding alloys))

**Environment:** (Environmental Release Category) Formulation of preparations ERC 2

### Worker (Process Category -Phrase)

Use in closed process, no likelihood of exposure	PROC 1
Use in closed, continuous process with occasional controlled exposure	PROC 2
Use in closed batch process (synthesis or formulation)	PROC 3
Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	PROC 5
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	PROC 8a
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC 8b
Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC 9
Production of preparations or articles by tableting, compression, extrusion, pelletisation	PROC 14
Use as laboratory reagent	PROC 15

### Processes, tasks, activities covered

storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities.

## 2. Conditions of use affecting exposure

### 2.0 Default Product Characteristics

Physical form of product/article	Solid
Volatility	Not relevant
Dustiness	Medium

### Mixture Article Concentration

Not relevant: for exposure estimation the neat substance is taken into account, because the neat substance is added to the formulation process.





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<b>2.1. Control of environmental exposure:</b>		
Formulation of preparations – ERC 2 SPERC (AISE, 2010E) are also used ( <a href="http://www.aise.eu/reach/exposureass_sub4.htm">http://www.aise.eu/reach/exposureass_sub4.htm</a> ).		
<b>Amounts used</b>		
Up to 5 000 tonnes/year		
<b>Frequency and duration of use</b>		
Continuous		
<b>Other given operational conditions affecting environmental exposure</b>		
See sections 8 and 13 of Safety Data Sheet		
<b>Technical and organizational conditions and measures</b>		
In case of dust formation, use filter to reduce atmospheric emissions.		
<b>Conditions and measures related to municipal sewage treatment plant</b>		
Control the pH of the liquid effluent if the effluent is sent to STP.		
<b>Conditions and measures related to external treatment of waste</b>		
No specific waste related measures are to be defined.		
<b>Additional good practice advice beyond the REACH CSA</b>		
See sections 6 and 13 of Safety Data Sheet		
<b>2.2. Control of workers exposure</b>		
Valid for PROCs 1, 2, 3, 5, 4, 8a, 8b, 9, 14, 15.		
<b>Amounts used, frequency and duration of use</b>		
Amounts used	Not Relevant Parameter does not influence exposure estimations for this ES	
Frequency and duration of use	Daily 8h/day	
<b>Technical and organisational conditions and measures</b>		
See section 8 of Safety Data Sheet		
<b>Additional good practice advice beyond the REACH CSR (Chemical Safety Report)</b>		
See sections 7 and 8 of Safety Data Sheet		
<b>3. Exposure estimation and reference to its source</b>		
<b>3.1 Environment exposure estimation and reference to its source</b>		
The table below gives the summary of the environment exposure estimation made in the Chemical Safety Report and in Specific Environmental Release Categories (SPERC) (AISE, 2010):		
<b>Compartments</b>	<b>Measured release (kg/d)</b>	<b>Explanation / source of data</b>
Aquatic	Negligible	
Air (direct)	2.7	Specific Environmental Release Categories (SPERC) (AISE, 2010)
Soil (direct only)	Negligible	Specific Environmental Release Categories (SPERC) (AISE, 2010)



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### 3.2 Workers exposure estimation and reference to its source

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

#### Formulation: long-term exposure concentrations to worker

Routes of exposure	Estimated exposure concentrations (mg/m <sup>3</sup> )	Explanation / source of measured data (Characteristics, Duration, Frequency, OC and RMM described above)
Dermal exposure	Not relevant	No assessment for dermal exposure because of no local skin effects and no systemic availability after dermal contact.
Inhalation exposure	0.01	ECETOC TRA V2. PROC 1
	0.5	ECETOC TRA V2. PROC 2
	1	ECETOC TRA V2. PROC 3
	5	ECETOC TRA V2. PROC 4
	5	ECETOC TRA V2. PROC 5
	5	ECETOC TRA V2. PROC 8a
	5	ECETOC TRA V2. PROC 8b
	5	ECETOC TRA V2. PROC 9
	1	ECETOC TRA V2. PROC 14
	0.5	ECETOC TRA V2. PROC 15

### 4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

#### 4.1 Environment.

Predicted exposures are not expected to exceed the DNEL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

#### 4.2 Health.

Predicted exposures are not expected to exceed the DNEL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.



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Substance: Sodium Carbonate ; EC : 207-838-8 ; CAS : 497-19-8

Exposure Scenario for communication:  
ES 4: Other industrial and professional uses

## 0. General information

ES identifier	ES 4
Version no	01
Revision date	28.10.2010
EC #	207-838-8
CAS #	497-19-8

## 1. Use descriptors

### 1.1 Industrial end uses

**Market sector:** SU 3 (Industrial uses)  
**Sector of use:** No restriction (SUs 0-20, 23, 24)

**Environment:** (Environmental Release Category)

Formulation of preparations	ERC 4
Industrial use resulting in inclusion into or onto a matrix	ERC 5
Industrial use resulting in manufacture of another substance (use of intermediates)	ERC 6a
Industrial use of reactive processing aids	ERC 6b
Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers	ERC 6d
Industrial use of sub-stances in closed systems	ERC 7

### Worker (Process Category -Phrase)

Use in closed process, no likelihood of exposure	PROC 1
Use in closed, continuous process with occasional controlled exposure	PROC 2
Use in closed batch process (synthesis or formulation)	PROC 3
Use in batch and other process (synthesis) where opportunity for exposure arises	PROC 4
Spraying in industrial settings and applications	PROC 7
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	PROC 8a
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC 8b
Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC 9



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Roller application or brushing of adhesive and other coating	PROC 10
Treatment of articles by dipping and pouring	PROC 13
Use as laboratory reagent	PROC 15
Lubrication at high energy conditions and in partly open process	PROC 17
Greasing at high energy conditions	PROC 18
Hand-mixing with intimate contact and only PPE available	PROC 19
Potentially closed processing operations with minerals/metals at elevated temperature. The process temperature is higher than the melting point (High fugacity)	PROC 22
Open processing and transfer operations with minerals/metals at elevated temperature. The process temperature is higher than the melting point (High fugacity)	PROC 23
Handling of solid inorganic substances at ambient temperature	PROC 26
<b>Processes, tasks, activities covered:</b> Manufacturing, mixing, maintenance, loading, packaging, sampling and monitoring.	
<b>1.2 Professional end uses</b>	
<b>Market sector:</b> SU 22 (Professional uses) <b>Sector of use:</b> SU 22 (Professional uses)	
<b>Environment:</b> (Environmental Release Category)	
Wide dispersive indoor use of processing aids in open systems	ERC 8a
Wide dispersive indoor use of reactive substances in open systems	ERC 8b
Wide dispersive indoor use resulting in inclusion into or onto a matrix	ERC 8c
Wide dispersive outdoor use of processing aids in open systems	ERC 8d
Wide dispersive outdoor use of reactive substances in open systems	ERC 8e
Wide dispersive outdoor use resulting in inclusion into or onto a matrix	ERC 8f
Wide dispersive indoor use of substances in closed systems	ERC 9a
Wide dispersive outdoor use of substances in closed systems	ERC 9b
<b>Worker (Process Category -Phrase)</b>	
Use in closed process, no likelihood of exposure	PROC 1
Use in closed, continuous process with occasional controlled exposure	PROC 2



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Use in batch and other process (synthesis) where opportunity for exposure arises	PROC 4
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	PROC 8a
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC 8b
Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC 9
Roller application or brushing of adhesive and other coating	PROC 10
Non industrial spraying	PROC 11
Treatment of articles by dipping and pouring	PROC 13
Use as laboratory reagent	PROC 15
Hand-mixing with intimate contact and only PPE available	PROC 19

**Processes, tasks, activities covered**  
 Manufacturing, mixing, maintenance, loading, packaging, sampling and monitoring.

**2. Conditions of use affecting exposure**

**2.0 Default Product Characteristics**

Physical form of product/article	Solid
Volatility	Not relevant
Dustiness	Medium (PROCs 1, 2, 3, 4, 8a, 8b, 9, 15, 19) High (PROCs 22 and 23)

**2.1. Control of environmental exposure:**

**Industrial end uses:** ERC4, ERC5, ERC 6a/6b/6d, ERC 7.  
**Professional end uses:** ERC 8a/8b/8c/8d/8e/8f; ERC 9a/9b.

**Amounts used**

Industrial use up to 100 000 tonnes/year.  
 Professional use much lower

**Frequency and duration of use**

Up to continuous.

**Other given operational conditions affecting environmental exposure**

See sections 8 and 13 of Safety Data Sheet

**Technical and organizational conditions and measures**

In case of dust formation, use filter to reduce atmospheric emissions.

**Conditions and measures related to municipal sewage treatment plant**

Control the pH of the liquid effluent if the effluent is sent to STP.

**Conditions and measures related to external treatment of waste**

No specific waste related measures are to be defined.

**Additional good practice advice beyond the REACH CSR (Chemical Safety Report)**



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See sections 6 and 13 of Safety Data Sheet

**2.2. Control of workers exposure**

Valid for PROC 1-4, 7, 8a, 8b, 9, 10, 11, 13, 15, 17, 18, 19, 22, 23, 26.

**Amounts used, frequency and duration of use**

Amounts used	Not Relevant Parameter does not influence exposure estimations for this ES
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Frequency and duration of use (Exposure Frequency Duration)

Operational conditions related to the duration of use	Process Category	Industrial (Data Field)	Professional (Data Field)
Duration of exposure per day at workplace [for one worker]	PROC 1		Less than 15 min/day
	PROC 2		Less than 15 min/day
	PROC 3	> 4 hours/day (liquid mixture)	
	PROC 4		> 4 hours/day
	PROC 7	> 4 hours/day (liquid mixture)	
	PROC 8a		15 min/day to 1 hour/day
	PROC 8b		15 min/day to 1 hour/day
	PROC 9	> 4 hours/day (liquid mixture)	
	PROC 10		> 4 hours/day
	PROC 11		> 4 hours/day
	PROC 13		15 min/day to 1 hour/day
	PROC 15		15 min/day to 1 hour/day
	PROC 17	> 4 hours/day (liquid mixture)	
	PROC 18	> 4 hours/day (liquid mixture)	
PROC 19		15 min/day to 1 hour/day	

PROC26 is not foreseen in ECETOC TRA but it involves activities which are described by PROC 8a and 8b. Therefore the calculation with PROC 8a and 8b covers PROC 26.

**Technical and organisational conditions and measures**

See section 8 of Safety Data Sheet.

**Additional good practice advice beyond the REACH CSR (Chemical Safety Report)**

See sections 7 and 8 of Safety Data Sheet

**3. Exposure estimation and reference to its source**

**3.1 Environment exposure estimation and reference to its source**



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The table below gives the summary of the environment exposure estimation made in the Chemical Safety Report:

Compartments	Measured release (kg/d)
Aquatic	Negligible
Air (direct)	Small releases might be possible
Soil (direct only)	Negligible in all cases except agricultural use Max application use rates of soda ash as co-formulant in plant protection products: Professional agricultural: 0.0126 kg/ ha (tier 1 default use rate: 1 kg/ ha)

### 3.2 Workers exposure estimation and reference to its source

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Routes of exposure	Explanation / source of measured data (Characteristics, Duration Frequency, OC and RMM described above)	Industrial estimated exposure concentrations (mg/m <sup>3</sup> )	Professional estimated Exposure concentrations (mg/m <sup>3</sup> )
Dermal exposure	No local effects and no systemic availability after dermal contact	Not relevant	Not relevant
Inhalation exposure	PROC 1	0.01	0.0044 (liquid) 0.001 (solid)
	PROC 2	0.5 (solid)	0.044 (liquid) 0.1 (solid)
	PROC 3	1 (solid)	0.044 (liquid)
	PROC 4	5	0.044 (liquid) 5 (solid)
	PROC 7	0.022	
	PROC 8a	5	0.088 (liquid) 1 (solid)
	PROC 8b	5 (solid)	0.088 (liquid)
	PROC 9	5 (solid)	0.044 (liquid)
	PROC 10		0.44 (liquid mixture only)
	PROC 11		0.44 (liquid mixture only)
	PROC 13		0.088 (liquid mixture only)
	PROC 15	5 (solid)	0.088 (liquid mixture only)
	PROC 17	0.022 (liquid mixture only)	
	PROC 18	0.022 (liquid mixture)	
	PROC 19	5	0.088 (liquid) 1 (solid)
	PROC 22	1	
PROC 23	1		
	Professional agricultural with solid mixture, outdoor, no PPE (ECPA OWB Tier 1: default use rate)		0.142 (solid)

PROC 26 is not foreseen in ECETOC TRA but it involves activities which are described by PROC 8a and 8b. Therefore the calculation with PROC 8a and 8b covers PROC 26.

## 4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES



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4.1 Environment.

Predicted exposures are not expected to exceed the DNEL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

4.2 Health.

Predicted exposures are not expected to exceed the DNEL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.





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Substance: Sodium Carbonate ; EC : 207-838-8 ; CAS : 497-19-8

Exposure Scenario for communication:  
ES 5: Consumer use

## 0. General information

ES identifier	ES 5
Version no	01
Revision date	28.10.2010
EC #	207-838-8
CAS #	497-19-8

## 1. Use descriptor

Consumer use

**Market sector:** SU 21 Consumer uses: Private households (= general public = consumers)  
**Sector of use:** SU 21 Consumer uses: Private households (= general public = consumers)

**Environment:**  
Environmental Release Category: ERC 8 a/b/c/d/e/f; ERC 9 a/b.

**Product Category (PC):** No restriction (from PC 0 to PC 40)

**Process Category:** Not applicable

**Processes, tasks, activities covered**  
Cleaning activities

## 2. Conditions of use affecting exposure

### 2.0 Default Product Characteristics

Physical form of product/article	Solid or dissolved in water
Volatility	Not relevant
Dustiness	Medium for powdered detergents, low for household soda

### Mixture Article Concentration

Laundry detergents and surface cleaners: 30%  
Machine dish washing tablets: 45%  
Household soda (pure sodium carbonate decahydrate) : 37% content of sodium carbonate  
Surface cleaning sprays: 10%  
Air care products: 5% (PC 3)  
Furniture, floor and leather care: 10% (PC 31)

### 2.1. Control of environmental exposure:

Consumer use – ERC 8 a/b/c/d/e/f; ERC 9 a/b.

### Amounts used

Not relevant as the exposure is estimated to be negligible

### Frequency and duration of use

Not relevant as the exposure is estimated to be negligible

### Other given operational conditions affecting environmental exposure



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See sections 8 and 13 of Safety Data Sheet													
<b>Technical and organizational conditions and measures</b>													
See section 8 of Safety Data Sheet													
<b>Conditions and measures related to municipal sewage treatment plant</b>													
See section 13 of Safety Data Sheet													
<b>Conditions and measures related to external treatment of waste</b>													
See section 13 of Safety Data Sheet													
<b>Additional good practice advice beyond the REACH CSR (Chemical Safety Report)</b>													
See sections 6 and 13 of Safety Data Sheet													
<b>2.2. Control of consumers exposure</b>													
<b>Amounts used, frequency and duration of use</b>													
Amounts used	Household soda: 37 g/l (worst case)												
Frequency and duration of use	Household soda: one time per week (frequency) and 5 min (duration) (worst case)												
<b>Technical and organisational conditions and measures</b>													
<i>Keep out of reach of children and avoid contact with eyes. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.</i>													
<b>Additional good practice advice beyond the REACH CSR (Chemical Safety Report)</b>													
See sections 7 and 8 of Safety Data Sheet													
<b>3. Exposure estimation and reference to its source</b>													
<b>3.1 Environment exposure estimation and reference to its source</b>													
The table below gives the summary of the environment exposure estimation made in the Chemical Safety Report, referring to HERA (2005a) and to Specific Environmental Release Categories (SPERC) (AISE, 2010).													
<table border="1"> <thead> <tr> <th>Compartments</th> <th>Measured release (kg/d)</th> <th>Explanation / source of measured data</th> </tr> </thead> <tbody> <tr> <td>Aquatic</td> <td>Negligible</td> <td>HERA (2005a); see section 9.5.2.3.2</td> </tr> <tr> <td>Air (direct)</td> <td>Negligible</td> <td>Specific Environmental Release Categories (SPERC) (AISE, 2010)</td> </tr> <tr> <td>Soil (direct only)</td> <td>Negligible</td> <td>Specific Environmental Release Categories (SPERC) (AISE, 2010)</td> </tr> </tbody> </table>		Compartments	Measured release (kg/d)	Explanation / source of measured data	Aquatic	Negligible	HERA (2005a); see section 9.5.2.3.2	Air (direct)	Negligible	Specific Environmental Release Categories (SPERC) (AISE, 2010)	Soil (direct only)	Negligible	Specific Environmental Release Categories (SPERC) (AISE, 2010)
Compartments	Measured release (kg/d)	Explanation / source of measured data											
Aquatic	Negligible	HERA (2005a); see section 9.5.2.3.2											
Air (direct)	Negligible	Specific Environmental Release Categories (SPERC) (AISE, 2010)											
Soil (direct only)	Negligible	Specific Environmental Release Categories (SPERC) (AISE, 2010)											
<b>3.2 Consumers exposure estimation and reference to its source</b>													
Exposures have been calculated with the software tool REACT (Reach Exposure Assessment Consumer Tool) Long-term dermal exposure to consumers:													
<table border="1"> <thead> <tr> <th>Product category</th> <th>Ingredient fraction by weight</th> <th>Estimated uptake value (mg/kg bw per day)</th> </tr> </thead> <tbody> <tr> <td>Laundry regular (AISE C1, PC35), Powder</td> <td>0.3</td> <td>1.56E-02</td> </tr> <tr> <td>Laundry regular (AISE C1, PC35), Liquid</td> <td>0.3</td> <td>2.29E-02</td> </tr> </tbody> </table>		Product category	Ingredient fraction by weight	Estimated uptake value (mg/kg bw per day)	Laundry regular (AISE C1, PC35), Powder	0.3	1.56E-02	Laundry regular (AISE C1, PC35), Liquid	0.3	2.29E-02			
Product category	Ingredient fraction by weight	Estimated uptake value (mg/kg bw per day)											
Laundry regular (AISE C1, PC35), Powder	0.3	1.56E-02											
Laundry regular (AISE C1, PC35), Liquid	0.3	2.29E-02											



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Laundry compact (AISE C2, PC35), Powder	0.3	1.60E-02
Laundry compact (AISE C2, PC35), Liquid/Gel	0.3	2.29E-02
Laundry additives (AISE C4, PC35), Liquid Bleach	0.3	2.21E-02
Hand Dishwashing (AISE C5, PC35)	0.3	3.12E-04
Surface cleaners (AISE C7, PC35), Gel	0.3	4.29E-02

The negligible inhalation has been confirmed for the laundry washing scenario reported by HERA (2005a).

#### 4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

##### 4.1 Environment.

Predicted exposures are not expected to exceed the DNEL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

##### 4.2 Health.

Predicted exposures are not expected to exceed the DNEL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.