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

CALCIUM CHLORIDE 34% (E509) FOOD

Version 3.1 Print Date 01.11.2025

Revision date / valid from 31.10.2025

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

1.1. Product identifier

Trade name	:	CALCIUM CHLORIDE 34% (E509) FOOD
UFI	:	CQQ3-M03M-Q00Y-R1C9
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.
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**
Eye irritation	Category 2	---	H319

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	:	Warning	
Hazard statements	:	H319	Causes serious eye irritation.
Precautionary statements			
Prevention	:	P264 P280	Wash skin thoroughly after handling. Wear eye protection/ face protection.
Response	:	P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313	If eye irritation persists: Get medical advice/ attention.

Hazardous components which must be listed on the label:

- calcium chloride

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.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Chemical nature : Aqueous solution

Hazardous components	Amount [%]	Classification (REGULATION (EC) No 1272/2008)	
		Hazard class / Hazard category	Hazard statements
calcium chloride			
Index-No. : 017-013-00-2 CAS-No. : 10043-52-4 EC-No. : 233-140-8 EU REACH-Reg. No. : 01-2119494219-28-xxxx	>= 25 - <= 45	Eye Irrit.2	H319

For the full text of the H-Statements 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	: Remove to fresh air. If symptoms persist, call a physician.
In case of skin contact	: Wash off immediately with soap and plenty of water. If skin irritation persists, call a physician.
In case of eye contact	: Rinse immediately with plenty of water, also under the eyelids, for at least 5 minutes. Consult an eye specialist immediately. Go to an ophthalmic hospital if possible.
If swallowed	: Rinse mouth with water. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.
Protection of First Aid Responders	: First Aid responders should pay attention to self-protection and use the recommended protective clothing.

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	: irritant effects

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	:	The product itself does not burn. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	High volume water jet

5.2. Special hazards arising from the substance or mixture

Specific hazards during firefighting	:	Fire may cause evolution of: Irritant gases/vapours

5.3. Advice for firefighters

Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus.Wear personal protective equipment.
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.

6.2. Environmental precautions

Environmental precautions	:	Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration.

6.3. Methods and materials for containment and cleaning up

Methods and materials for containment and cleaning up	:	Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders). Keep in suitable, closed containers for disposal.
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 tightly closed. Use personal protective equipment. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. 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. Suitable materials for containers: Polypropylene; polyethylene; Unsuitable materials for containers: Aluminium
Advice on protection against fire and explosion	:	Normal measures for preventive fire protection.

Further information on storage conditions	:	Keep tightly closed in a dry and cool place.

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

Other Occupational Exposure Limit Values

(Additional) Information	:	Contains no substances with occupational exposure limit values.

Contains no substances with occupational exposure limit values.

Component:	**calcium chloride**	**CAS-No. 10043-52-4**

Derived No Effect Level (DNEL)/Derived Minimal Effect Level (DMEL)

DNEL Workers, Acute - local effects, Inhalation	:	10 mg/m3
DNEL Workers, Long-term - local effects, Inhalation	:	5 mg/m3
DNEL Consumers, Acute - local effects, Inhalation	:	5 mg/m3
DNEL Consumers, Long-term - local effects, Inhalation	:	2,5 mg/m3

Predicted No Effect Concentration (PNEC)

No PNEC value was derived.	:	

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).

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	:	Natural Rubber
Break through time	:	>= 480 min
Glove thickness	:	0,5 mm
Material	:	polychloroprene
Break through time	:	>= 480 min
Glove thickness	:	0,5 mm
Material	:	Nitrile rubber
Break through time	:	>= 480 min
Glove thickness	:	0,35 mm
Material	:	butyl-rubber
Break through time	:	>= 480 min
Glove thickness	:	0,5 mm
Material	:	Fluorinated rubber
Break through time	:	>= 480 min
Glove thickness	:	0,4 mm
Material	:	Polyvinylchloride
Break through time	:	>= 480 min
Glove thickness	:	0,5 mm

Eye protection

Advice	:	Tightly fitting safety goggles (EN166)

Skin and body protection

Protecting Clothes	:	Wear personal protective equipment.

Environmental exposure controls

General advice	:	Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Form	:	liquid
Physical state	:	liquid
Colour	:	colourless
Odour	:	odourless
Odour Threshold	:	Not applicable
Melting point/ range	:	ca. -46 °C 18 - 42% solution
Boiling point/boiling range	:	ca. 100 - 120 °C 18 - 42% solution
Flammability (solid, gas)	:	Not applicable Remarks: does not sustain combustion.
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	:	> 772 °C
Self-Accelerating decomposition temperature (SADT)	:	No data available
pH	:	10 - 11 (20 °C) Concentration: 100 % (formulated product)
Viscosity		
Viscosity, dynamic	:	ca. 2 - 10 mPa.s 18 - 42% solution
Viscosity, kinematic	:	No data available
Flow time	:	No data available
Solubility(ies)		
Water solubility	:	completely soluble
Solubility in other solvents	:	No data available

Dissolution Rate	:	No data available
Partition coefficient: n-octanol/water	:	Not applicable
Dispersion Stability	:	No data available
Vapour pressure	:	Not applicable
Relative density	:	No data available
Density	:	1,4 g/cm3 solution 40%
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.
Flammability (liquids)	:	Not applicable Remarks: does not sustain combustion.

SECTION 10: Stability and reactivity

10.1. Reactivity

Advice : No decomposition if stored and applied as directed.

10.2. Chemical stability

Advice : Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions : No dangerous reaction known under conditions of normal use.

10.4. Conditions to avoid

Conditions to avoid : Exposure to moistureProduct is hygroscopic.
Thermal decomposition : > 772 °C

10.5. Incompatible materials

Materials to avoid : Strong reducing agents, Strong oxidizing agents

10.6. Hazardous decomposition products

Hazardous decomposition : Fire may cause evolution of: Irritant gases/vapours
products

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

Please find this information in the listing of the component/components below in this section.

Inhalation

Please find this information in the listing of the component/components below in this section.

Dermal

Please find this information in the listing of the component/components below in this section.

Irritation

Skin

Result : Please find this information in the listing of the component/components below in this section.

Eyes

Result : Please find this information in the listing of the component/components below in this section.

Sensitisation

Result : Please find this information in the listing of the component/components below in this section.

CMR effects

CMR Properties

Carcinogenicity : Please find this information in the listing of the component/components below in this section.

Mutagenicity : Please find this information in the listing of the component/components below in this section.

Teratogenicity : Please find this information in the listing of the component/components below in this section.

Reproductive toxicity : Please find this information in the listing of the component/components below in this section.

Carcinogenicity

Please find this information in the listing of the

component/components below in this section.

Teratogenicity

Please find this information in the listing of the component/components below in this section.

Specific Target Organ Toxicity

Single exposure

Remarks : Please find this information in the listing of the component/components below in this section.

Repeated exposure

Remarks : Please find this information in the listing of the component/components below in this section.

Other toxic properties

Repeated dose toxicity

; Please find this information in the listing of the component/components below in this section.

Aspiration hazard

No data available

Component:	**calcium chloride**	**CAS-No. 10043-52-4**

Acute toxicity

Oral

LD50 : 2120 mg/kg body weight(Rat, male and female) (OECD Test Guideline 401)

Inhalation

No data available

Dermal

LD50 : > 5000 mg/kg body weight(Rabbit, male and female)

Irritation

Skin

Result : No skin irritation (Rabbit) (OECD Test Guideline 404)

Eyes

Result	:	Irritating to eyes. (Rabbit) (OECD Test Guideline 405)

Sensitisation

Result	:	Study scientifically not justified.

CMR effects

Carcinogenicity

It dissociates into ions that are present physiologically in relatively high levels in vertebrates. Therefore, a study is considered (scientifically) unnecessary.

CMR Properties

Carcinogenicity	:	Study scientifically not justified.
Mutagenicity	:	In vitro tests did not show mutagenic effects
Teratogenicity	:	Did not show teratogenic effects in animal experiments.
Reproductive toxicity	:	Study scientifically not justified.

Teratogenicity

NOAEL Maternal	:	169 mg/kg (Rabbit)(OECD Test Guideline 414)

Specific Target Organ Toxicity

Single exposure

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

Repeated exposure

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

Other toxic properties

Repeated dose toxicity

; It dissociates into ions that are present physiologically in relatively high levels in vertebrates. Therefore, a study is considered (scientifically) unnecessary.

Aspiration hazard

Not applicable,

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: calcium chloride CAS-No. 10043-52-4

Endocrine disrupting properties

Assessment Endocrine Disrupting Properties	:	The substance is identified as having endocrine disrupting properties according to Commission Regulation (EU) 2018/605 or Commission Delegated Regulation (EU) 2017/2100.

SECTION 12: Ecological information

12.1. Toxicity

Component: calcium chloride CAS-No. 10043-52-4

Acute toxicity

Fish

LC50	:	4.630 mg/l (Pimephales promelas (fathead minnow); 96 h) (static test; EPA 600/4-90/027)

Toxicity to daphnia and other aquatic invertebrates

NOEC	:	2.000 mg/l (Daphnia magna; 48 h) (static test; OECD Test Guideline 202)
LC50		2.400 mg/l (Daphnia magna; 48 h) (static test; OECD Test Guideline 202)

algae		
EC50	:	2900 mg/l (Pseudokirchneriella subcapitata (green algae); 72 h) (OECD Test Guideline 201)

Bacteria		
	:	Study scientifically unjustified.

12.2. Persistence and degradability

Component:	**calcium chloride**	**CAS-No. 10043-52-4**
Persistence and degradability		
Persistence		
Result	:	(Related to: Water) decomposition by hydrolysis.
Biodegradability		
Result	:	The methods for determining the biological degradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Component:	**calcium chloride**	**CAS-No. 10043-52-4**
Bioaccumulation		
Result	:	Bioaccumulation is not expected.

12.4. Mobility in soil

Component:	**calcium chloride**	**CAS-No. 10043-52-4**
Mobility		
Water	:	The product is water soluble.

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:	calcium chloride	CAS-No. 10043-52-4
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:	calcium chloride	CAS-No. 10043-52-4

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:	calcium chloride	CAS-No. 10043-52-4
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

Not dangerous goods for ADR, RID, IMDG and IATA.

14.1. UN number or ID number

Not applicable.

14.2. UN proper shipping name

Not applicable.

14.3. Transport hazard class(es)

Not applicable.

14.4. Packaging group

Not applicable.

14.5. Environmental hazards

Not applicable.

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. REACH, Annex XVII, Restrictions on manufacture, placing on the market and use of certain dangerous substances, 1907/2006/EC, as amended	:	Point Nos.: , 3; Listed Point Nos.: , 75; 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:	**calcium chloride**	**CAS-No. 10043-52-4**

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. 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
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.

Notification status calcium chloride:

Regulatory List	Notification	Notification number

AICS	YES	
DSL	YES	
EINECS	YES	233-140-8
ENCS (JP)	YES	(1)-176
IECSC	YES	
INSQ	YES	
ISHL (JP)	YES	(1)-176
KECI (KR)	YES	KE-04496
NZIOC	YES	HSR003389
ONT INV	YES	
PHARM (JP)	YES	
PICCS (PH)	YES	
TCSI	YES	
TH INV	YES	2827.20
TH INV	YES	55-1-00071
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.

H319	Causes serious eye irritation.

Full text of the Notes referred to under section 3.

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 : Supplier information and data from the "Database of registered

and sources for data		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	Use as an intermediate	3	1, 4, 5, 6b, 8, 9, 14	NA	1, 2, 3, 4, 6, 8a, 8b, 9, 15, 22, 23	6a	NA	ES1640
2	Formulation & (re)packing of substances and mixtures	3	1, 2, 4, 5, 6b, 8, 10, 11, 12, 13, 14, 15, 19, 20, 0	NA	1, 2, 3, 5, 6, 8a, 8b, 9, 14, 15	2	NA	ES1642
3	Industrial use	3	1, 2a	NA	1, 2, 5, 7, 8a, 8b, 9, 13, 19	4	NA	ES1646
4	Use of low dusty solids	3	0, 1, 2a, 4, 5, 6b, 8, 9, 10, 11, 12, 13, 14, 15, 19, 20	NA	1, 2, 3, 4, 5, 6, 7, 8a, 8b, 9, 10, 13	1, 2, 4, 6a	NA	ES1656
5	Use of low dusty solids	22	0, 1, 2a, 4, 5, 6b, 8, 9, 10, 11, 12, 13, 14, 15, 19, 20	NA	1, 2, 3, 4, 5, 6, 8a, 8b, 9, 10, 11, 13	8a, 8d	NA	ES1658
6	Professional use	22	1, 10, 19, 20, 0, 23	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 10, 11, 13, 15, 19, 20	8a, 8d	NA	ES1648
7	Use as processing aid	3	1, 2, 2b, 4, 5, 6b, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17	NA	1, 2, 3, 4, 6, 7, 8a, 8b, 9, 10, 13, 15, 22, 23	4	NA	ES1644
8	Use of aqueous solutions	3	0, 1, 2a, 4, 5, 6b, 8, 9, 10, 11, 12, 13, 14, 15, 19, 20	NA	1, 2, 3, 4, 5, 6, 7, 8a, 8b, 9, 10, 13, 14, 15	1, 2, 4, 6a	NA	ES1652
9	Use of aqueous solutions	22	0, 1, 2a, 4, 5,	NA	1, 2, 3, 4, 5, 6, 8a,	8a, 8d	NA	ES1654

			6b, 8, 9, 10, 11, 12, 13, 14, 15, 19, 20		8b, 9, 10, 11, 13, 14, 15			
10	Consumer use	21	NA	0, 2, 4, 12, 16, 27, 35, 37	NA	8a, 8d	NA	ES1660

1. Short title of Exposure Scenario 1: Use as an intermediate		
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 SU4: Manufacture of food products SU5: Manufacture of textiles, leather, fur SU6b: Manufacture of pulp, paper and paper products SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals SU14: Manufacture of basic metals, including alloys	
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 PROC6: Calendering operations 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) PROC15: Use as laboratory reagent PROC22: Potentially closed processing operations with minerals/metals at elevated temperature; industrial setting PROC23: Open processing and transfer operations with minerals/metals at elevated temperature	
Environmental Release Categories	ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)	
2.1 Contributing scenario controlling environmental exposure for: ERC6a		
As no environmental hazard was identified no environmental related exposure assessment and risk characterization was performed.		
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC6, PROC8a, PROC8b, PROC9, PROC15, PROC22, PROC23		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	Solid, medium dustiness
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
Technical conditions and	General measures	Clean up contamination/spills as soon as they

measures to control dispersion from source towards the worker	applicable to all activities	occur.
	provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC4, PROC6, PROC8a, PROC8b, PROC9)	
	Equipment cleaning and maintenance Non-dedicated facility	Drain or remove substance from equipment prior to break-in or maintenance.(PROC8a)
	General exposures (closed systems) Elevated temperature	Provide extract ventilation to points where emissions occur.(Process temperature > melting point of substance PROC22)
	Material transfers (open systems) Batch processes at elevated temperatures	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).(Process temperature > melting point of substance PROC23)
Organisational measures to prevent /limit releases, dispersion and exposure	General measures applicable to all activities	Provide basic employee training to prevent /minimise exposures and to report any skin problems that may develop.
Conditions and measures related to personal protection, hygiene and health evaluation	General measures applicable to all activities	Avoid direct skin contact with product. Wear suitable gloves tested to EN374 during the activities where the skin contact is possible. Wash off any skin contamination immediately. Use suitable eye protection.
	In case of dust or aerosol formation: use respiratory protection with approved filter (P2) Respiratory protection complying with EN 143.(PROC4, PROC6, PROC8a, PROC8b, PROC9, PROC22, PROC23)	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

ECETOC TRA

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,01mg/m³	< 0,01
PROC1	---	Worker - inhalative, long-term - local	0,02mg/m³	< 0,01
PROC2, PROC15	---	Worker - inhalative, long-term - systemic	0,50mg/m³	0,10
PROC2, PROC15	---	Worker - inhalative, long-term - local	1,00mg/m³	0,10
PROC3,	---	Worker - inhalative, long-	1,00mg/m³	0,20

PROC8a		term - systemic		
PROC3, PROC8a	---	Worker - inhalative, long-term - local	2,00mg/m³	0,20
PROC4, PROC6, PROC8b, PROC9	---	Worker - inhalative, long-term - systemic	3,50mg/m³	0,70
PROC4, PROC6, PROC8b, PROC9	---	Worker - inhalative, long-term - local	7,00mg/m³	0,70
PROC8a	Bulk open loading and unloading, Non-dedicated facility	Worker - inhalative, long-term - systemic	3,50mg/m³	0,70
PROC8a	Bulk open loading and unloading, Non-dedicated facility	Worker - inhalative, long-term - local	7,00mg/m³	0,70
PROC8b	Bulk closed loading and unloading, Dedicated facility	Worker - inhalative, long-term - systemic	3,50mg/m³	0,70
PROC8b	Bulk closed loading and unloading, Dedicated facility	Worker - inhalative, long-term - local	7,00mg/m³	0,70
PROC8a	Equipment cleaning and maintenance, Non-dedicated facility	Worker - inhalative, long-term - systemic	4,00mg/m³	0,80
PROC8a	Equipment cleaning and maintenance, Non-dedicated facility	Worker - inhalative, long-term - local	8,00mg/m³	0,80
PROC22	General exposures (closed systems), Elevated temperature, Low fugacity (pt<mp)	Worker - inhalative, long-term - systemic	3,0mg/m³	0,6
PROC22	General exposures (closed systems), Elevated temperature, High fugacity (pt>mp), Low fugacity (pt<mp)	Worker - inhalative, long-term - local	6,00mg/m³	0,60
PROC22	General exposures (closed systems), Elevated temperature, High fugacity (pt>mp)	Worker - inhalative, long-term - systemic	1,00mg/m³	0,20
PROC22	General exposures (closed systems), Elevated temperature, High fugacity (pt>mp)	Worker - inhalative, long-term - local	2,00mg/m³	0,20
PROC23	Material transfers, (open systems), Batch	Worker - inhalative, long-term - systemic	3,00mg/m³	0,60

	processes at elevated temperatures, Low fugacity (pt<mp)			
PROC23	Material transfers, (open systems), Batch processes at elevated temperatures, Low fugacity (pt<mp)	Worker - inhalative, long-term - local	6,00mg/m³	0,60
PROC23	Material transfers, (open systems), Batch processes at elevated temperatures, High fugacity (pt>mp)	Worker - inhalative, long-term - systemic	3,00mg/m³	0,60
PROC23	Material transfers, (open systems), Batch processes at elevated temperatures, High fugacity (pt>mp)	Worker - inhalative, long-term - local	6,00mg/m³	0,60
PROC1	Storage, General exposures (closed systems)	Worker - inhalative, long-term - systemic	0,01mg/m³	< 0,01
PROC1	Storage, General exposures (closed systems)	Worker - inhalative, long-term - local	0,02mg/m³	< 0,01

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

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For scaling see: http://www.ecetoc.org/tra
Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
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

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 2: Formulation & (re)packing of substances and mixtures	
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) SU4: Manufacture of food products SU5: Manufacture of textiles, leather, fur SU6b: Manufacture of pulp, paper and paper products SU8: Manufacture of bulk, large scale chemicals (including petroleum products) 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 SU13: Manufacture of other non-metallic mineral products, e.g. plasters, cement SU14: Manufacture of basic metals, including alloys SU15: Manufacture of fabricated metal products, except machinery and equipment SU19: Building and construction work SU20: Health services SU0: Other
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) PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC6: Calendering operations 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) PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelettisation PROC15: Use as laboratory reagent
Environmental Release Categories	ERC2: Formulation of preparations

2.1 Contributing scenario controlling environmental exposure for: ERC2

As no environmental hazard was identified no environmental related exposure assessment and risk characterization was performed.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC14, PROC15

Product characteristics	Concentration of the Substance in	Covers percentage substance in the product up to 100 % (unless stated differently).

	Mixture/Article	
	Physical Form (at time of use)	Solid, medium dustiness
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	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	General measures applicable to all activities	Clean up contamination/spills as soon as they occur.
	provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC5, PROC6, PROC8a, PROC8b, PROC9)	
	Equipment cleaning and maintenance Non-dedicated facility	Drain or remove substance from equipment prior to break-in or maintenance.(PROC8a)
Organisational measures to prevent /limit releases, dispersion and exposure	General measures applicable to all activities	Provide basic employee training to prevent /minimise exposures and to report any skin problems that may develop.
Conditions and measures related to personal protection, hygiene and health evaluation	General measures applicable to all activities	Avoid direct skin contact with product. Wear suitable gloves tested to EN374 during the activities where the skin contact is possible. Wash off any skin contamination immediately. Use suitable eye protection.
	In case of dust or aerosol formation: use respiratory protection with approved filter (P2) Respiratory protection complying with EN 143.(PROC5, PROC6, PROC8a, PROC8b, PROC9)	
	Process sampling Non-dedicated facility	Avoid carrying out operation for more than 1 hour.(PROC8a)

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

ECETOC TRA

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	General exposures	Worker - inhalative, long-term - systemic	0,01mg/m³	< 0,01
PROC1	General exposures	Worker - inhalative, long-term - local	0,02mg/m³	< 0,01
PROC2, PROC15	General exposures, Process sampling	Worker - inhalative, long-term - systemic	0,50mg/m³	0,10
PROC2,	General exposures,	Worker - inhalative, long-	1,00mg/m³	0,10

PROC15	Process sampling	term - local		
PROC3, PROC14	---	Worker - inhalative, long-term - systemic	1,00mg/m³	0,20
PROC3, PROC14	---	Worker - inhalative, long-term - local	2,00mg/m³	0,20
PROC5, PROC6, PROC8a, PROC8b, PROC9	---	Worker - inhalative, long-term - systemic	3,50mg/m³	0,70
PROC5, PROC6, PROC8a, PROC8b, PROC9	---	Worker - inhalative, long-term - local	7,00mg/m³	0,70
PROC8a	Process sampling, Non-dedicated facility	Worker - inhalative, long-term - systemic	1,00mg/m³	0,20
PROC8a	Equipment cleaning and maintenance, Non-dedicated facility	Worker - inhalative, long-term - local	8,00mg/m³	0,80
PROC8a	Process sampling, Non-dedicated facility	Worker - inhalative, long-term - local	2,00mg/m³	0,20
PROC8a	Equipment cleaning and maintenance, Non-dedicated facility	Worker - inhalative, long-term - systemic	4,00mg/m³	0,80

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

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For scaling see: http://www.ecetoc.org/tra
Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
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

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 3: Industrial use		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Sectors of end-use	SU1: Agriculture, forestry, fishery SU2a: Mining (without offshore industries)	
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) 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	
2.1 Contributing scenario controlling environmental exposure for: ERC4		
Activity	De-icing agent	
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Annual tonnage of road salt	0,25 tonnes/km
	Fraction in road salt	1
	Annual tonnage	0,25 tonnes/km
Frequency and duration of use	Continuous exposure	25 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data. Other information	Spreading width (m)10
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0 %
	Emission or Release Factor: Soil	1 %
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and	Soil	Avoid spilling salt directly onto plants.

releases to soil Organizational measures to prevent/limit release from the site		
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater.	

2.2 Contributing scenario controlling environmental exposure for: ERC4

Activity	De-icing agent	
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 20%
Amount used	Annual tonnage of road salt	1,5 tonnes/km
	Fraction in road salt	0,06
	Annual tonnage	0,09 tonnes/km
Frequency and duration of use	Continuous exposure	25 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data. Other information	Spreading width (m)10
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0 %
	Emission or Release Factor: Soil	1 %
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	Soil	Avoid spilling salt directly onto plants.
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater.	

2.3 Contributing scenario controlling environmental exposure for: ERC4

Activity	De-icing agent	
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
Amount used	Annual tonnage of road salt	0,8 tonnes/km
	Fraction in road salt	0,35
	Annual tonnage	0,28 tonnes/km

Frequency and duration of use	Continuous exposure	25 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data. Other information	Spreading width (m)10
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0 %
	Emission or Release Factor: Soil	1 %
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	Soil	Avoid spilling salt directly onto plants.
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater.	

2.4 Contributing scenario controlling environmental exposure for: ERC4

Activity	De-icing agent	
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 80%
Amount used	Annual tonnage of road salt	3 tonnes/km
	Fraction in road salt	0,8
	Annual tonnage	2,4 tonnes/km
Frequency and duration of use	Continuous exposure	3 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data. Other information	Spreading width (m)10
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0 %
	Emission or Release Factor: Soil	1 %
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and	Soil	Avoid spilling salt directly onto plants.

releases to soil Organizational measures to prevent/limit release from the site		
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater.	

2.5 Contributing scenario controlling environmental exposure for: ERC4

Activity	Dust suppression	
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 37%
Amount used	Annual tonnage of road salt	3 tonnes/km
	Fraction in road salt	0,37
	Annual tonnage	1,11 tonnes/km
Frequency and duration of use	Continuous exposure	3 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data. Other information	Spreading width (m)10
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0 %
	Emission or Release Factor: Soil	1 %
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	Soil	Avoid spilling salt directly onto plants.
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater.	

2.6 Contributing scenario controlling environmental exposure for: ERC4

Activity	Dust suppression	
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 80%
Amount used	Annual tonnage of road salt	3 tonnes/km
	Fraction in road salt	0,8
	Annual tonnage	2,4 tonnes/km

Frequency and duration of use	Continuous exposure	3 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data. Other information	Spreading width (m)10
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0 %
	Emission or Release Factor: Soil	1 %
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	Soil	Avoid spilling salt directly onto plants.
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater.	
2.7 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC13, PROC19		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	Solid, medium dustiness
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
	Exposure duration per day	60 min(PROC7)
Other operational conditions affecting workers exposure	Outdoor use.	
	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	General measures applicable to all activities	Clean up contamination/spills as soon as they occur.
	Spraying	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.(PROC7)
Organisational measures to prevent /limit releases, dispersion and exposure	General measures applicable to all activities	Provide basic employee training to prevent /minimise exposures and to report any skin problems that may develop.
Conditions and measures related to personal protection, hygiene and health evaluation	General measures applicable to all activities	Avoid direct skin contact with product. Wear suitable gloves tested to EN374 during the activities where the skin contact is possible. Wash off any skin contamination immediately.

	Use suitable eye protection.
Spraying	In case of dust or aerosol formation: use respiratory protection with approved filter (P2) Respiratory protection complying with EN 143.(PROC7)

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

ECETOC TRA

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC2	---	Worker - inhalative, long-term - systemic	< 0,01mg/m³	< 0,01
PROC1, PROC2	---	Worker - inhalative, long-term - local	0,01mg/m³	< 0,01
PROC5, PROC8a, PROC8b, PROC9, PROC19	---	Worker - inhalative, long-term - systemic	3,50mg/m³	0,70
PROC5, PROC8a, PROC8b, PROC9, PROC19	---	Worker - inhalative, long-term - local	7,00mg/m³	0,70
PROC7	---	Worker - inhalative, long-term - systemic	2,00mg/m³	0,40
PROC7	---	Worker - inhalative, long-term - local	4,00mg/m³	0,40
PROC7	Outdoor use.	Worker - inhalative, long-term - systemic	2,80mg/m³	0,56
PROC7	Outdoor use.	Worker - inhalative, long-term - local	5,60mg/m³	0,56
PROC13	---	Worker - inhalative, long-term - systemic	0,70mg/m³	0,14
PROC13	---	Worker - inhalative, long-term - local	1,40mg/m³	0,14

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

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For scaling see: http://www.ecetoc.org/tra
Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
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

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 4: Use of low dusty solids	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU0: Other SU1: Agriculture, forestry, fishery SU2a: Mining (without offshore industries) SU4: Manufacture of food products SU5: Manufacture of textiles, leather, fur SU6b: Manufacture of pulp, paper and paper 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 SU13: Manufacture of other non-metallic mineral products, e.g. plasters, cement SU14: Manufacture of basic metals, including alloys SU15: Manufacture of fabricated metal products, except machinery and equipment SU19: Building and construction work SU20: Health services
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) PROC6: Calendering operations PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring
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)

2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2, ERC4, ERC6a
As no environmental hazard was identified no environmental related exposure assessment and risk characterization

was performed.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	Solid, low dustiness
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	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	General measures applicable to all activities	Clean up contamination/spills as soon as they occur.
Organisational measures to prevent /limit releases, dispersion and exposure	General measures applicable to all activities	Provide basic employee training to prevent /minimise exposures and to report any skin problems that may develop.
Conditions and measures related to personal protection, hygiene and health evaluation	General measures applicable to all activities	Avoid direct skin contact with product. Wear suitable gloves tested to EN374 during the activities where the skin contact is possible. Wash off any skin contamination immediately. Use suitable eye protection.

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

ECETOC TRA

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13	worst-case	Worker - inhalative, long-term - systemic	1,00mg/m³	0,20
PROC1, PROC2, PROC3, PROC4, PROC5, PROC6,	worst-case	Worker - inhalative, long-term - local	2,00mg/m³	0,20

PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13				

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

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For scaling see: http://www.ecetoc.org/tra
Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
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

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 5: Use of low dusty solids	
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sectors of end-use	SU0: Other SU1: Agriculture, forestry, fishery SU2a: Mining (without offshore industries) SU4: Manufacture of food products SU5: Manufacture of textiles, leather, fur SU6b: Manufacture of pulp, paper and paper 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 SU13: Manufacture of other non-metallic mineral products, e.g. plasters, cement SU14: Manufacture of basic metals, including alloys SU15: Manufacture of fabricated metal products, except machinery and equipment SU19: Building and construction work SU20: Health services
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) PROC6: Calendering operations PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

As no environmental hazard was identified no environmental related exposure assessment and risk characterization was performed.

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

PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	Solid, low dustiness
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	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	General measures applicable to all activities	Clean up contamination/spills as soon as they occur.
Organisational measures to prevent /limit releases, dispersion and exposure	General measures applicable to all activities	Provide basic employee training to prevent/minimize exposures
Conditions and measures related to personal protection, hygiene and health evaluation	General measures applicable to all activities	Avoid direct skin contact with product. Wear suitable gloves tested to EN374 during the activities where the skin contact is possible. Wash off any skin contamination immediately. Use suitable eye protection.

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

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Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13	worst-case	Worker - inhalative, long-term - local	2,00mg/m³	0,20
PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9,	worst-case	Worker - inhalative, long-term - systemic	1,00mg/m³	0,20

PROC10, PROC11, PROC13				

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

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For scaling see: http://www.ecetoc.org/tra
Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
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

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 6: Professional use	
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sectors of end-use	SU1: Agriculture, forestry, fishery SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys) SU19: Building and construction work SU20: Health services SU0: Other SU23: Electricity, steam, gas water supply and sewage treatment
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a

As no environmental hazard was identified no environmental related exposure assessment and risk characterization was performed.

2.2 Contributing scenario controlling environmental exposure for: ERC8d

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Annual tonnage of road salt	0,25 tonnes/km
	Fraction in road salt	1
	Annual tonnage	0,25 tonnes/km

Frequency and duration of use	Continuous exposure	25 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data. Other information	Spreading width (m)10
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0 %
	Emission or Release Factor: Soil	1 %
	Outdoor use.	
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	Soil	Avoid spilling salt directly onto plants.
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater.	

2.3 Contributing scenario controlling environmental exposure for: ERC8d

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 20%
Amount used	Annual tonnage of road salt	1,5 tonnes/km
	Fraction in road salt	0,06
	Annual tonnage	0,09 tonnes/km
Frequency and duration of use	Continuous exposure	25 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data. Other information	Spreading width (m)10
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0 %
	Emission or Release Factor: Soil	1 %
	Outdoor use.	
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit	Soil	Avoid spilling salt directly onto plants.

discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site		
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater.	

2.4 Contributing scenario controlling environmental exposure for: ERC8d

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
Amount used	Annual tonnage of road salt	0,8 tonnes/km
	Fraction in road salt	0,35
	Annual tonnage	0,28 tonnes/km
Frequency and duration of use	Continuous exposure	25 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data. Other information	Spreading width (m)10
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0 %
	Emission or Release Factor: Soil	1 %
	Outdoor use.	
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	Soil	Avoid spilling salt directly onto plants.
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater.	

2.5 Contributing scenario controlling environmental exposure for: ERC8d

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 80%
Amount used	Annual tonnage of road salt	3 tonnes/km
	Fraction in road salt	0,8
	Annual tonnage	2,4 tonnes/km

Frequency and duration of use	Continuous exposure	3 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data. Other information	Spreading width (m)10
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0 %
	Emission or Release Factor: Soil	1 %
	Outdoor use.	
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	Soil	Avoid spilling salt directly onto plants.
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater.	

2.6 Contributing scenario controlling environmental exposure for: ERC8d

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 37%
Amount used	Annual tonnage of road salt	3 tonnes/km
	Fraction in road salt	0,37
	Annual tonnage	1,11 tonnes/km
Frequency and duration of use	Continuous exposure	3 days/year, Dispersive use.
Environment factors not influenced by risk management	Other data. Other information	Spreading width (m)10
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0 %
	Emission or Release Factor: Soil	1 %
	Outdoor use.	
Technical conditions and measures at process level (source) to prevent release Technical onsite conditions and measures to reduce or limit	Soil	Avoid spilling salt directly onto plants.

discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site		
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater.	
2.7 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC15, PROC19, PROC20		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	Solid, medium dustiness
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor use.	
	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	General measures applicable to all activities	Clean up contamination/spills as soon as they occur.
	provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC15, PROC19)	
	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.(PROC11)	
Organisational measures to prevent /limit releases, dispersion and exposure	General measures applicable to all activities	Provide basic employee training to prevent /minimise exposures and to report any skin problems that may develop.
Conditions and measures related to personal protection, hygiene and health evaluation	General measures applicable to all activities	Avoid direct skin contact with product. Wear suitable gloves tested to EN374 during the activities where the skin contact is possible. Wash off any skin contamination immediately. Use suitable eye protection.
	In case of dust or aerosol formation: use respiratory protection with approved filter (P2) Respiratory protection complying with EN 143.(PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC15, PROC19)	
2.8 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC19, PROC20		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	Solid, medium dustiness
Frequency and duration of use	Exposure duration per day	60 min(PROC11)

	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Outdoor use.	
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
	Avoid carrying out activities involving exposure for more than 1 hour.(PROC11)	
Technical conditions and measures to control dispersion from source towards the worker	General measures applicable to all activities	Clean up contamination/spills as soon as they occur.
	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.(PROC11)	
Organisational measures to prevent /limit releases, dispersion and exposure	General measures applicable to all activities	Provide basic employee training to prevent /minimise exposures and to report any skin problems that may develop.
Conditions and measures related to personal protection, hygiene and health evaluation	General measures applicable to all activities	Avoid direct skin contact with product. Wear suitable gloves tested to EN374 during the activities where the skin contact is possible. Wash off any skin contamination immediately. Use suitable eye protection.
	Respiratory protection complying with EN 143. Particle filter:P2(PROC11)	

3. Exposure estimation and reference to its source

Environment

Used EUSES model.

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC8d	De-icing agent, application as solution, (amount of 30% in solution)	---	Deposition volume	9g/cm²	0,060
ERC8d	De-icing agent, application as liquid brine, (max. 35% solution)	---	Deposition volume	28g/cm²	0,187
ERC8d	De-icing agent, application as solid, (< 100%)	---	Deposition volume	25g/cm²	0,167
ERC8d	Dust suppression, application as solid, (< 80%)	---	Deposition volume	100g/cm²	0,667
ERC8d	Dust suppression, application as solution, (< 37%)	---	Deposition volume	111g/cm²	0,740

ERC8d	De-icing agent, application as solution, (amount of 30% in solution), High traffic areas	---	Deposition volume	45g/cm²	0,300
ERC8d	De-icing agent, application as solid, (< 100%), High traffic areas	---	Deposition volume	125g/cm²	0,833
ERC8d	De-icing agent, application as liquid brine, (max. 35% solution), High traffic areas	---	Deposition volume	140g/cm²	0,933

Workers

ECETOC TRA

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,10mg/m³	0,02
PROC1	---	Worker - inhalative, long-term - local	0,20mg/m³	0,02
PROC2, PROC20	---	Worker - inhalative, long-term - systemic	1,00mg/m³	0,20
PROC2, PROC20	---	Worker - inhalative, long-term - local	2,00mg/m³	0,20
PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC15, PROC19	---	Worker - inhalative, long-term - systemic	3,50mg/m³	0,70
PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC15, PROC19	---	Worker - inhalative, long-term - local	7,00mg/m³	0,70
PROC2	---	Worker - inhalative, long-term - systemic	0,07mg/m³	0,01

PROC2	---	Worker - inhalative, long-term - local	0,14mg/m³	0,01
PROC2, PROC20	---	Worker - inhalative, long-term - systemic	0,70mg/m³	0,14
PROC2, PROC20	---	Worker - inhalative, long-term - local	1,40mg/m³	0,14
PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC19	---	Worker - inhalative, long-term - systemic	3,50mg/m³	0,70
PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC19	---	Worker - inhalative, long-term - local	7,00mg/m³	0,70
PROC11	---	Worker - inhalative, long-term - systemic	1,40mg/m³	0,28
PROC11	---	Worker - inhalative, long-term - local	2,80mg/m³	0,28
PROC11	---	Worker - inhalative, long-term - systemic	2,8mg/m³	0,56
PROC11	---	Worker - inhalative, long-term - local	5,60mg/m³	0,56

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

The environmental emission has been evaluated using EUSES 2.1 (http://ecb.jrc.ec.europa.eu/euses), in which default values have been used, unless otherwise indicated.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For scaling see: http://www.ecetoc.org/tra
Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
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

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 7: Use as processing aid	
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) SU2b: Offshore industries SU4: Manufacture of food products SU5: Manufacture of textiles, leather, fur SU6b: Manufacture of pulp, paper and paper 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 SU13: Manufacture of other non-metallic mineral products, e.g. plasters, cement 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
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 PROC6: Calendering operations PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent PROC22: Potentially closed processing operations with minerals/metals at elevated temperature; industrial setting PROC23: Open processing and transfer operations with minerals/metals at elevated temperature
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

As no environmental hazard was identified no environmental related exposure assessment and risk characterization was performed.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC15, PROC22, PROC23

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	Solid, medium dustiness
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	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	General measures applicable to all activities	Clean up contamination/spills as soon as they occur.
	Spraying	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.(PROC7)
	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).(PROC4, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC22, PROC23)	
Organisational measures to prevent /limit releases, dispersion and exposure	General measures applicable to all activities	Provide basic employee training to prevent /minimise exposures and to report any skin problems that may develop.
Conditions and measures related to personal protection, hygiene and health evaluation	General measures applicable to all activities	Avoid direct skin contact with product. Wear suitable gloves tested to EN374 during the activities where the skin contact is possible. Wash off any skin contamination immediately. Use suitable eye protection.
	In case of dust or aerosol formation: use respiratory protection with approved filter (P2) Respiratory protection complying with EN 143.(PROC4, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC22, PROC23)	
	Process sampling Non-dedicated facility	Avoid carrying out operation for more than 4 hours.(PROC8a)

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

ECETOC TRA

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - systemic	0,01mg/m³	< 0,01
PROC1	---	Worker - inhalative, long-term - local	0,02mg/m³	< 0,01
PROC2, PROC15	---	Worker - inhalative, long-term - systemic	0,50mg/m³	0,10
PROC2, PROC15	---	Consumer - inhalative, long-term - local	1,00mg/m³	0,10
PROC3, PROC13	---	Worker - inhalative, long-term - systemic	1,00mg/m³	0,20
PROC3, PROC13	---	Worker - inhalative, long-term - local	2,00mg/m³	0,20
PROC4, PROC6, PROC8a, PROC8b, PROC9, PROC10	---	Worker - inhalative, long-term - systemic	3,50mg/m³	0,70
PROC4, PROC6, PROC8a, PROC8b, PROC9, PROC10	---	Worker - inhalative, long-term - local	7,00mg/m³	0,70
PROC7	---	Worker - inhalative, long-term - systemic	2,00mg/m³	0,40
PROC7	---	Worker - inhalative, long-term - local	4,00mg/m³	0,40
PROC8a	Equipment maintenance, cleaning	Worker - inhalative, long-term - systemic	4,00mg/m³	0,80
PROC8a	Equipment maintenance, cleaning	Worker - inhalative, long-term - local	8,00mg/m³	0,80
PROC8a	---	Worker - inhalative, long-term - systemic	1,00mg/m³	0,20
PROC8a	---	Worker - inhalative, long-term - local	2,00mg/m³	0,20
PROC22, PROC23	---	Worker - inhalative, long-term - systemic	3,00mg/m³	0,60
PROC22, PROC23	---	Worker - inhalative, long-term - local	6,00mg/m³	0,60

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

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For scaling see: http://www.ecetoc.org/tra
Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
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

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 8: Use of aqueous solutions	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU0: Other SU1: Agriculture, forestry, fishery SU2a: Mining (without offshore industries) SU4: Manufacture of food products SU5: Manufacture of textiles, leather, fur SU6b: Manufacture of pulp, paper and paper 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 SU13: Manufacture of other non-metallic mineral products, e.g. plasters, cement SU14: Manufacture of basic metals, including alloys SU15: Manufacture of fabricated metal products, except machinery and equipment SU19: Building and construction work SU20: Health services
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) PROC6: Calendering operations PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelettisation 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)

2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2, ERC4, ERC6a

As no environmental hazard was identified no environmental related exposure assessment and risk characterization was performed.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	< 0,1 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	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	General measures applicable to all activities	Clean up contamination/spills as soon as they occur.
Organisational measures to prevent /limit releases, dispersion and exposure	General measures applicable to all activities	Provide basic employee training to prevent /minimise exposures and to report any skin problems that may develop.
Conditions and measures related to personal protection, hygiene and health evaluation	General measures applicable to all activities	Avoid direct skin contact with product. Wear suitable gloves tested to EN374 during the activities where the skin contact is possible. Wash off any skin contamination immediately. Use suitable eye protection.

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

ECETOC TRA

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9,	worst-case	Worker - inhalative, long-term - systemic	1,00mg/m³	0,20

PROC10, PROC13, PROC14, PROC15				
PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15	worst-case	Worker - inhalative, long-term - local	2,00mg/m³	0,20

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

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For scaling see: http://www.ecetoc.org/tra
Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
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

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 9: Use of aqueous solutions	
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sectors of end-use	SU0: Other SU1: Agriculture, forestry, fishery SU2a: Mining (without offshore industries) SU4: Manufacture of food products SU5: Manufacture of textiles, leather, fur SU6b: Manufacture of pulp, paper and paper 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 SU13: Manufacture of other non-metallic mineral products, e.g. plasters, cement SU14: Manufacture of basic metals, including alloys SU15: Manufacture of fabricated metal products, except machinery and equipment SU19: Building and construction work SU20: Health services
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) PROC6: Calendering operations PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelettisation PROC15: Use as laboratory reagent
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d
As no environmental hazard was identified no environmental related exposure assessment and risk characterization

was performed.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	< 0,1 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	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	General measures applicable to all activities	Clean up contamination/spills as soon as they occur.
Organisational measures to prevent /limit releases, dispersion and exposure	General measures applicable to all activities	Provide basic employee training to prevent /minimise exposures and to report any skin problems that may develop.
Conditions and measures related to personal protection, hygiene and health evaluation	General measures applicable to all activities	Avoid direct skin contact with product. Wear suitable gloves tested to EN374 during the activities where the skin contact is possible. Wash off any skin contamination immediately. Use suitable eye protection.

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

ECETOC TRA

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15	worst-case	Worker - inhalative, long-term - local	1,00mg/m³	0,20

PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15	worst-case	Worker - inhalative, long-term - local	2,00mg/m³	0,20

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

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For scaling see: http://www.ecetoc.org/tra
Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
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

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 10: Consumer use		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC0: Other products: PC2: Adsorbents PC4: Anti-freeze and de-icing products PC12: Lawn and garden preparations, including fertilizers (- Fertilizers) PC16: Heat transfer fluids PC27: Plant protection products PC35: Washing and cleaning products (including solvent based products) PC37: Water treatment chemicals	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d		
As no environmental hazard was identified no environmental related exposure assessment and risk characterization was performed.		
2.2 Contributing scenario controlling consumer exposure for: PC0, PC2, PC4, PC12, PC16, PC37		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Amount used per event	50 kg
Frequency and duration of use	Frequency of use	24 Hours/event
	Frequency of use	365 days/year
Human factors not influenced by risk management	Release area	125 m²
	Breathing rate	32,9 m3/day
Other given operational conditions affecting consumers exposure	Room size	1 m3
	Ventilation rate per hour	0,6
	Covers use at ambient temperatures.	
2.3 Contributing scenario controlling consumer exposure for: PC27, PC35		
Activity	Spraying	
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 45%
Frequency and duration of use	Spray Duration	10 min
Other given operational conditions affecting consumers exposure	Room size	58 m3
Conditions and measures related to protection of consumer (e.g.	Consumer Measures	Ensure spraying away from persons.

behavioural advice, personal protection and hygiene)	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Consumers

ECETOC TRA

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC0, PC2, PC4, PC9b, PC12, PC16, PC27, PC35, PC37	---	Consumer - inhalative, long-term - systemic	< 0,01mg/m³	< 0,01
PC0, PC2, PC4, PC9b, PC12, PC16, PC27, PC35, PC37	---	Consumer - inhalative, long-term - local	0,005mg/m³	< 0,01
PC12	Spraying	Consumer - inhalative, long-term - systemic	0,69mg/m³	0,14
PC12	Spraying	Consumer - inhalative, long-term - local	0,687mg/m³	0,27
PC27	Spraying	Consumer - inhalative, long-term - systemic	0,69mg/m³	0,14
PC27	Spraying	Consumer - inhalative, long-term - local	0,687mg/m³	0,27

K35100 has been used to describe the product category.

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

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For scaling see: http://www.ecetoc.org/tra
Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
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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