BRENNTAG

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

CITRIC ACID ANH 12-40 MESH / BB 500 KG

Version 4.0 Print Date 06.11.2024

Revision date / valid from 13.06.2023

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

1.1. Product identifier

Trade name	:	CITRIC ACID ANH 12-40 MESH / BB 500 KG
Substance name	:	citric acid
CAS-No.	:	77-92-9
EC-No.	:	201-069-1
EU REACH-Reg. No.	:	01-2119457026-42-xxxx

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., Food/ feedstuff additives, Pharmaceutical industry
Use of the Substance/Mixture	:	
Uses advised against	:	At this moment we have not identified any uses advised against
Remarks	:	
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 Nordic AB Hyllie Stationstorg 31 SE 215 32 Malmö
Telephone	:	+46 (0)40-28 73 00
Telefax	:	+46 (0)40-93 7015
E-mail address	:	se-sds@brenntag.com
Responsible/issuing person	:	Environment & Quality

1.4. Emergency telephone number

Emergency telephone number	:	In case of personal injury call: Denmark: +45 82 12 12 12 Giftlinien, Bispebjerg Hospital Finland: +358 9 471 977 Finnish Poison Information Center (24 h/day) Norway: +47 22 59 13 00 Giftinformasjonen (døgnåpent) Sweden: +46-8-33 70 43 Giftinformationscentralen (24 hour service)

Outside these countries: Please call your local emergency services

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
Specific target organ toxicity - single exposure	Category 3	Respiratory system	H335

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

Most important adverse effects

Human Health : Causes serious eye irritation.

Physical and chemical hazards : Stable under normal conditions., Risk of dust explosion.

Potential environmental effects : According to available data, this product is not harmful to the environment.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008

Hazard symbols :

Signal word : Warning

Hazard statements : H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

Precautionary statements

Prevention : P261 Avoid breathing dust.
P264 Wash skin thoroughly after handling.
P280 Wear eye protection/ face protection.

Response : P304 + P340 + P312 IF INHALED: Remove person to fresh

			air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
		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.
Storage	:	P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
Disposal	:	P501	Dispose of contents/ container to an approved waste disposal plant.

Hazardous components which must be listed on the label:

- citric acid

2.3. Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

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

3.1. Substances

Hazardous components	Amount [%]	Classification (REGULATION (EC) No 1272/2008)	
		Hazard class / Hazard category	Hazard statements
citric acid			
Index-No. : 607-750-00-3 CAS-No. : 77-92-9 EC-No. : 201-069-1 EU REACH-Reg. No. : 01-2119457026-42-xxxx	>= 90 - <= 100	Eye Irrit.2 STOT SE3	H319 H335

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 contaminated clothing and shoes immediately. Wash contaminated clothing before re-use.
If inhaled	: Remove to fresh air. If symptoms persist, call a physician.
In case of skin contact	: Wash off immediately with 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 15 minutes. Consult an eye specialist immediately. Go to an ophthalmic hospital if possible.
If swallowed	: Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. If symptoms persist, call a physician.

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

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

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

Treatment	: No information available.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Water spray, Foam
Unsuitable extinguishing media	: High volume water jet

5.2. Special hazards arising from the substance or mixture

Specific hazards during firefighting	: Combustible material.

Hazardous combustion products	:	Carbon dioxide (CO2), Carbon monoxide

5.3. Advice for firefighters

Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus.Choose protective equipment according to size of fire.
Further advice	:	Dust may form explosive mixture in air.Collect contaminated fire extinguishing water separately. This must not be discharged into drains.Cool closed containers exposed to fire with water spray.Capable of producing an explosive atmosphere when dispersed in air in cloud form.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Use personal protective equipment. For personal protection see section 8. Keep people away from and upwind of spill/leak. Avoid dust formation. Avoid contact with skin, eyes and clothing. Do not breathe dust. Ensure adequate ventilation.

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	:	Use mechanical handling equipment. Keep in suitable, closed containers for disposal. Flush away residuals with plenty of water. Retain and dispose of contaminated wash water. Avoid generation of dust during clean-up.
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. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Emergency eye wash fountains and emergency showers should be available in the immediate vicinity. Avoid dust formation.
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. Remove and wash contaminated clothing before re-use.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Keep only in the original container.
Advice on protection against fire and explosion	:	Keep away from heat and sources of ignition. Take precautionary measures against static discharges. Ensure all equipment is electrically grounded before beginning transfer operations. Avoid dust formation. Dust may form explosive mixture in air.
Further information on storage conditions	:	Keep container tightly closed. Keep in a well-ventilated place. Keep in a dry place. Avoid moisture. Protect against water.
Advice on common storage	:	Keep away from food, drink and animal feedingstuffs. Incompatible with oxidizing agents. Incompatible with strong acids and bases.
Storage temperature	:	10 - 30 °C

7.3. Specific end use(s)

Specific use(s)	:	No information available.

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.

Component:	**citric acid**	**CAS-No. 77-92-9**

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

No DNEL value was derived.	:

Predicted No Effect Concentration (PNEC)		
Fresh water	:	0,44 mg/l
Marine water	:	0,044 mg/l
Sewage treatment plant (STP)	:	1000 mg/l
Fresh water sediment	:	34,6 mg/kg d.w.
Marine sediment	:	3,46 mg/kg d.w.
Soil	:	33,1 mg/kg d.w.

8.2. Exposure controls

Appropriate engineering controls

Refer to protective measures listed in sections 7 and 8.

Provide for appropriate exhaust ventilation and dust collection at machinery.
Take measures to prevent the build up of electrostatic charge.

Personal protective equipment

Respiratory protection

Advice	:	If ventilation is insufficient, suitable respiratory protection must be provided Required, if exposure limit is exceeded (e.g. OEL). In the case of dust or aerosol formation use respirator with an approved filter. Respiratory protection complying with EN 143. Recommended Filter type:P
Filter Type	:	Particulates type

Hand protection

Advice	:	Choose right chemical protection as: natural rubber Nitrile rubber

Eye protection

Advice	:	Tightly fitting safety goggles Ensure that eyewash stations and safety showers are close to the workstation location.

Skin and body protection

Advice	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear appropriate chemical resistant clothing and boots.

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	:	solid
Physical state	:	solid
Colour	:	white
Odour	:	odourless
Odour Threshold	:	not determined
Melting point/range	:	153 °C
	:	not determined
Flammability (solid, gas)	:	The product is not flammable.
Upper explosion limit / Upper flammability limit	:	Not applicable
Lower explosion limit / Lower flammability limit	:	Not applicable
Flash point	:	345 °C Method: closed cup
Auto-ignition temperature	:	No data available
Decomposition temperature	:	> 170 °C
Self-Accelerating decomposition temperature (SADT)	:	No data available
pH	:	1,8 (25 °C) Concentration: 50 g/l
Viscosity		
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	Not applicable
Flow time	:	No data available
Solubility(ies)		

Water solubility	:	750 g/l (20 °C)
Solubility in other solvents	:	No data available
Dissolution Rate	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Dispersion Stability	:	No data available
Vapour pressure	:	Not applicable
Relative density	:	No data available
Density	:	1,665 g/cm3 (20 °C)
Bulk density	:	No data available
Relative vapour density	:	Not applicable

Particle characteristics
No data available

9.2 Other information

Explosives	:	Product is not explosive.
Oxidizing properties	:	not oxidising
Evaporation rate	:	Not applicable
Molecular weight	:	192,12 g/mol

SECTION 10: Stability and reactivity

10.1. Reactivity

Advice : No decomposition if stored and applied as directed.

10.2. Chemical stability

Advice : Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions : Dust may form explosive mixture in air. Capable of producing an explosive atmosphere when dispersed in air in cloud form.

10.4. Conditions to avoid

Conditions to avoid : Keep away from heat and sources of ignition.Avoid dust formation.Avoid moisture.Protect from humidity and keep away from water.

Thermal decomposition : >170 °C

10.5. Incompatible materials

Materials to avoid : Strong acids and strong bases, Strong oxidizing agents

10.6. Hazardous decomposition products

Hazardous decomposition products : Carbon oxides

SECTION 11: Toxicological information

11.1. Information on the hazard classes within the meaning of Regulation (EC) No. 1272/2008

Data for the product		
Acute toxicity		
Oral		
		This material may be a slight health hazard if ingested in large quantities.
LD50	:	5000 mg/kg (Mouse) (OECD Test Guideline 401)
Inhalation		
		Inhalation of high concentration may cause mechanical overstraining of mucous membranes. Not classified based on the calculation method according to CLP regulation.
Irritation		
Skin		
Result	:	Prolonged skin contact may cause skin irritation.
Eyes		
Result	:	Causes serious eye irritation.
Sensitisation		
Result	:	Not classified based on the calculation method according to CLP regulation.
CMR effects		
CMR Properties		
Carcinogenicity	:	Not classified based on the calculation method according to CLP regulation.
Mutagenicity	:	Not classified based on the calculation method according to CLP regulation.
Reproductive toxicity	:	Not classified based on the calculation method according to CLP

regulation.

Specific Target Organ Toxicity

Single exposure

Repeated exposure

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

Other toxic properties

Aspiration hazard

No aspiration toxicity classification,

Component: citric acid CAS-No. 77-92-9

Acute toxicity

Inhalation

No valid data available.

Dermal

LD50 : > 2000 mg/kg (Rat, male and female) (OECD Test Guideline 402)

Irritation

Eyes

Result : Irritating to eyes.

CMR effects

CMR Properties

Carcinogenicity : It is not considered carcinogenic.
Mutagenicity : In vitro tests did not show mutagenic effects
In vivo tests did not show mutagenic effects
Teratogenicity : Did not show teratogenic effects in animal experiments.
Reproductive toxicity : It is not considered toxic for reproduction.

Specific Target Organ Toxicity

Single exposure

Inhalation : Target Organs: Respiratory systemMay cause respiratory irritation.

Repeated exposure		
Remarks	:	No data available

Other toxic properties
Aspiration hazard
Not applicable,

11.2. Information on other hazards

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

SECTION 12: Ecological information

12.1. Toxicity

Data for the product		
Acute toxicity		
Short-term (acute) aquatic hazard		
Result	:	The product is not classified as dangerous for the environment.

Component:	citric acid	CAS-No. 77-92-9
Acute toxicity		
Fish		
LC50	:	440 mg/l (Leuciscus idus melanotus; 48 h) (static test; OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates		
LC50	:	1.535 mg/l (Daphnia magna (Water flea); 24 h) (static test)

12.2. Persistence and degradability

Component:	citric acid	CAS-No. 77-92-9

Persistence and degradability

Persistence

Result : No data available

Biodegradability

Result : 97 % (aerobic; Related to: CO2 formation (% of the theoretical value).; Exposure Time: 28 d)(OECD Test Guideline 301B)Readily biodegradable.

Result : 100 % (aerobic; Related to: Dissolved organic carbon (DOC); Exposure Time: 19 d)(OECD Test Guideline 301E)Readily biodegradable.

12.3. Bioaccumulative potential

Component:	citric acid	CAS-No. 77-92-9

Bioaccumulation

Result : log Kow -1,80 - -1,61

: Bioaccumulation is not expected.

12.4. Mobility in soil

Component:	citric acid	CAS-No. 77-92-9

Mobility

Water : The product is water soluble.

Air : not volatile

12.5. Results of PBT and vPvB assessment

Data for the product

Results of PBT and vPvB assessment

Result :

Result : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Component:	citric acid	CAS-No. 77-92-9

Results of PBT and vPvB assessment

Result	:	This substance is not considered to be persistent, bioaccumulating nor toxic (PBT)., This substance is not considered to be very persistent and very bioaccumulating (vPvB).

12.6. Endocrine disrupting properties

Data for the product		
Endocrine disrupting potential	:	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

Data for the product		
Additional ecological information		
Result	:	Do not flush into surface water or sanitary sewer system.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product	:	Eliminate waste in conditions authorized by the regulations. Store waste in containers provided for this purpose. Do not dump in drains, water sheets or the ground.
Contaminated packaging	:	Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning. Packagings that cannot be cleaned are to be disposed of in the same manner as the product. In accordance with local and national regulations.
European Waste Catalogue Number	:	Waste codes should be assigned by the user based on the application for which the product was used.

SECTION 14: Transport information

Not dangerous goods for ADR, RID and IMDG.

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

National product code	:	402145-7
Other regulations	:	Exposure limits in accordance to local regulations

Component:	**citric acid**	**CAS-No. 77-92-9**

EU. REACH, Annex XVII, Marketing and Use Restrictions (Regulation 1907/2006/EC)	:	; The substance/mixture does not fall under this legislation.
EU. Regulation 528/2012/EU concerning the making available on the market and use of biocidal products, Annex I: Active substances	:	EC Number: , 201-069-1; Category 6 - Substances included in Annex I or IA to Directive 98/8/EC; Minimum degree of purity of the active substance (The purity indicated in this column was the minimum degree of purity of the active substance evaluated. The active substance in the product placed on the market can be of equal or different purity if it has been proven to be technically equivalent to the evaluated active substance): 995 g/kg

Notification status

citric acid:

Regulatory List	Notification	Notification number
EINECS	YES	201-069-1
DSL	YES	
KECI (KR)	YES	KE-20831
ENCS (JP)	YES	(2)-1318
PICCS (PH)	YES	
JEX (JP)	YES	(2)-1318
ISHL (JP)	YES	(2)-1318
NZIOC	YES	HSR003138
IECSC	YES	
ONT INV	YES	
INSQ	YES	
TCSI	YES	
TSCA	YES	
VN INVL	YES	
TH INV	YES	2918.14
TH INV	YES	55-1-06186
PHARM (JP)	YES	
AICS	YES	

15.2. Chemical safety assessment

No data available

SECTION 16: Other information

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

H319	Causes serious eye irritation.
H335	May cause respiratory 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
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

Key literature references and sources for data	:	Supplier information and data from the "Database of registered substances" of the European Chemicals Agency (ECHA) were used to create this safety data sheet.
Methods used for	:	The classification for human health, physical and chemical

product classification		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.

|| Indicates updated section.

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.

No.	Short title	REACH Auth. No.:/ REACH AuthApC. No.	Main User Group (SU)	Sector of Use (SU)	Product Category (PC)	Process Category (PROC)	Environmental Release Category (ERC)	Article Category (AC)	Specified
1	Manufacture of substance	NA	3	8	19	1, 2, 3, 4, 8b	1	NA	ES10028
2	Formulation & (re)packing of substances and mixtures	NA	3	5, 10, 13, 20	1, 3, 9a, 9b, 12, 18, 30, 31, 35, 39	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 13, 14, 15, 19	1, 2, 3, 4	NA	ES1638
3	Use in polymers and plastic	NA	3	NA	32	3, 5, 8a, 8b	6b	NA	ES2140
4	Use in coatings	NA	3	17, 18, 19	9a, 9b, 18, 34	7, 8a, 8b, 10, 19, 24	5	4, 11	ES2145
5	Use in coatings	NA	21	NA	9a, 9b, 18, 34	NA	8c, 8f, 10a, 10b, 11a, 11b	4, 11	ES2149
6	Use in coatings	NA	22	17, 18, 19	9a, 9b, 18, 34	8a, 8b, 10, 11, 19, 24	8c, 8f, 10a, 10b, 11a, 11b	4, 11	ES2147
7	Use in cleaning agents	NA	21	NA	3, 28, 31, 35, 36, 37	NA	8a, 8d, 9a, 9b	NA	ES2097
8	Use in agrochemicals	NA	3	1	8, 12, 21	3, 5, 8a, 8b, 10, 14, 15, 19	4	2	ES2238
9	Use in agrochemicals	NA	21	1	8, 12, 21	NA	8b, 8d	NA	ES2252
10	Use in agrochemicals	NA	22	1	8, 12, 21	3, 5, 8a, 8b, 10, 11, 14, 15, 19	8b, 8d	NA	ES2249
11	Use in process water treatment	NA	3	14, 15, 16, 17	4, 7, 14, 16, 17, 20, 25, 35, 37	1, 2, 3, 4, 7, 8a, 8b, 9, 10, 13, 18, 20	4, 7	NA	ES2205
12	Use in oil industry	NA	3	2a, 2b	20, 40	3, 4, 5	4	NA	ES2143
13	Use in metal surface treatment.	NA	3	14, 15, 16, 17	7, 14, 25, 31, 35	2, 3, 4, 7, 8a, 8b, 9, 10, 13, 17, 18, 23	4, 6b	NA	ES2219
14	Use in photography products	NA	21	20	30	NA	8a	NA	ES2171
15	Use in photography products	NA	22	20	NA	5, 13	8a	NA	ES2159
16	Use in building and construction work	NA	22	2, 10, 19	NA	4, 5, 8a, 8b, 10, 11, 13, 14, 19, 21, 24	8c, 8f, 10a, 10b, 11a, 11b	4	ES2136

1. Short title of Exposure Scenario 1: Manufacture of substance	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products)
Chemical product category	PC19: Intermediate
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
Environmental Release Categories	ERC1: Manufacture of substances

2.1 Contributing scenario controlling environmental exposure for: ERC1		
Amount used	Amounts used in the EU (tonnes/year)	1000 ton(s)/year
	Regional use tonnage:	10000 ton(s)/year
	Fraction of regional tonnage used locally:	1
	Annual amount per site	10000 ton(s)/year
	Daily amount per site	30000 kg/day
Frequency and duration of use	Continuous exposure	350 Emission days
Environment factors not influenced by risk management	Dilution Factor (River)	900
	Dilution Factor (Coastal Areas)	1.000
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0,01 %
Technical conditions and measures at process level 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	Water	Do not flush into surface water or sanitary sewer system., Do not release undiluted and unneutralized to the sewer., Regular control of the pH value during introduction into open waters is required.
	The substance is biodegradable, has a low Kow and is not expected to bioaccumulate	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Onsite sewage treatment plant
	Flow rate of sewage treatment plant effluent	10.000 m3/d
	Sludge Treatment	Recovery of sludge for agriculture or horticulture
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Solid wastes should be disposed of via landfill or incineration, Waste water treatment may vary at different sites. Wastewater should be at least treated in either an on-site or a municipal secondary biological treatment plant prior to discharge
	Contain and dispose of waste in accordance with environmental legislation and	

	according to local regulations.	

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8b

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 90%.
	Physical Form (at time of use)	solid, liquid
Frequency and duration of use	Exposure duration per day	> 4 h
	Frequency of use	1 Times per day
Human factors not influenced by risk management	Exposed skin area	Palm of one hand (240cm2) (PROC1, PROC3)
	Exposed skin area	Palms of both hands (480 cm2) (PROC2, PROC4, PROC8b)
	Breathing volume	10 m3/day
	Light activity	
	Body weight	70 kg
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a predominantly closed system provided with extract ventilation. Handle in a fume cupboard or under extract ventilation. Dust must be extracted directly at the point of origin. Take measures to prevent the build up of electrostatic charge. Use explosion-proof equipment. Avoid splashing.	
	Provide local exhaust ventilation (LEV). (Efficiency: 90 %)(PROC2, PROC3, PROC4)	
	Provide local exhaust ventilation (LEV). (Efficiency: 95 %)(PROC8b)	
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day. Provide basic employee training to prevent/minimize exposures Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related to personal protection, hygiene and health evaluation	In case of inadequate ventilation wear respiratory protection. Wear face protection. Butyl rubber gloves offer good protection Wear protective clothing. LEV and respiratory protection to be taken in areas where workers may come into contact with dust Avoid contact with the substance or contaminated objects Use of PPE will minimize contact during handling.	

3. Exposure estimation and reference to its source

Environment

EUSES 2.1.1

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0153mg/L	0,0348
---	Annual average	Water	PEC	0,0153mg/L	---
---	---	Fresh water sediment	PEC	0,261mg/kg wwt	0,0348
---	---	Marine water	PEC	0,00180mg/L	0,0408
---	Annual average	Marine water	PEC	0,00718mg/L	---
---	---	Marine sediment	PEC	0,0307mg/kg wwt	0,0408

---	30 days	Agricultural soil	PEC	0,0227mg/kg wwt	0,000777
---	180 days	Agricultural soil	PEC	0,00743mg/kg wwt	---
---	180 days	Grassland	PEC	0,00297mg/kg wwt	---
---	---	Pore water of agricultural soil	PEC	0,000112mg/L	---
---	---	Pore water of grassland	PEC	0,0000448mg/L	---
---	---	Groundwater under agricultural soil	PEC	0,000112mg/L	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC8b: ECETOC TRA worker v3

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Dermal	0,3mg/kg/day	---
PROC2	---	Dermal	0,14mg/kg/day	---
PROC3	---	Dermal	0,03mg/kg/day	---
PROC4, PROC8b	---	Dermal	0,69mg/kg/day	---
PROC1	---	Inhalation	0,01mg/m³	---
PROC2, PROC3	---	Inhalation	0,1mg/m³	---
PROC4	---	Inhalation	2,5mg/m³	---
PROC8b	---	Inhalation	1,25mg/m³	---

In the ECETOC TRA model, LEV is not considered for PROC1.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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	SU5: Manufacture of textiles, leather, fur SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys) SU13: Manufacture of other non-metallic mineral products, e.g. plasters, cement SU20: Health services
Chemical product category	PC1: Adhesives, sealants PC3: Air care products PC9a: Coatings and paints, thinners, paint removers PC9b: Fillers, putties, plasters, modelling clay PC12: Fertilizers PC18: Ink and toners PC30: Photo-chemicals PC31: Polishes and wax blends PC35: Washing and cleaning products PC39: Cosmetics, personal care products
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC7: Industrial spraying 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 PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	ERC1: Manufacture of substances ERC2: Formulation of preparations ERC3: Formulation in materials ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
Activity	Note: this Exposure Scenario is only relevant for an appropriated use according to the quality grade of the substance delivered

2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2, ERC3, ERC4		
Amount used	Amounts used in the EU (tonnes/year)	10000 ton(s)/year
	Regional use tonnage (tons/year):	10000 ton(s)/year
	Fraction of EU tonnage used in region:	0,6
	Annual amount per site	6000 ton(s)/year
	Daily amount per site	20000 kg/day

Frequency and duration of use	Continuous exposure	300 Emission days
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,25 %
	Emission or Release Factor: Water	0,05 %
Technical conditions and measures at process level 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	Water	Removal of solids in settling tanks, Do not flush into surface water or sanitary sewer system., Do not release undiluted and unneutralized to the sewer., Regular control of the pH value during introduction into open waters is required.
	The substance is biodegradable, has a low Kow and is not expected to bioaccumulate	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	10.000 m3/d
	Sludge Treatment	Recovery of sludge for agriculture or horticulture
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Solid wastes should be disposed of via landfill or incineration, Waste water treatment may vary at different sites. Wastewater should be at least treated in either an on-site or a municipal secondary biological treatment plant prior to discharge
	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15, PROC19		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	solid, liquid
Frequency and duration of use	Exposure duration per day	> 4 h
	Frequency of use	1 Times per day
Human factors not influenced by risk management	Exposed skin area	Palm of one hand (240cm2) (PROC1, PROC3, PROC15)
	Exposed skin area	Palms of both hands (480 cm2) (PROC2, PROC4, PROC5, PROC8b, PROC9, PROC13, PROC14)
	Body weight	70 kg
	Breathing volume	10 m3/day
Technical conditions and measures to control dispersion from source towards the worker	Provide appropriate exhaust ventilation at places where dust is formed. Handle substance within a predominantly closed system provided with extract ventilation. Handle in a fume cupboard or under extract ventilation. Take measures to prevent the build up of electrostatic charge. Use explosion-proof equipment. Avoid splashing.	
	Provide local exhaust ventilation (LEV). (Efficiency: 90 %)	
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day. Provide basic employee training to prevent/minimize exposures Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related	Butyl rubber gloves offer good protection	

to personal protection, hygiene and health evaluation	Wear protective clothing. Safety glasses Wear face protection. Avoid contact with the substance or contaminated objects Use of PPE will minimize contact during handling.

3. Exposure estimation and reference to its source

Environment

EUSES 2.1.1

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0158mg/L	0,0359
---	Annual average	Fresh water	PEC	0,0157mg/L	---
---	---	Fresh water sediment	PEC	0,27mg/kg wwt	0,0359
---	---	Marine water	PEC	0,0194mg/L	0,441
---	Annual average	Marine water	PEC	0,0162mg/L	---
---	---	Marine sediment	PEC	0,331mg/kg wwt	---
---	30 days	Agricultural soil	PEC	0,106mg/kg wwt	0,00362
---	180 days	Agricultural soil	PEC	0,347mg/kg wwt	---
---	180 days	Grassland	PEC	0,0139mg/kg wwt	---
---	---	Pore water of agricultural soil	PEC	0,000523mg/L	---
---	---	Pore water of grassland	PEC	0,000209mg/L	---

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15, PROC19: ECETOC TRA worker v3

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Dermal	0,34mg/kg/day	---
PROC2	---	Dermal	0,14mg/kg/day	---
PROC3, PROC15	---	Dermal	0,034mg/kg/day	---
PROC4, PROC8b, PROC9, PROC13	---	Dermal	0,69mg/kg/day	---
PROC5, PROC8a	---	Dermal	1,37mg/kg/day	---
PROC7	---	Dermal	4,29mg/kg/day	---
PROC14	---	Dermal	0,34mg/kg/day	---
PROC19	---	Dermal	14,1mg/kg/day	---
PROC1, PROC13	---	Inhalation	0,01mg/m³	---
PROC2, PROC3	---	Inhalation	0,1mg/m³	---

PROC4, PROC5, PROC8b	---	Inhalation	2,5mg/m³	---
PROC7	---	Inhalation	10mg/m³	---
PROC8a	---	Inhalation	5mg/m³	---
PROC9	---	Inhalation	2mg/m³	---
PROC14	---	Inhalation	1mg/m³	---
PROC15	---	Inhalation	0,5mg/m³	---
PROC19	---	Inhalation	0,05mg/m³	---

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

Guidance is based on assumed operating conditions which may not be applicable to all sites. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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: Use in polymers and plastic	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Chemical product category	PC32: Polymer preparations and compounds
Process categories	PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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
Environmental Release Categories	ERC6b: Industrial use of reactive processing aids

2.1 Contributing scenario controlling environmental exposure for: ERC6b		
Amount used	Amounts used in the EU (tonnes/year)	200 ton(s)/year
	Regional use tonnage (tons/year):	20 ton(s)/year
	Fraction of regional tonnage used locally:	1
	Annual amount per site	20 ton(s)/year
	Daily amount per site	67 kg/day
Frequency and duration of use	Continuous exposure	300 days/year
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	0,65 %
	Regional only, .	
Technical conditions and measures at process level 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	Water	Before discharge into sewage plants the product normally needs to be neutralised.
	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate	
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste water treatment may vary at different sites. Wastewater should be at least treated in either an on-site or a municipal secondary biological treatment plant prior to discharge
	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	

2.2 Contributing scenario controlling worker exposure for: PROC3, PROC5, PROC8a, PROC8b		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 1 %.
	Physical Form (at time of use)	solid, liquid
Technical conditions and measures to control dispersion	Take measures to prevent the build up of electrostatic charge. Avoid splashing.	

from source towards the worker	Provide adequate ventilation.
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day. Provide basic employee training to prevent/minimize exposures Supervision in place to check that the RMMs in place are being used correctly and OC's followed
Conditions and measures related to personal protection, hygiene and health evaluation	In case of inadequate ventilation wear respiratory protection. Wear face protection. Butyl rubber gloves offer good protection LEV and respiratory protection to be taken in areas where workers may come into contact with dust Avoid contact with the substance or contaminated objects Use of PPE will minimize contact during handling.

3. Exposure estimation and reference to its source

Environment

No information available.

Workers

Qualitative approach used to conclude safe use.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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 in coatings	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment SU18: Manufacture of furniture SU19: Building and construction work
Chemical product category	PC9a: Coatings and paints, thinners, paint removers PC9b: Fillers, putties, plasters, modelling clay PC18: Ink and toners PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids
Process categories	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 PROC10: Roller application or brushing PROC19: Hand-mixing with intimate contact and only PPE available PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles
Article categories	AC4: Stone, plaster, cement, glass and ceramic articles AC11: Wood articles
Environmental Release Categories	ERC5: Industrial use resulting in inclusion into or onto a matrix

2.1 Contributing scenario controlling environmental exposure for: ERC5		
Amount used	Amounts used in the EU (tonnes/year)	300 ton(s)/year
	Regional use tonnage (tons/year):	40 ton(s)/year
	Fraction of regional tonnage used locally:	0,25
	Annual amount for wide disperse uses	10 ton(s)/year
Frequency and duration of use	Continuous exposure	365 days/year
Technical conditions and measures at process level 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	Water	Before discharge into sewage plants the product normally needs to be neutralised.
	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate	
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste water treatment may vary at different sites. Wastewater should be at least treated in either an on-site or a municipal secondary biological treatment plant prior to discharge
	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	

2.2 Contributing scenario controlling worker exposure for: PROC7, PROC8a, PROC8b, PROC10, PROC19, PROC24		
Product characteristics	Physical Form (at time of use)	solid, liquid

Technical conditions and measures to control dispersion from source towards the worker	Avoid splashing. Provide adequate ventilation.
Organisational measures to prevent /limit releases, dispersion and exposure	Provide basic employee training to prevent/minimize exposures Supervision in place to check that the RMMs in place are being used correctly and OC's followed
Conditions and measures related to personal protection, hygiene and health evaluation	In case of inadequate ventilation wear respiratory protection. Wear face protection. Butyl rubber gloves offer good protection Use of PPE will minimize contact during handling.

3. Exposure estimation and reference to its source

Environment

No information available.

Workers

Qualitative approach used to conclude safe use.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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 in coatings	
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC9a: Coatings and paints, thinners, paint removers PC9b: Fillers, putties, plasters, modelling clay PC18: Ink and toners PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids
Article categories	AC4: Stone, plaster, cement, glass and ceramic articles AC11: Wood articles
Environmental Release Categories	ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release ERC10b: Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing) ERC11a: Wide dispersive indoor use of long-life articles and materials with low release ERC11b: Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing)

2.1 Contributing scenario controlling environmental exposure for: ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b		
Amount used	Amounts used in the EU (tonnes/year)	300 ton(s)/year
Frequency and duration of use	Continuous exposure	365 days/year
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Water	2 %
	local release rate, .	
Technical conditions and measures at process level to prevent release	Water	Before discharge into sewage plants the product normally needs to be neutralised.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate	
Organizational measures to prevent/limit release from the site		
Conditions and measures related to external treatment of waste for disposal	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	

2.2 Contributing scenario controlling consumer exposure for: PC9a, PC9b, PC18, PC34		
Product characteristics	Physical Form (at time of use)	liquid, solid
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Exposure to low concentrations during application/use	

3. Exposure estimation and reference to its source

Environment

No information available.

Consumers

No information available.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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: Use in coatings

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sectors of end-use	SU17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment SU18: Manufacture of furniture SU19: Building and construction work
Chemical product category	PC9a: Coatings and paints, thinners, paint removers PC9b: Fillers, putties, plasters, modelling clay PC18: Ink and toners PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids
Process categories	PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC10: Roller application or brushing PROC11: Non industrial spraying PROC19: Hand-mixing with intimate contact and only PPE available PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles
Article categories	AC4: Stone, plaster, cement, glass and ceramic articles AC11: Wood articles
Environmental Release Categories	ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release ERC10b: Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing) ERC11a: Wide dispersive indoor use of long-life articles and materials with low release ERC11b: Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing)

2.1 Contributing scenario controlling environmental exposure for: ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b

Amount used	Amounts used in the EU (tonnes/year)	300 ton(s)/year
	Regional use tonnage (tons/year):	40 ton(s)/year
	Fraction of regional tonnage used locally:	0,25
	Annual amount for wide disperse uses	10 ton(s)/year
Frequency and duration of use	Continuous exposure	365 days/year
Technical conditions and measures at process level to prevent release	Water	Before discharge into sewage plants the product normally needs to be neutralised.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate	
Organizational measures to prevent/limit release from the site		
Conditions and measures related to external treatment of waste for disposal	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	

2.2 Contributing scenario controlling worker exposure for: PROC8a, PROC8b, PROC10, PROC11, PROC19, PROC24

Product characteristics	Physical Form (at time of use)	solid, liquid
Frequency and duration of use	Exposure time	> 4 h
Technical conditions and measures to control dispersion from source towards the worker	Avoid splashing.	
Organisational measures to prevent /limit releases, dispersion and exposure	Provide basic employee training to prevent/minimize exposures Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related to personal protection, hygiene and health evaluation	In case of inadequate ventilation wear respiratory protection. Wear face protection. Butyl rubber gloves offer good protection Use of PPE will minimize contact during handling.	

3. Exposure estimation and reference to its source

Environment

No information available.

Workers

Qualitative approach used to conclude safe use.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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 in cleaning agents	
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC3: Air care products PC28: Perfumes, fragrances PC31: Polishes and wax blends PC35: Washing and cleaning products PC36: Water softeners 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 ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems
Activity	Note: this Exposure Scenario is only relevant for an appropriated use according to the quality grade of the substance delivered

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d, ERC9a, ERC9b		
Readily biodegradable		
Amount used	Amounts used in the EU (tonnes/year)	100000 ton(s)/year
	Regional use tonnage (tons/year):	10000 ton(s)/year
	Fraction of regional tonnage used locally:	0,0005
	Annual amount for wide disperse uses	14 kg/day
Frequency and duration of use	Continuous exposure	365 Emission days
Environment factors not influenced by risk management	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	Emission or Release Factor: Water	100 %
Technical conditions and measures at process level 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	Water	Before discharge into sewage plants the product normally needs to be neutralised.
	The substance is biodegradable, has a low Kow and is not expected to bioaccumulate	
Conditions and measures related to sewage treatment plant	Type of Sewage Treatment Plant	Municipal sewage treatment plant
	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Sludge Treatment	Recovery of sludge for agriculture or horticulture
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Solid wastes should be disposed of via landfill or incineration
	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	

2.2 Contributing scenario controlling consumer exposure for: PC3, PC28, PC31, PC35, PC36, PC37		
Product characteristics	Concentration of the	Covers concentrations more than 25%

	Substance in Mixture/Article	
	Physical Form (at time of use)	liquid, solid
Human factors not influenced by risk management	Body weight	65 kg
	Breathing volume	26 m3
	Light activity	
	Exposed skin surface	960 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Ventilation rate per hour	0,6
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Long term exposure to low concentrations during application/use	

3. Exposure estimation and reference to its source

Environment

EUSES 2.1.1

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0248mg/L	0,0563
---	Annual average	Fresh water	PEC	0,0248mg/L	0,0563
---	---	Fresh water sediment	PEC	0,423mg/kg wwt	0,0563
---	---	Marine water	PEC	0,00237mg/L	0,0539
---	Annual average	Marine water	PEC	0,00237mg/L	0,0539
---	---	Marine sediment	PEC	0,0405mg/kg wwt	0,0539
---	30 days	Agricultural soil	PEC	0,402mg/kg wwt	0,0138
---	180 days	Agricultural soil	PEC	0,132mg/kg wwt	---
---	180 days	Grassland	PEC	0,0527mg/kg wwt	---
---	---	Pore water of agricultural soil	PEC	0,00199mg/L	---
---	---	Pore water of grassland	PEC	0,000795mg/L	---
---	---	Groundwater under agricultural soil	PEC	0,00199mg/L	---

Consumers

No information available.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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 in agrochemicals	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU1: Agriculture, forestry, fishery
Chemical product category	PC8: Biocidal products (e.g. Disinfectants, pest control) PC12: Fertilizers PC21: Laboratory chemicals
Process categories	PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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 PROC10: Roller application or brushing PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available
Article categories	AC2: Machinery, mechanical appliances, electrical/ electronic articles
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		
Amount used	Amounts used in the EU (tonnes/year)	1500 ton(s)/year
Frequency and duration of use	Continuous exposure	365 days/year
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Water	10 %
	Emission or Release Factor: Soil	90 %
Technical conditions and measures at process level 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	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate	
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste water treatment may vary at different sites. Wastewater should be at least treated in either an on-site or a municipal secondary biological treatment plant prior to discharge

2.2 Contributing scenario controlling worker exposure for: PROC3, PROC5, PROC8a, PROC8b, PROC10, PROC14, PROC15, PROC19		
Product characteristics	Physical Form (at time of use)	solid, liquid
Technical conditions and measures to control dispersion from source towards the worker	Take measures to prevent the build up of electrostatic charge. Avoid splashing. Provide appropriate exhaust ventilation at places where dust is formed.	
Organisational measures to prevent /limit releases, dispersion	Clean equipment and the work area every day. Provide basic employee training to prevent/minimize exposures	

and exposure	
Conditions and measures related to personal protection, hygiene and health evaluation	In case of inadequate ventilation wear respiratory protection. Wear face protection. Butyl rubber gloves offer good protection LEV and respiratory protection to be taken in areas where workers may come into contact with dust Avoid contact with the substance or contaminated objects

3. Exposure estimation and reference to its source

Environment

No information available.

Workers

No information available.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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 in agrochemicals

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Sectors of end-use	SU1: Agriculture, forestry, fishery
Chemical product category	PC8: Biocidal products (e.g. Disinfectants, pest control) PC12: Fertilizers PC21: Laboratory chemicals
Environmental Release Categories	ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8b, ERC8d

Amount used	Amounts used in the EU (tonnes/year)	1500 ton(s)/year
Frequency and duration of use	Continuous exposure	365 days/year
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Water	10 %
	Emission or Release Factor: Soil	90 %
Technical conditions and measures at process level 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	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate	

2.2 Contributing scenario controlling consumer exposure for: PC8, PC12, PC21

Product characteristics	Physical Form (at time of use)	solid, liquid
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Wear suitable protective clothing, gloves and eye/face protection. Avoid prolonged contact with eyes, skin and clothing. Ensure that no inhalable dusts are generated In case of dust or aerosol formation: use respiratory protection with approved filter (P2) These measures involve good personal and housekeeping practices (i.e. regular cleaning), no eating and smoking at the workplace, wearing of standard working clothes and shoes.

3. Exposure estimation and reference to its source

Environment

No information available.

Consumers

No information available.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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: Use in agrochemicals	
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sectors of end-use	SU1: Agriculture, forestry, fishery
Chemical product category	PC8: Biocidal products (e.g. Disinfectants, pest control) PC12: Fertilizers PC21: Laboratory chemicals
Process categories	PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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 PROC10: Roller application or brushing PROC11: Non industrial spraying PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8b, ERC8d		
Amount used	Amounts used in the EU (tonnes/year)	1500 ton(s)/year
Frequency and duration of use	Continuous exposure	365 days/year
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Water	10 %
	Emission or Release Factor: Soil	90 %
Technical conditions and measures at process level 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	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate	

2.2 Contributing scenario controlling worker exposure for: PROC3, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC14, PROC15, PROC19		
Product characteristics	Physical Form (at time of use)	solid, liquid
Technical conditions and measures to control dispersion from source towards the worker	Take measures to prevent the build up of electrostatic charge. Avoid splashing. Provide appropriate exhaust ventilation at places where dust is formed.	
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day. Provide basic employee training to prevent/minimize exposures	
Conditions and measures related to personal protection, hygiene and health evaluation	In case of inadequate ventilation wear respiratory protection. Wear face protection. Butyl rubber gloves offer good protection LEV and respiratory protection to be taken in areas where workers may come	

	into contact with dust Avoid contact with the substance or contaminated objects

3. Exposure estimation and reference to its source

Environment

No information available.

Workers

Qualitative approach used to conclude safe use.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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 11: Use in process water treatment	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU14: Manufacture of basic metals, including alloys SU15: Manufacture of fabricated metal products, except machinery and equipment SU16: Manufacture of computer, electronic and optical products, electrical equipment SU17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Chemical product category	PC4: Anti-Freeze and de-icing products PC7: Base metals and alloys PC14: Metal surface treatment products, including galvanic and electroplating products PC16: Heat transfer fluids PC17: Hydraulic fluids PC20: Products such as pH-regulators, flocculants, precipitants, neutralization agents PC25: Metal working fluids PC35: Washing and cleaning products PC37: Water treatment chemicals
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises 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 PROC18: Greasing at high energy conditions PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC7: Industrial use of substances in closed systems

2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC7		
Amount used	Amounts used in the EU (tonnes/year)	1000 ton(s)/year
Frequency and duration of use	Continuous exposure	365 days/year
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Water	100 %
	Regional only, .	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit	Water	Before discharge into sewage plants the product normally needs to be neutralised.
	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. The substance is biodegradable, has a low Kow and is not expected to	

discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	bioaccumulate	
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste water treatment may vary at different sites. Wastewater should be at least treated in either an on-site or a municipal secondary biological treatment plant prior to discharge
	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC18, PROC20

Product characteristics	Physical Form (at time of use)	liquid, solid
Frequency and duration of use	Exposure time	> 4 h
Technical conditions and measures to control dispersion from source towards the worker	Take measures to prevent the build up of electrostatic charge. Avoid splashing. Provide appropriate exhaust ventilation at places where dust is formed.	
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day. Provide basic employee training to prevent/minimize exposures Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related to personal protection, hygiene and health evaluation	In case of inadequate ventilation wear respiratory protection. Wear face protection. Butyl rubber gloves offer good protection LEV and respiratory protection to be taken in areas where workers may come into contact with dust Avoid contact with the substance or contaminated objects Use of PPE will minimize contact during handling.	

3. Exposure estimation and reference to its source

Environment

No information available.

Workers

Qualitative approach used to conclude safe use.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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 12: Use in oil industry	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU2a: Mining, (without offshore industries) SU2b: Offshore industries
Chemical product category	PC20: Products such as pH-regulators, flocculants, precipitants, neutralization agents PC40: Extraction agents
Process categories	PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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)
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		
Amount used	Amounts used in the EU (tonnes/year)	900 ton(s)/year
	Regional use tonnage (tons/year):	100 ton(s)/year
Frequency and duration of use	Continuous exposure	365 days/year
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Water	100 %
	Regional only, .	
Technical conditions and measures at process level 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	Water	Before discharge into sewage plants the product normally needs to be neutralised.
	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate	
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste water treatment may vary at different sites. Wastewater should be at least treated in either an on-site or a municipal secondary biological treatment plant prior to discharge
	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	

2.2 Contributing scenario controlling worker exposure for: PROC3, PROC4, PROC5		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 20% - 50%
	Physical Form (at time of use)	liquid, solid
Technical conditions and measures to control dispersion from source towards the worker	Take measures to prevent the build up of electrostatic charge. Avoid splashing. Provide appropriate exhaust ventilation at places where dust is formed.	
Organisational measures to prevent /limit releases, dispersion and exposure	Provide basic employee training to prevent/minimize exposures Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related	Wear face protection.	

to personal protection, hygiene and health evaluation	Butyl rubber gloves offer good protection LEV and respiratory protection to be taken in areas where workers may come into contact with dust Use of PPE will minimize contact during handling. In case of inadequate ventilation wear respiratory protection.

3. Exposure estimation and reference to its source

Environment

No information available.

Workers

Qualitative approach used to conclude safe use.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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 13: Use in metal surface treatment.	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU14: Manufacture of basic metals, including alloys SU15: Manufacture of fabricated metal products, except machinery and equipment SU16: Manufacture of computer, electronic and optical products, electrical equipment SU17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Chemical product category	PC7: Base metals and alloys PC14: Metal surface treatment products, including galvanic and electroplating products PC25: Metal working fluids PC31: Polishes and wax blends PC35: Washing and cleaning products
Process categories	PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises 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 PROC17: Lubrication at high energy conditions and in partly open process PROC18: Greasing at high energy conditions 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 ERC6b: Industrial use of reactive processing aids

2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC6b		
Amount used	Amounts used in the EU (tonnes/year)	1000 ton(s)/year
Frequency and duration of use	Continuous exposure	365 days/year
Technical conditions and measures at process level 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	Water	Before discharge into sewage plants the product normally needs to be neutralised.
	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate	
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Waste water treatment may vary at different sites. Wastewater should be at least treated in either an on-site or a municipal secondary biological treatment plant prior to discharge
	Contain and dispose of waste in accordance with environmental legislation and	

	according to local regulations.	
2.2 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17, PROC18, PROC23		
Product characteristics	Physical Form (at time of use)	liquid, solid
Frequency and duration of use	Exposure time	> 4 h
Technical conditions and measures to control dispersion from source towards the worker	Take measures to prevent the build up of electrostatic charge. Avoid splashing. Provide appropriate exhaust ventilation at places where dust is formed.	
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day. Provide basic employee training to prevent/minimize exposures Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related to personal protection, hygiene and health evaluation	In case of inadequate ventilation wear respiratory protection. Wear face protection. Butyl rubber gloves offer good protection LEV and respiratory protection to be taken in areas where workers may come into contact with dust Avoid contact with the substance or contaminated objects Use of PPE will minimize contact during handling.	

3. Exposure estimation and reference to its source

Environment

No information available.

Workers

Qualitative approach used to conclude safe use.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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 14: Use in photography products

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Sectors of end-use	SU20: Health services
Chemical product category	PC30: Photo-chemicals
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems
Activity	Note: this Exposure Scenario is only relevant for an appropriated use according to the quality grade of the substance delivered

2.1 Contributing scenario controlling environmental exposure for: ERC8a

Amount used	Amounts used in the EU (tonnes/year)	200 ton(s)/year
Technical conditions and measures at process level 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	Water	Before discharge into sewage plants the product normally needs to be neutralised.
	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate	
Conditions and measures related to external treatment of waste for disposal	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	

2.2 Contributing scenario controlling consumer exposure for: PC30

Product characteristics	Physical Form (at time of use)	solid, liquid
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Exposure to low concentrations during application/use	

3. Exposure estimation and reference to its source

Environment

No information available.

Consumers

No information available.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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 15: Use in photography products	
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sectors of end-use	SU20: Health services
Process categories	PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC13: Treatment of articles by dipping and pouring
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems
Activity	Note: this Exposure Scenario is only relevant for an appropriated use according to the quality grade of the substance delivered

2.1 Contributing scenario controlling environmental exposure for: ERC8a		
Amount used	Amounts used in the EU (tonnes/year)	200 ton(s)/year
Technical conditions and measures at process level 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	Water	Before discharge into sewage plants the product normally needs to be neutralised.
	The substance is biodegradable, has a low Kow and is not expected to bioaccumulate	
Conditions and measures related to external treatment of waste for disposal	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	

2.2 Contributing scenario controlling worker exposure for: PROC5, PROC13		
Product characteristics	Physical Form (at time of use)	liquid, solid
Frequency and duration of use	Exposure time	> 4 h
Technical conditions and measures to control dispersion from source towards the worker	Avoid splashing.	
Organisational measures to prevent /limit releases, dispersion and exposure	Provide basic employee training to prevent/minimize exposures Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related to personal protection, hygiene and health evaluation	In case of inadequate ventilation wear respiratory protection. Wear face protection. Butyl rubber gloves offer good protection	

3. Exposure estimation and reference to its source

Environment

No information available.

Workers

Qualitative approach used to conclude safe use.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to

at least equivalent levels.

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 16: Use in building and construction work	
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sectors of end-use	SU2: Mining, (including offshore industries) SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys) SU19: Building and construction work
Process categories	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 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, pelletisation PROC19: Hand-mixing with intimate contact and only PPE available PROC21: Low energy manipulation of substances bound in materials and/ or articles PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles
Article categories	AC4: Stone, plaster, cement, glass and ceramic articles
Environmental Release Categories	ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release ERC10b: Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing) ERC11a: Wide dispersive indoor use of long-life articles and materials with low release ERC11b: Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing)

2.1 Contributing scenario controlling environmental exposure for: ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b		
Amount used	Regional use tonnage (tons/year):	1500 ton(s)/year
Frequency and duration of use	Continuous exposure	365 days/year
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Water	10 %
	Emission or Release Factor: Soil	90 %
Technical conditions and measures at process level to prevent release	Water	Before discharge into sewage plants the product normally needs to be neutralised.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate	
Organizational measures to prevent/limit release from the site		
Conditions and measures related to external treatment of waste for	Contain and dispose of waste in accordance with environmental legislation and according to local regulations.	

disposal		

2.2 Contributing scenario controlling worker exposure for: PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC14, PROC19, PROC21, PROC24

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 1 %.
	Physical Form (at time of use)	solid, liquid
Frequency and duration of use	Exposure time	> 4 h
Technical conditions and measures to control dispersion from source towards the worker	Take measures to prevent the build up of electrostatic charge. Avoid splashing.	
Organisational measures to prevent /limit releases, dispersion and exposure	Provide basic employee training to prevent/minimize exposures Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related to personal protection, hygiene and health evaluation	In case of inadequate ventilation wear respiratory protection. Wear face protection. Butyl rubber gloves offer good protection	

3. Exposure estimation and reference to its source

Environment

No information available.

Workers

Qualitative approach used to conclude safe use.

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

Guidance is based on assumed operating conditions which may not be applicable to all sites. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.